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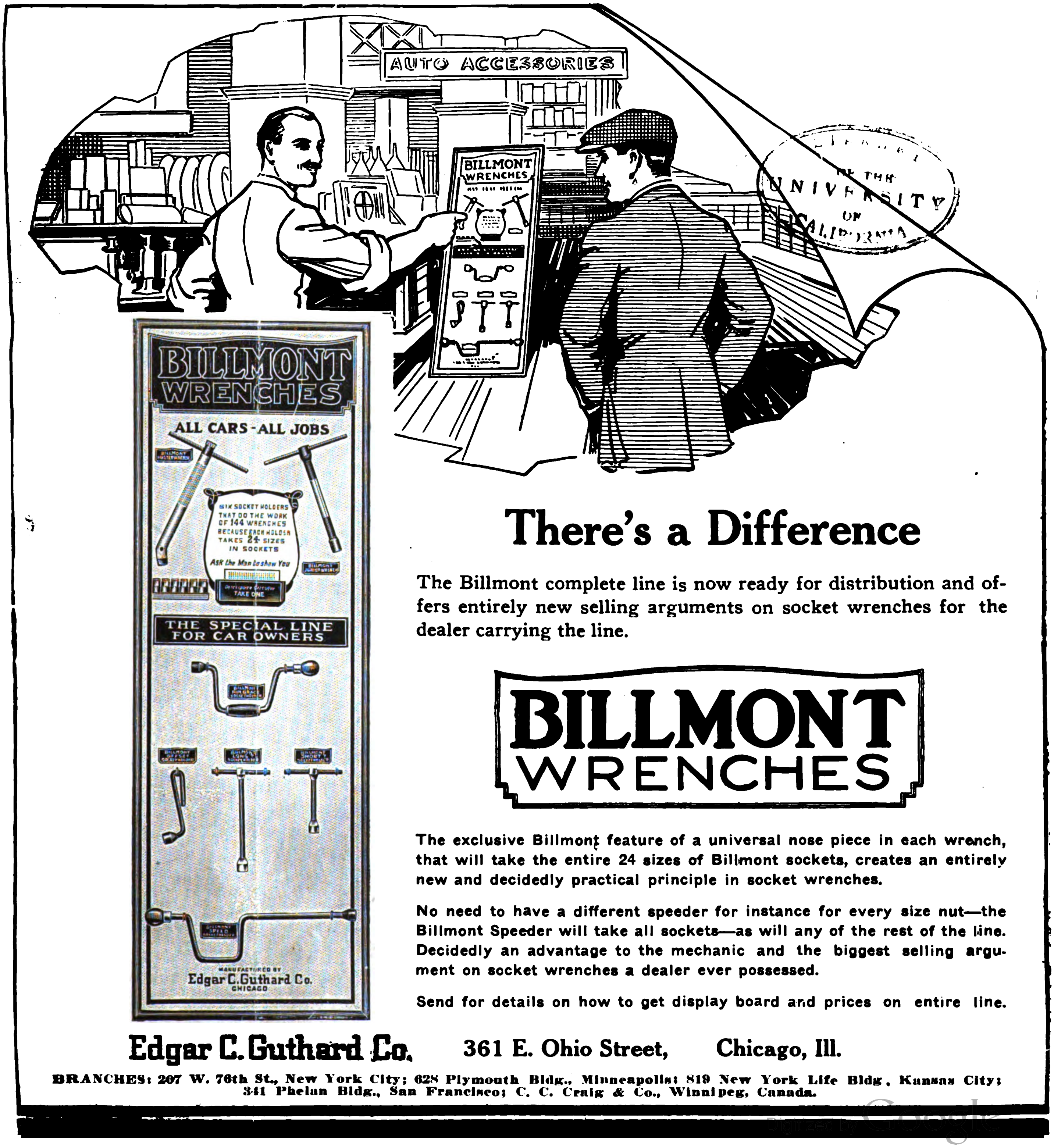
THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

VOL. X. NO. 1. PAWTUCKET, R. I., MAY, 1920. $2.00 THE YEAR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BILLMONT WRENCHES
BILLMONT WRENCHES
ALL CARS - ALL JOBS
SIX SOCKET HOLDERS THAT DO THE WORK OF 144 WRENCHES BECAUSE EACH HOLDER TAKES 24 SIZES IN SOCKETS
Ask the Man to show You
TAKE ONE
THE SPECIAL LINE FOR CAR OWNERS
MANUFACTURED BY
Edgar C. Guthard Co.
CHICAGO

THE UNIVERSITY OF CALIFORNIA

There's a Difference

The Billmont complete line is now ready for distribution and offers entirely new selling arguments on socket wrenches for the dealer carrying the line.

BILLMONT WRENCHES

The exclusive Billmont feature of a universal nose piece in each wrench, that will take the entire 24 sizes of Billmont sockets, creates an entirely new and decidedly practical principle in socket wrenches.

No need to have a different speeder for instance for every size nut—the Billmont Speeder will take all sockets—as will any of the rest of the line. Decidedly an advantage to the mechanic and the biggest selling argument on socket wrenches a dealer ever possessed.

Send for details on how to get display board and prices on entire line.

Edgar C. Guthard Co. 361 E. Ohio Street, Chicago, Ill.

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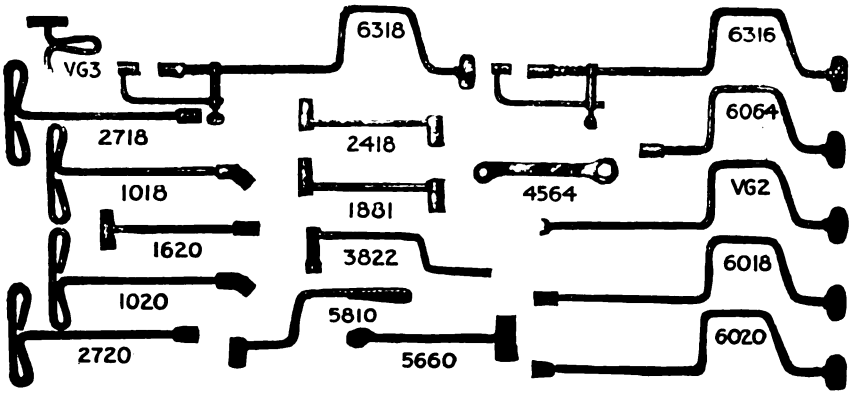
WALDEN-WORCESTER, INC.
WALDEN WORCESTER WRENCHES
WORCESTER, MASS. U.S.A.



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The series illustrated will serve nearly every requirement for Ford Car adjustment, repair and overhaul.

A Walden-Worcester agency means the establishment of a department that will meet a constantly increasing demand for highest grade dependable tools.

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296 BROADWAY

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The ACCESSORY and GARAGE JOURNAL

VOL. X. PAWTUCKET, R. I., MAY, 1920 No. 1

Alarming Increase in Motor Car Fatalities

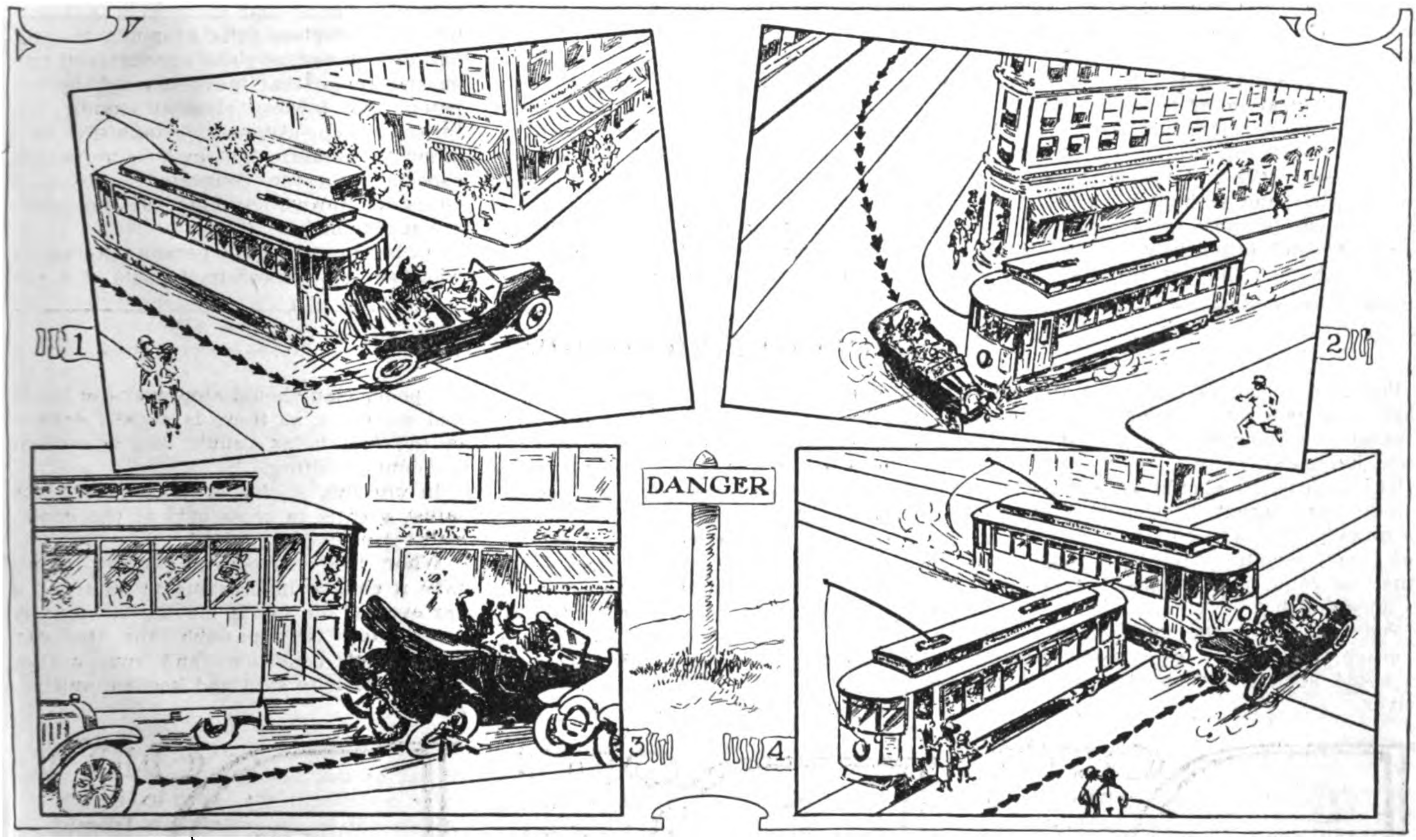
Responsibility of Dealers Pointed Out and Cooperation Urged

STATISTICS from nearly all the larger cities of the country in regard to motor car fatalities show an alarming increase in accidents from this cause in almost exact mathematical ratio to the increase in the number of automobiles.

In 1910 there were 400,000 automobiles in the United States, and out of every 100,000 population during that year 2 1/3 persons were killed by automobiles. In 1917 there were 3,000,000 automobiles in the United States and 9 1/6 persons out of every 100,000 were killed by motor cars. This year it is estimated that 9,000,000 automobiles and trucks will be in use, and the question of how many thousand persons may be killed may well cause serious consideration.

In its monthly report for April of traffic hazards, the National Highways Protective society announces that in New York City 50 persons were killed by automobiles in that month, 19 of them children under 16 years of age. Surface cars caused the death of four and horse-drawn wagons six. Throughout New York state the deaths from automobile acidents reached 82. At this ratio the

SUGGESTIONS BY RHODE ISLAND CO. FOR COOPERATION OF MOTORISTS IN THE AVOIDANCE OF ACCIDENTS.



Procedure to Be Avoided in Crossing Car Tracks or Approaching Trolley Cars: 1—Shows the Danger of Turning from Right Hand Side of Street to Left on to a Car Track Without Being Sure That There Is No Car Behind Within Striking Distance. 2—Shows the Manner in Which Most Auto Trolley Accidents Happen—Driver Comes Out of Side Street so Fast That He Cannot Slow Up in Time to Avoid Being Struck by Car Approaching in Either Direction. 3—Shows the Danger in Turning on to Car Track When Leaving Curb. Motorist Should Be Sure No Car Is Within 100 Feet Before Turning on to Track. 4—Be Careful in Passing Trolley Car Standing at an Intersecting Track. The View Is Obstructed and a Car May Be Approaching on the Intersecting Track.

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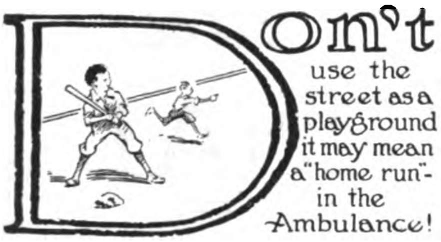
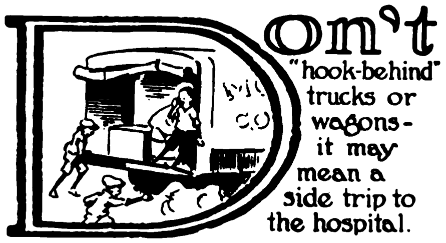
What to Teach Children


Don't
use the street as a playground
it may mean a "home run" - in the Ambulance!


Don't
"hook-behind" trucks or wagons -
it may mean a side trip to the hospital.

That the street is made for traffic and not for a playground. Not to play or roller skate in the street.

When more than one child is crossing the street they should hold hands tightly and keep together. Don't separate and don't run. The driver can maneouver to avoid them even if they become confused, provided they stay together, but if they separate, one or the other is almost sure to be struck.

In playing ball or tennis, if the ball goes into the street, don't run after it without first stopping at the curb to make sure that no cars are approaching.

Above all, they should not run out into the street to hop on behind passing teams, cars or trucks. There is great danger in dropping off as it is impossible for the "ride stealer" to see in both directions and he may fall directly in the path of an approaching vehicle.

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total fatalities in New York City for the year 1920 will reach 600 and throughout the state, 984.

Figures compiled by the National Safety Council show that, during recent years, automobile accidents have resulted in approximately one-half the total number of deaths caused by industrial accidents of all sorts. It is also reported that the greatest number of deaths from any one accidental cause comes from falls, the rate being 14.8 for every 100,000 people. Next come railroad accidents and injuries in ratios of 11.5 and 9.1 per 100,000, respectively. Motor cars enter the list at this point, the rate of deaths from this source being 8.9 per 100,000.

The Question of Responsibility.

While the responsibility for this lamentable state of affairs is laid largely to the door of the motorist in the general public mind, and perhaps, to a lesser degree, to carelessness on the part of pedestrians and other users of the highways, the fact that at least a portion of the burden of responsibility devolves on the dealer and distributor of motor cars seems to have been entirely overlooked. It will appear, upon consideration by any right-minded person, whether he be automobile manufacturer, dealer, owner or driver, that upon everyone engaged either directly or indirectly in the distribution of the modern motor car which, it cannot be denied, in the face of the statistics above noted, is becoming a veritable Juggernaut in the traffic annals of the country today, rests a share of the moral obligation to do everything in his power to obviate these deplorable conditions.

While the manufacturer undoubtedly uses discretion in the selection of responsible and competent dealers on the basis of sound business principles, the ethical side of the matter is apparently almost entirely ignored there beng no particular attempt to determine whether or not a dealer is competent to be intrusted with the indiscriminate distribution of an engine which, in the hands of inexperienced, incompetent or reckless drivers may become a frightful menace to the entire community.

Obligation of the Dealer.

The great responsibility, however, rests on the dealer or distributor as he is the only agent in a position to ascertain and judge at first hand the qualifications of the purchaser of a motor car. In the face of continually increasing traffic hazards caused by the greatly augmented use of automobiles on the streets, and the substantial rise in rates of insurance demanded by responsible companies for protection against injuries and damages consequent upon the alarming augmentation of casualties, if the dealer is not animated by a moral sense of his serious obligations to the cause of humanity, the question should still have an appeal to him from a strictly business standpoint.

There is already complaint that the regulations governing the operation of motor cars on the public highways are continually becoming more and more drastic. But it will undoubtedly come about that, if there is not a notable abatement in the casualty lists, such serious restrictions will eventually be imposed by federal, state and municipal authorities, animated by a general feeling of indignation and alarm on the part of the great mass of non-car users of the country, as to markedly curtail the sale, use and enjoyment of this great economic and recreational adjunct to modern life. And they will also have the sanction of the many thousands of law-abiding and careful owners and drivers of automobiles who deplore fully as much as anyone else the great risks encountered now on account of that inexperienced, incompetent and lawless element among motorists which, although fortunately in a minority numerically, makes motoring, especially in the congested section of cities and towns, anything but the pleasure it should be.

It behooves every person, therefore, who has any concern in the sale of a mo-

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Hints to Pedestrians

Pedestrians should realize at all times that their own safety depends in a large measure on their own watchfulness and good judgment.

The pedestrian should remember that a motor car cannot be brought to a stop as quickly as a horse or a wheelbarrow, but that certain mechanical processes must be gone through, which take time to accomplish.

Pedestrians should realize that the average motorist is even more anxious to avoid accidents than they are themselves.

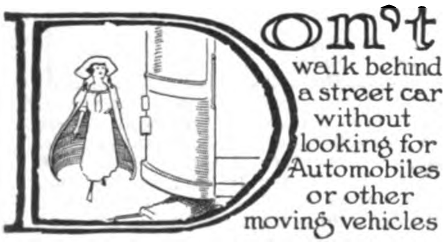
In getting off a trolley car watchful care should be exercised. In most states motor vehicles are not allowed to pass within a certain distance of a trolley loading or unloading passengers, yet pedestrians will often dart out of the safety zone directly into the path of the vehicle which has the right of way.

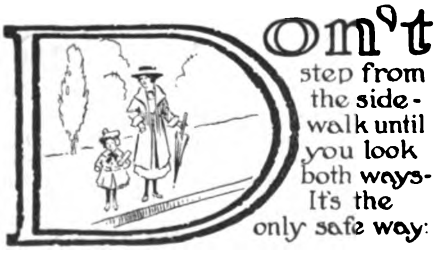
In a crowded thoroughfare where a traffic officer is on duty, wait for the officer's signal to "go ahead" and then move from point to point only as it is safe to do so.

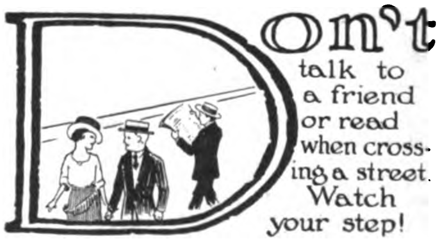
In crossing street car or trolley tracks the pedestrian should step over the track and not on it, as there is always danger of the foot being caught and a serious accident resulting.

In crossing a city or town street the safest plan is to cross only at the crosswalks especially provided.

When the streets are slippery, don't take a chance in crossing in front of a car even if the car is moving slowly. A quick stop is impossible for the car under such conditions and your action may cause it to skid and become unmanageable.


Don't
walk behind a street car without looking for Automobiles or other moving vehicles


Don't
step from the side-walk until you look both ways-
It's the only safe way.


Don't
talk to a friend or read when crossing a street.
Watch your step!

Old Man Commonsense says to the Motorist:

Don't violate the traffic regulations, especially the speed law.

Slow down when meeting other cars.

Tend strictly to the business of handling the car at all times and don't attempt to do anything else.

Keep eyes open and think about what you are doing every minute.

When road is wet and there is danger of skidding, drive with special care and take no risk of being crowded into the ditch or against the protection beside a steep bank.

Give plenty of room when passing street cars, trucks or other vehicles.

When there is a pedestrian on the right hand and a motor vehicle on the left with scarce room to pass between, either slow down or stop. Take every precaution to prevent accident.

Don't forget to drive more cautiously at night than in the daytime. Most traffic accidents occur after sunset.

It is up to the motorist to watch children on the streets. Upon him is the burden of avoiding accidents. Give a child the advantage of every doubt.

tor car to exercise especial care in regard to the qualifications and character of a prospective purchaser. It is high time that the indiscriminate sale of a machine to any person who has the price should be superseded by some attention to the mental, physical and moral fitness of a driver as well as to his past record, before turning him loose on the community in charge of such a highly complex and powerful mechanism as the modern motor car. The entire burden of passing on the question of competency should not be left perfunctorily with licensing boards.

The dealer, after he has satisfied himself that his customer is of sufficient mental, physical and moral stamina to successfully operate a car, should take extreme precautions that he has competent and adequate instruction in all the details of its management so as to be well qualified to meet the various emergencies of congested traffic without danger to himself or others. A mere knowledge of the mechanical operation of the machine should not be deemed enough. The new driver should also be informed by the dealer, if he has not already posted himself, on such matters as the traffic rules of the section, and the unwritten, but none the less important, commonly accepted laws of the road, and there should be a thorough schooling in the proper procedure on the part of the motorist to reduce to a minimum the danger of accidents both to himself and other occupants of the car as well as to the other users of the highways.

In fact, the dealer and distributor should always be on the job of spreading the propaganda of "safety first" to every person with whom he comes in contact, pedestrian as well as motorist, drivers of other vehicles as well as of the motor car. If every dealer throughout the length and breadth of the land should begin today to conduct his business on the principles of the general welfare, there is no doubt that the result would be a marked decrease in automobile accidents and fatalities and that life would be much more worth while for everyone who ventures abroad on business or pleasure, whether on wheels or on foot.

UNIFORMITY IN TRAFFIC REGULATIONS.

The urgent need for uniformity in regulations and directions having to do with the control of traffic in cities throughout the country in order that life and limb may be made more safe, continues to be emphasized in the propaganda of the United States Council of National Defense.

Just as the standardization of parts and components of motor cars, trucks, tires, etc., has brought about better conditions in the automotive industry as a whole, so the standardization of traffic regulations, it is pointed out, will bring about better motoring conditions throughout the country.

In the interest of both life and limb, as well as from an economic standpoint, which touches the motor industry, some concerted action seems to be necessary if the number of accidents is to be reduced to the extent they should.

ALWAYS

Watch for the traffic officer's signal and obey it instantly and exactly. That will keep you safe and save others delay.

Wait for traffic to stop before trying to cross it.

Keep well to the right, whether you are awheel or afoot. Leave all the room you can for people coming toward you—just as you want them to do for you.

If you are going to make a long stop, send your car away with instructions to return at a certain time. Then be ready for it.

Remember that the traffic officer has everybody's rights to consider and knows the need of things you may not be able to see. His job is to keep everybody moving safely.

NEVER

Approach a traffic officer so fast that you can't get his signal clearly or have time and room to obey it properly.

Rush at crossings or around corners at high speed. Others don't know your intentions, and accidents result.

"Jay-walk." Cross streets only at corners, and walk on the sidewalk till traffic is moving your way.

Park your car in a crowded street if you can help it, even if the rules allow you to for a short time. It interferes with the legitimate use of the street as a thoroughfare.

Argue with a traffic officer while he is busy. If it seems best after you have thought it over, report your trouble to traffic headquarters.

THE A. B. C. OF MOTORING.
(Always Be Careful.)

Here are some of the "Don'ts" always quoted by Secretary of State Hugo of New York in his continual campaign for care in the use of the highways:

Don't forget to slow down at street or road intersections. It may save a human life.

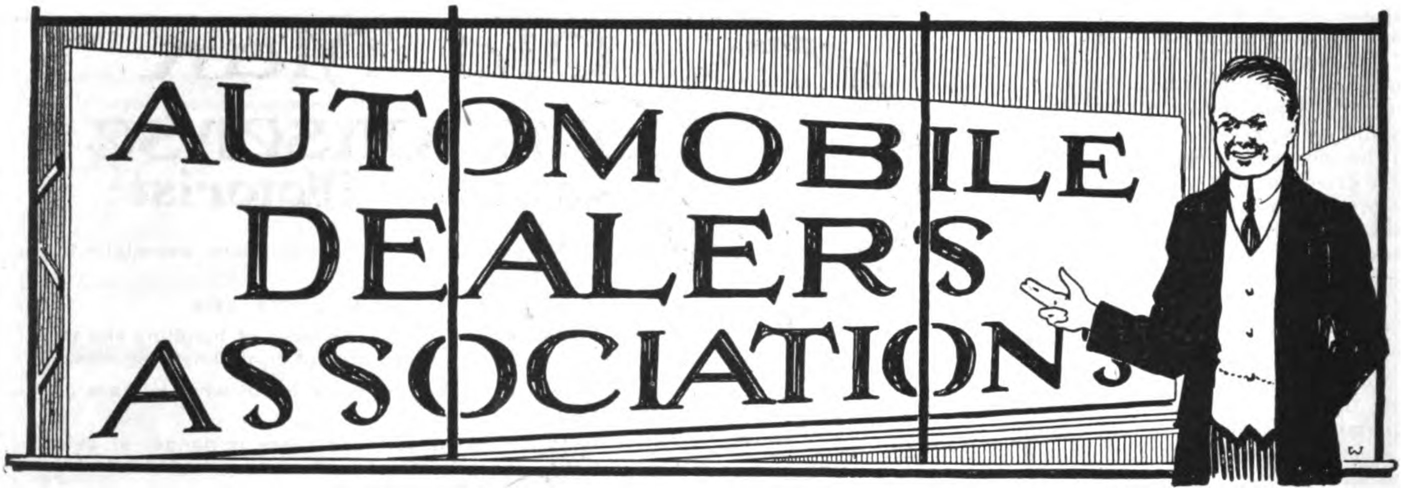
Don't forget to look to the right and left before passing a railroad crossing.

Don't forget, when signalled by a vehicle in your rear, to turn slightly to the right and allow such vehicle to pass on your left.

Don't forget that in case of accident, you must stop immediately and give your name, address and license number to the injured party or a police officer. If no police officer is in the vicinity of the place where the injury or an accident took place, report the same to the nearest police station or judicial officer.

Don't forget that all motor vehicles must be equipped with adequate brakes in good working order and adequate horns or other signalling devices.

Don't forget that your light must be lit within a half hour after sunset.



Milwaukee Dealers Reorganize

The Milwaukee Automotive Dealers, Inc., has reorganized and changed its name to the Milwaukee Automotive Dealers' association. A new board of officers has been elected, as follows: President, Thomas C. McMillan, vice president and treasurer of the Overland Wisconsin Co.; vice president, M. D. Newald, president of the M. D. Newald Co., Stewart truck; secretary, Dr. F. W. B. Achen, distributor of Cleveland and Chandler cars; treasurer, Frank J. Edwards, Dodge representative; directors, Jesse A. Smith, Hudson and Essex; R. C. Chidester, Packard; W. F. Sanger, Franklin; J. C. Millman, Titan truck; W. H. Upham, Upham-Schacht.

Bart J. Ruddle, who has been secretary and manager of the association since its inception in 1908, was reappointed with the title of executive secretary.

Under the new policy of organization the passenger car dealers will have a distinct association, while the truck dealers will likewise have their own division, but will both be included in the parent association. The Milwaukee Automotive Dealers' association will continue to conduct the various Milwaukee-Wisconsin shows in the Auditorium in January and at the State Fair park in September.

MANAGER OF FLORIDA ASSOCIATION.

B. B. Hudnall of St. Louis, formerly assistant general manager of the National Automobile Dealers' association, has been made secretary-general manager of the Florida Automobile Dealers' association, and as soon as headquarters are established he will begin a campaign to make this association 100 per cent. effective throughout the state.

DETROIT DEALERS TO CONTINUE TRUCK SHOW.

The truck division of the Detroit Automobile Dealers' association has voted to continue the display of trucks and commercial cars simultaneously with automobiles at the annual shows.

ILLINOIS STATE DEALERS TO ORGANIZE.

The presidents of 12 local automobile trade associations of Illinois have pledged the support of their organizations to the projected Illinois Automobile Dealers' association at a recent dinner at Springfield, called by Harry G. Moock, general manager of the National Automobile Dealers' association. Presidents attending the meeting were: J. Cassella, Alton; L. A. Pell, Chicago; B. B. Burns, Decatur; Paul Killeen, Galesburg; H. B. Pinkerton, Peoria; Morris Adler, Quincy; R. C. Schell, Beardstown. Also present were Vice President Morris, Springfield, and Mr. Ammerman of Champaign county. Presidents C. U. Williams, McLean county; J. A. Thompson, Kewanee (Tri-County); C. W. Williams, Rockford, wired their approval and support.

COLUMBUS ASSOCIATION TO PROBE PRICE OF GASOLINE.

The Columbus, O., Automobile Trade association has called in the aid of the county prosecutor to prevent the rapid increase in the price of gasoline and, if necessary, to call a grand jury to investigate the matter. C. S. Magruder, manager of the Columbus Automobile Trade association, claims that the increase is not justifiable and is a serious blow to motor transportation.

The Ohio Automobile Trade association has appealed the matter to the attorney general and the federal authorities.

ONTARIO RETAILERS' ASSOCIATION.

At its recent three days' convention at Toronto, Can., the Ontario Retail Automobile, Garage & Accessory Dealers' association voted to change its name to Automotive Retailers' association. The following officers were elected: President, S. H. Rowed, London; first vice president, J. J. Duffus, Peterboro; second vice president, Claude Pearce, Toronto; treasurer, Roy Alexander; secretary, William C. Miller, 2 College street, Toronto.

It was decided to hold the convention next year at Toronto.

Texas Association in Convention

At the fourth annual convention of the Texas Automobile Dealers' association, held at Dallas, Tex., the address of welcome was delivered by Mayor Frank W. Wozencraft and was responded to by H. L. Robertson of Houston, president, and W. A. Williams of San Antonio, vice president and field manager. The convention was called to order by M. Boyd Keith, first vice president of the Dallas Automobile Trades association.

Figures compiled by J. H. Shelton, secretary of the Dallas Automobile Trades association, and read by Mr. Keith, showed the total business of the wholesale and retail automobile industry in Dallas for the 12 months ending March 1 amounted to $210,670,000. The total pay roll was $7,254,000 and the number of persons employed was 4900.

One of the interesting addresses was that by A. H. Kroh of Chicago, representing the Goodyear Tire & Rubber Co., who eulogized the farmer as the bulwark of the nation and urged the need of motorizing farm work as a means of speeding up production to offset the effects of "short hours and long pay" in the cities.

More than 300 Texas dealers attended.

BROOKLYN ASSOCIATION TO REORGANIZE.

The Brooklyn Motor Vehicle Dealers' association met April 28 to ratify the dissolution of the existing organization so that plans for its reorganization on a more extensive basis may be put into effect. All classes of dealers in the automotive business will be enrolled in the membership with the idea of stimulating the growth of all branches on an even basis.

The reorganization committee is composed of the following: George C. Lewis, L. A. D. Motors Corporation, chairman; C. M. Bishop, Bishop, McCormick & Bishop, president of the association; C. J. Maxson, Maxson-Richardson Corporation; W. R. Couch, Couch-Hass Co.; M. Ray Stehley, Reo Motor Car Co.; D. W. Voorhis, Hudson Motor Car Co.

Personal News of the Industry in Brief

Hersey Sales Manager Jenkins Co.

Dwight T. Hersey has assumed the duties of sales manager of the Jenkins Vulcan Spring Co., Richmond, Ind., maker of replacement springs for cars and trucks. Mr. Hersey was, for many years, assistant general sales manager of the Splitdorf Electrical Co., Newark, N. J., and has a wide acquaintance in the automobile accessory trade and a knowledge of merchandising.

Charles W. Doane has been appointed Detroit representative of the Automobile Equipment department of the Westinghouse Electric & Manufacturing Co., 1109 Kresge building, to succeed L. B. Fijux, who has resigned to become vice president of the Turner Moore Co., Detroit. Mr. Doane was for many years in charge of the Westinghouse Automobile Service department for the Detroit district, and is succeeded in that capacity by A. B. Junker.

Christian Girl of the Standard Parts Co., Cleveland, O., has purchased an interest in the Kalamazoo Spring & Axle Co., Kalamazoo, Mich. The plant will be remodeled and extended to manufacture automobile springs chiefly, although the types formerly made by the company will be continued.

S. M. Grosner and **L. F. Revenger** are the directors of the 145th Street Garage Co., which was recently incorporated at Albany, and has leased the two-story garage, 100 by 100 feet, at 510-518 West 145th street, New York City, from the Hulse Garage Co.

Seymour De B. Keim, who recently resigned after 20 years' association with the Locomobile Co. of America, to become general sales manager of the Rolls-Royce Co., Springfield, Mass., is soon to visit the British works of the company at Derby, England.

Harry E. Marvel has purchased the property at Nos. 142-146 St. Mary's street, Boston, near the Brookline line, known as the Longwood Garage. It consists of a two-story concrete building which has been occupied by Mr. Marvel for some time.

Mark Ash has filed plans for the construction of 80 one-story garages, each 10 by 18 feet on the southwest corner of Lawrence Hill terrace and 186th street, New York. They have been estimated to cost $200 each, or a total of $16,000. The architect is J. R. Ashley.

W. H. Gleason of the Utterback-Gleason Co., Boston, Dort car distributor for New England, announces that his company is about to move into new and more commodious quarters on Commonwealth avenue, Boston.

Roy Black, who served overseas during the greater part of the war, has purchased an interest in the Service Tire & Auto Co., Torrence street, Russellville, Ark.

H. A. Bordeau, president of the Monroe Auto Equipment Manufacturing Co., Monroe, Mich., recently died.

Dwight T. Hersey, Sales Manager, Jenkins Vulcan Spring Co., Richmond, Ind.

Phillip S. Cole, head of the firm bearing his name in Oakland, Cal., has taken over the San Francisco branch of the Haynes Automobile Co., Kokomo, Ind., to succeed C. H. Haynes, who for many years has been the head of the San Francisco Haynes office and has retired from active business. Mr. Cole now becomes distributor for Haynes cars throughout the northern half of California and will establish his headquarters at the former Haynes branch, Turk and Polk streets, San Francisco.

Peter Cummings, president of Cummings & Co., Inc., announces that the offices of that concern have been removed to the fourth floor of the building at 23rd and Mechanic streets, Galveston, Tex., and that hereafter the company will conduct an exclusive wholesale and manufacturers' agent's business as representative of several makers and importers of standard lines of automobile accessories and bicycle parts. The retail department, located on the ground floor of the same building, has been sold to Schumacher & Co.

E. T. Sutton has been appointed by L. B. Graham, general sales manager of the Denby Motor Truck Co., Detroit, Mich., as advertising manager. Mr. Sutton has been district sales manager of the Denby company for three years and has thus had an exceptional opportunity for observing from every angle the advertising needs of Denby distributors and dealers.

James E. Baird, advertising manager of the General Motors Truck Co., and W. B. Hall of the Green, Fulton, Cunningham Co., Pontiac, Mich., are making a survey of the midwest farming section, covering Kansas, Nebraska, Iowa, Texas and Oklahoma, to obtain first hand information in regard to the motor truck situation.

Sterling to Head Own Company

J. G. Sterling, for many years chief engineer of the F. B. Stearns Co., maker of the Stearns-Knight motor car, and considered one of the country's authorities on Knight engine construction, has resigned and will head a company that will manufacture a six-cylinder Knight car. Mr. Sterling has associated with him in this new enterprise P. H. Worthington and several well known automobile men and capitalists, and headquarters have been secured in Cleveland, O., where it is proposed to erect a plant.

W. A. Olen, president of the Four Wheel Drive Auto Co., Clintonville, Wis., was among the prominent truck men who attended the National Foreign Trade Council at San Francisco. Mr. Olen is particularly interested in the motor truck as a factor in promoting the industrial development of China and other far eastern countries, a matter discussed by the automotive manufacturers' branch of the council.

Theodore C. Fedders, president of the Fedders Manufacturing Co., Buffalo, N. Y., died at his residence in that city May 2, aged 67 years. He was one of the pioneer makers of automobile radiators, having established the company which bears his name 20 years ago, originally known as the Fedders Sheet Steel Metal Works. He leaves four sons on whom the major management of the business has devolved for the past six years—Louis F., John M., Charles W. and Theodore C. Fedders, Jr.

D. T. Preyer has been appointed by Walter P. Coghlan, general sales manager of the American Hammered Piston Ring Co., Baltimore, Md., to the position of district sales manager for the middle west district, which includes the states of Michigan, Indiana, Kentucky, Illinois and Wisconsin. Mr. Preyer has a wide acquaintance among jobbers and dealers in the automotive field, having been eastern representative for the wholesale division of the Klaxon Co. in Canada and east of the Mississippi river.

L. B. Graham, general sales manager of the Denby Motor Truck Co., Detroit, Mich., is on a trip to the principal distributing points throughout the country, including New York, Philadelphia, Nashville, St. Louis and Dallas, Tex., and it will be extended to the Pacific coast to confer with the Denby managers in that section.

Millard S. Binney is now publicity manager for the Traffic Motor Truck Corporation, St. Louis, Mo. He was connected with the Chalmers Motor Co. prior to the war and since returning from Europe last September has been sales manager of the Omaha, Neb., branch of the Fulton Motor Truck Co.

L. D. Turner, representing the Fairbanks Co., is to open a selling agency at Alton, Ill.

M. A. M. A. Officials Going Abroad

C. E. Thompson, president, and **M. L. Heminway**, general manager of the Motor and Accessory Manufacturers' association, are to sail for Paris, France, on June 5, where they will represent the association at the meeting of the International Chamber of Commerce on June 21. While abroad they will gather information in regard to American opportunities in foreign automobile markets, and will personally investigate conditions in England, France, Italy and adjoining countries. The International Automobile show at Antwerp, Belgium, will also be visited.

W. H. McCloud, who has been connected with the Buick Motor Co., Flint, Mich., for the past 13 years, has resigned to join Walter P. Chrysler with the Willys Corporation at Elizabeth, N. J.

H. G. Edwards, Southeastern District Manager, Acason Motor Truck Co.

Mr. McCloud was director of traffic for the Buick Co. and during the last two years of his association there was vice president under Mr. Chrysler. The Willys corporation is now operating the former plant of the Duesenberg Motor Co. at Elizabeth, to which a large extension has been added.

E. Edward Hunter, aged 32 years, an automobile manufacturer of Middletown, N. Y., died in that city recently. He was president of the E. E. Hunter Co., Inc., and was also a member of the local Automobile association.

Adolph Picken has leased seven four-story buildings at 1981 to 1987 Broadway and 103 to 107 West 67th street, New York City, for 21 years, as a site for a building to house the Hamilton Motors Co., of which he is the head.

James A. Down has leased the two garage buildings at 114 and 166 West 56th street, New York City, to a client who is to build a commercial building thereon.

Ralph Murphy, chief engineer of the H. H. Franklin Manufacturing Co., Syracuse, N. Y., for a number of years, has been appointed assistant to John Wilkinson, vice president of the company. Louis Stellmann, formerly assistant engineer, succeeds Mr. Murphy as chief engineer. Messrs. Murphy and Stellmann both are graduates of the University of Michigan; both joined the Franklin organization in 1909 and have been associated with that concern during their entire business careers. Prior to these new appointments Mr. Murphy had been successively coast engineer, service manager and chief engineer, while Mr. Stellmann has served as experimental engineer and assistant engineer.

John Flint, comptroller of the Maxwell Motor Co., has announced his resignation and will devote his entire personal attention to the interests of the firm of West & Flint, accountant and auditor, 50 Pine street, New York City, of which he is a member.

Carroll B. Bassett, for over a year with the Jack W. Neal Auto Co., has become the authorized representative for the Auburn tire in southwest Texas, with headquarters at 426 Main avenue, San Antonio, Tex.

Ralph B. Dort, supervisor of foreign agencies for the Dort Motor Car Co., Flint, Mich., has left for the Far East on a trip which will occupy approximately 18 months. He will visit the Orient, Australia and Africa.

Elijah G. Poxson, foreign sales manager of the Dort Motor Car Co., Flint, Mich., attended the recent seventh annual foreign trade convention at San Francisco.

A. S. Barrett has been appointed advertising manager for the Studebaker Corporation, with headquarters at South Bend, Ind. He succeeds R. C. Sackett, who has entered the distributing field.

Samuel H. Stone has bought from the Havemeyer estate, the Cedarhurst Garage, a four-story structure, 75 by 102.2 feet, at 141-145 West 83rd street, New York City.

Henry Weiss, president of the Weiss Motors Distributing Corporation, distributor for the Dixie Flyer and Comet Six cars, is to open a service station at 249 West 64th street, New York City.

H. H. Eschedor and **John Maiback** have opened temporary sales rooms at 510 Penn street, Reading, Pa. for the distribution of the Elcar.

J. C. Bennett and **C. E. Bennett** have opened an automobile exchange at Jefferson and Lafayette boulevards, South Bend, Ind.

John Wierer has purchased the tire repair shop of Frank Hershfield at Kewaunee, Wis.

W. E. Steed has opened show rooms for the sale of the Reo car in the Malone building, Albany, Ala.

J. W. Wattinger and **Foster Hord** have purchased the Southwestern Garage, Alpine, Tex., of B. Stewart.

R. C. Fannin and **B. Smith** have bought the Willard battery station at Stillwater, Okla., from C. C. Fox.

L. D. Bone has purchased the Jefferson Highway Garage at Webb City, Mo.

Thompson Manager of F-W-D Co.

J. H. Thompson, a veteran in the automobile industry, has been appointed manager of the recently established factory branch at New York City of the Four Wheel Drive Auto Co., Clintonville, Wis., maker of FWD trucks. This new branch covers a territory from Baltimore, Md., to New England. Mr. Thompson started in the automobile business with the Babcock Electric Carriage Co., Buffalo, N. Y., where he was for a number of years manager and territorial agent. He was later connected with the sales organization of the General Motors Co. and the Mercury Manufacturing Co.

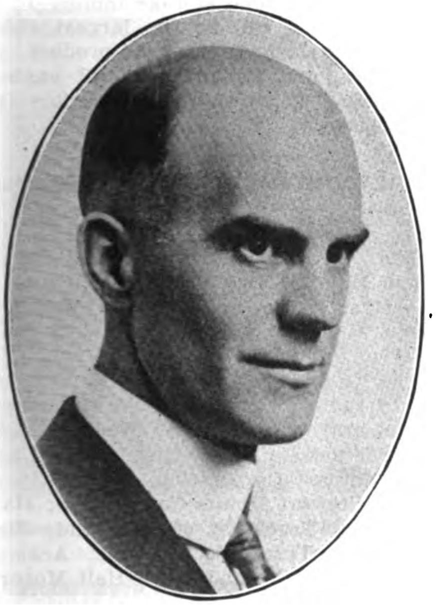
Wilson S. Porter, general manager of Hare's Motors of New England, the new company into which has been merged the Boston Locomobile branch and the Mercer agency, announces the following appointments: J. Roy Hiltz, sales manager of the Locomobile division, formerly with the Locomobile Co. for seven years as salesman, special wholesale representative in New England and branch manager at Providence. Fred J. Klauer, sales manager of the Mercer division, formerly with the Locomobile Co. for six years as retail salesman on new cars, and for the past five years, exchange car manager; E. C. Blake, territorial manager, formerly with the Packard Motor Car Co. of New York as manager of the New York City branch; H. V. Neville, exchange car manager, formerly with the Packard Motor Car Co. of New York for 10 years as truck salesman, manager of the truck department, general used vehicle manager and general accessories manager.

J. H. Thompson, Manager of the F-W-D Factory Branch at New York City.

L. M. Landis has sold the business of the Landis Body Building Co., Lansdale, Pa., to the Heebner-Felver Motor Co., which will operate it in connection with its automobile business. Mr. Landis remains as manager of the body building plant.

Lamb Sales Manager Automatic Light

I. C. Lamb has been appointed sales manager of the Automatic Light Co., Inc., Ludington, Mich., maker of the Holt power light unit. Mr. Lamb was formerly a member of the sales staff of the General Electric Co., where he specialized in fractional horsepower motors. He was still earlier connected with the Western Electric and Westinghouse Electric & Manufacturing Co. during a period of several years. The Holt power light is a compact, self-contained unit of exceptionally simple and rigid construction. It generates a 110-volt current, placing it on a par with central stations, and permits the installation of standard wiring, snap fixtures and the use of standard household electric appliances. It operates without batteries with the exception of a small one for starting the engine. The Automatic Light Co. is primarily a marketing organization. Mr. Lamb's immediate activities will involve the development and perfecton of sales policies, educational work among distributors and dealers and the establishment of definite marketing routines.



J. B. Adair, Branch Manager, J. I. Case Plow Works Co.

T. H. Sharp, representative of the Oldsmobile Co. at Little Rock, Ark., is constructing a building at the northwest corner of Capitol and Arch streets to cost approximately $150,000.

Frank Feinberg of Jersey City, N. J., has leased the seven-story garage at 322-328 East 47th street, New York City, for use as a service station.

Ralph R. Rice, manager of the Cogswell Avenue Garage, Cambridge, Mass., has been appointed agent for the Overland car in his territory.

A. M. and C. G. White of Chicago are to establish a garage, repair shop and automobile sales agency on Thornton street, Three Rivers, Tex.

Archie Webb and William Lack have bought the Paul Calmes garage at Clinton, Okla.

I. C. Lamb, Sales Manager, Automatic Light Co., Ludington, Mich.

O. E. Truesdell has been appointed district manufacturers' representative for the Firestone Steel Products Co., Akron, O. He will take over portions of the territories heretofore handled by L. W. Enos and A. B. Droeger, with headquarters at Chicago and Detroit, respectively. His jurisdiction will now include the states of Ohio and Indiana, and he expects to make his headquarters at the Firestone branch at Indianapolis. Mr. Truesdell has been with the Firestone Steel Products Co. for three years, starting in the trade sales department and later working into the manufacturers' sales division at Akron.

Joseph and William Owen Cooper have taken the agency for Jordan and Briscoe automobiles at Arkansas City, Kan.

George Davison has bought the Ford Garage at Belpre, Kan., from C. B. Peacock.

O. E. Truesdell, District Manufacturers' Representative, Firestone Steel Products Co.

Fleming Treasurer of Cleveland Tractor

C. D. Fleming, formerly of Detroit, Mich., has been appointed treasurer of the Cleveland Tractor Co., Cleveland, O., in charge of finance and accounting. Early in his business career he was recognized as one of the leading public accountants of Detroit, which profession he followed for several years. He later became associated with the Detroit Trust Co. in this line of work. Some seven years ago he became affiliated with the Studebaker Corporation as assistant treasurer and had charge of the accounting and costs departments of the plants of that company at Detroit until his present connection with the Cleveland Tractor Co.

John D. Coss has been appointed branch manager at Philadelphia of the Buick Motor Co., Flint, Mich. Mr. Coss has been associated with the Buick company for a number of years and goes to Philadelphia from Memphis, Tenn., where he was branch manager. J. G. Wilmoth, who is succeeded by Mr. Coss, has joined the General Motors Co.

C. D. Fleming, Treasurer, Cleveland Tractor Co., Cleveland, O.

C. W. Hollingsworth is the new manager of the tire department of the Seitz Auto Co., 2-8 East North avenue, Baltimore, Md., distributor for Service and Norwalk trucks and Velie and Norwalk passenger cars, Canton-Blackstone solid tires and Norwalk pneumatic tires and high-pressure tubes.

N. F. Holbrook, president of the Perfect Body Corporation, a subsidiary of the Sanger Motor Car Co., has leased the one-story building at Madison avenue, 136th to 137th streets, Bronx, covering an area of 40,000 square feet.

John S. Mullin has bought the garage of Joseph O. Colladay at 3412-3414 Brandywine street, Philadelphia.

N. W. Ray has purchased a garage in Comanche, Okla.

Charles V. Warford has opened a garage at Gallatin, Mo.

Notes of the Industry and Trade

American Motors Has Own Body Plant

Another step in the rapid development of the American Motors Corporation, maker of the American Balanced Six car, was taken recently in the organization of the Plainfield Body Corporation of Plainfield, N. J., which will supply bodies for both the Plainfield and Greensboro, N. C., plants of the company.

The body concern is capitalized at $250,000 of eight per cent. participating preferred stock and 25,000 shares of common stock having no par value. Through ownership of the common stock it is understood that the American Motors Corporation will exercise control of the company, which will be financed entirely through interests identified with the parent concern. Temporarily the Plainfield Body Corporation will occupy the recently completed south wing of the American Motors Plainfield plant, but construction will be started immediately on a new building containing more than 40,000 square feet of floor space, which will be devoted exclusively to the manufacturing operations of the body company. The plant will have a capacity of upwards of 7500 jobs a year. During the first year output of the body plant will be restricted to touring car and roadster bodies for the new American "6-60" model just going into production.

Officers and directors of the Plainfield Body Corporation include Robert Bursner, president; Guy Morgan, vice president and general manager; Proctor W. Hansl, secretary and treasurer; C. B. Penney, president American-Southern Motors Corporation; R. D. Mock, vice president and treasurer Hydraulic Steel Corporation, Cleveland, O., and George W. Cravens, president Universal Body Corporation, Garwood, N. J.

Factory operations will be under the personal supervision of Hiram F. Browne, formerly factory manager of the Lexington Motor Car Co., who recently joined the forces of American Motors Corporation as manufacturing manager, and R. K. Blair, formerly superintendent of the Brewster body plant.

D. G. Caywood, New Northeastern District Manager, Black & Decker Manufacturing Company.

BLACK & DECKER NORTHEASTERN BRANCH.

The Black & Decker Manufacturing Co., Towson Heights, Baltimore, Md., maker of portable electric tools, electric air compressors and special machinery, has opened a northeastern branch office at 169 Massachusetts avenue, Boston, Mass., in charge of D. G. Caywood as northeastern district manager.

A service station for Black & Decker products will be maintained at the same address to give prompt and efficient service for the New England trade.

NEW LOCATION OF MUELLER ELECTRIC CO.

The Mueller Electric Co., Cleveland, O., has just moved into its new headquarters, a two-story brick building at 2139-2143 Fairmount road.

This new plant gives necessary floor space for the increasing production of the Mueller line of battery clips, test clips and attachment plugs, as well as the new type of battery parts such as handles, terminals, etc.

New Tank Shop for Wayne Co.

The accompanying illustration shows the plant of the Wayne Oil Tank & Pump Co. at Fort Wayne, Ind. This company manufactures the well-known Wayne line of self-measuring pumps, liquid storage and oil filtration systems, oil-burning, metal-forging, heat-treating and metal-melting furnaces, etc.

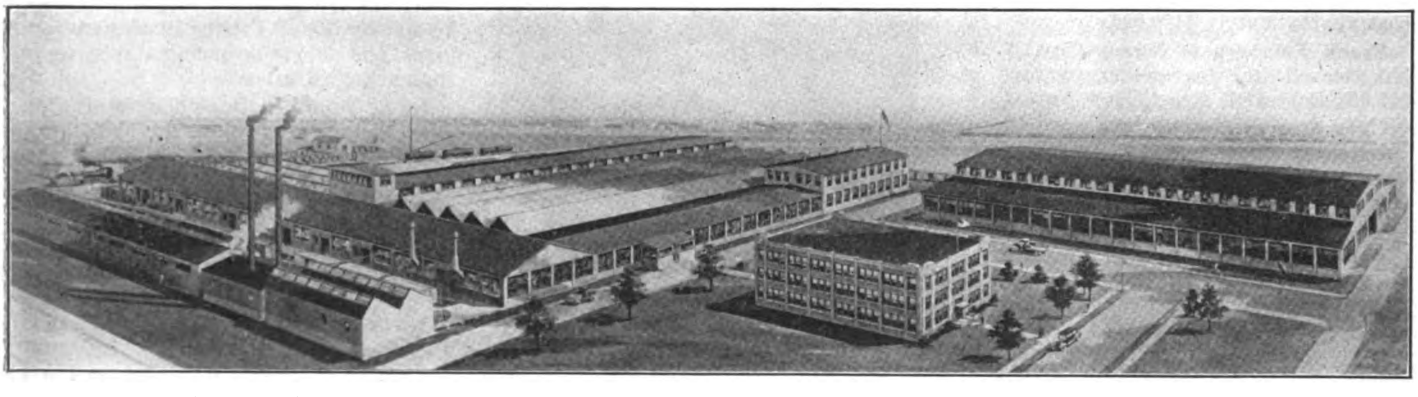
At the extreme right of the illustration is seen the latest addition to this immense plant, the new heavy metal tank shop, which is incomplete as yet. This building will measure 360 feet by 130 feet, is to be made entirely of brick and steel, and will be equipped with the most up-to date appliances for the manufacture of heavy metal storage tanks. It is stated that it will be the largest shop devoted exclusively to this product in the West, and its addition will enable the Wayne Co. to more than double its floor space.

MORE CONTRACTS FOR EISEMANN PRODUCTS.

The Detroit Transportation and Truck Co. of Munroe, Mich., has recently signed a contract with the Eisemann Magneto Corporation to use the Eisemann type GS-4 magneto.

The Eisemann Corporation has also received contracts from the following truck manufacturing concerns: New Orleans Motor Truck Co., New Orleans, La.; Capitol Motors Corporation, Fall River, Mass.; Stewart Motors Corporation; Hal-Fur Motor Truck Co. of Cleveland; Signal Motor Truck Co., Detroit; Acason Motor Truck Co. and Lewis-Hall Motors Corporation.

Contracts have been signed by the Eisemann Magneto Corporation with the following makers of tractors: Holton Tractor Co., Indianapolis, Ind.; Power Truck & Tractor Co., Detroit; Dual Truck and Tractor Co., Decatur, Ill.; Dayton-Dowd Co. of Quincy, Ill., manufacturer of the Leader tractor; Franklin Tractor Co., Greenville, O., and Stutes-Mar Tractor Co., San Jose, Cal.



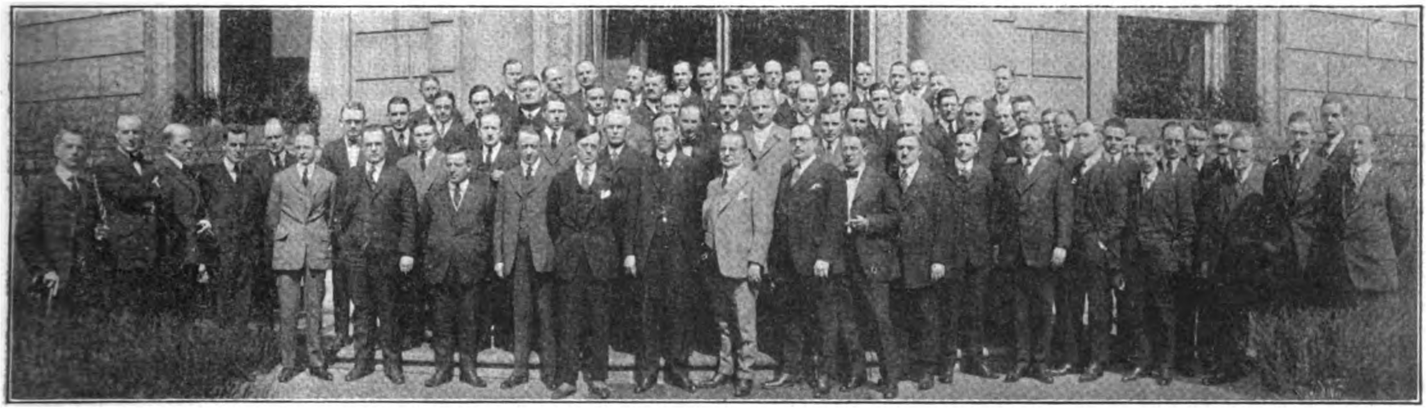
Plant of Wayne Oil Tank & Pump Co., Fort Wayne, Ind.—At Extreme Right Is New Tank Shop.

Truck Manufacturers at Timken Detroit Conference

It was the unanimous opinion of 52 truck manufacturers who were recent guests of the Timken-Detroit Axle Co. at Detroit that the present method of giving trucks a definite rating, or a chassis rating, is best, and that any change would be a source of endless trouble for the truck builder and the parts maker. It was agreed that the attempt to convert passenger cars into trucks has been a failure. That there is a market for speed trucks of 1500 pounds capacity was the view of nearly all the manufacturers.

While the various problems of motor truck manufacturing and marketing were discussed at the informal session, the question uppermost in the minds of many of the guests repeatedly came to the surface. This was: "When can we get more axles?"

President A. R. Demory, General Manager Fred Glover and Sales Manager P. W. Hood were all heard on this topic. Due to the difficulty in securing quality materials, none was over optimistic. If contracts already signed are carried out, however, they promised an increase of from 12½ to 25 per cent in production this year and a 50 per cent increase in 1921.



Group of 52 Representatives of Truck Manufacturers Assembled at the Plant of the Timken-Detroit Axle Co., Detroit, to Consider Load Rating and Material Supplies.

REMOVAL OF PHILADELPHIA BLACK & DECKER BRANCH.

The Black & Decker Manufacturing Co., Towson Heights, Baltimore, Md., manufacturer of portable electric tools, electrical air compressors and special machinery, has moved its Philadelphia branch from the West End Trust building to more spacious quarters at 318 North Broad street.

The new office has a show window and show room, as well as a completely equipped service station for the convenience of users of Black & Decker equipment, and will enable a more extensive cooperation with the company's jobbers in that section. The office is in charge of W. C. Allen, branch manager.

RECENT APPOINTMENTS OF MOTO-METER CO.

The Moto-Meter Co., Inc., Long Island City, N. Y., manufacturer of Boyce motometers, has recently made the following appointments in its sales department:

George Feher, for the past six years connected with the selling organization of the American Ever Ready Works of the National Carbon Co., has been made assistant sales manager.

S. J. Green becomes district manager in the northwestern territory. He was formerly sales manager of the Detroit Battery Co., and later district manager for the American Ever Ready Works for eight years.

E. V. Hennecks, sales manager of the Moto-Meter Co., is now on an extended western trip, in the course of which he expects to visit all of the principal jobbing centers and to attend the Jobbers' convention at Del Monte. Cal., June 7-12.

ELLIS WITH NIELSEN CO.

In the March issue of the Accessory and Garage Journal, it was erroneously stated that Robert M. Ellis had assumed the management of the Splitdorf Electrical Co. of Boston.

Mr. Ellis, who was formerly identified with the Boston branch of the Splitdorf Electrical Co. as manager, treasurer and director, has become secretary of the V. A. Nielsen Co., manufactures' sales agent at 708 Beacon street, Boston, and in his new capacity will have charge of sales, while Mr. Nielsen will continue in charge of the service department.

The position of manager of the Boston branch of the Splitdorf Electrical Co. is now held by T. P. Nickell, who succeeded Mr. Ellis Jan. 1 of this year.

AUTOMOBILES IN LIBERIA.

About two years ago four American automobiles were imported into Liberia, Africa, for the purpose of stimulating road construction. Considerable interest was aroused among the inhabitants and government officials and it is believed that in the near future a comprehensive system of road construction will be commenced, with a consequent opening up of a market for American motor vehicles.

Simms Co. to Build Light Four Car

One of the most important recent announcements in the automobile field in the southern section of the country is the entry of the Simms Motor Car Corporation into the motor car manufacturing industry at Atlanta, Ga. This concern contemplates the manufacturing and marketing of a light four-cylinder car, with valve-in-head engine, to be known as the Simms Light Four and to sell for $1200.

The personnel of the Simms Motor Car Co. is as follows: President, Thomas H. Mars, formerly general manager of manufacturing for the Edward Valve & Manufacturing Co., East Chicago; vice president and general manager of sales, Jackson H. Simms, formerly with the American Locomotive Co. and later manager of the southeastern district for the Chevrolet car; vice president and chief engineer, E. W. Van Duzen, formerly connected with the Pullman Motor, Columbia Motor Car, Mitchell-Lewis, Reo Motor and Hanson Motor companies; secretary and general counsel, Erie M. Donaldson, formerly United States attorney for the southern district of Georgia.

The board of directors is composed, in addition to Messrs. Mars, Simms, Van Duzen and Donaldson, of the following: J. A. Vail, general manager of the Northwestern Expanded Metal Co. and former chairman of the board of directors of the Maxwell Motor Car Corporation; W. L. Mathers, president of the Mathers Motor Co. of Atlanta and of the Georgia State Automobile Dealers' association; Marion Smith of the law firm of Little, Howell, Smith & Goldstein, who will also act as special counsel for the Simms company; Walter P. Andrews, prominent lawyer and capitalist of Atlanta.

The advertising manager is D. K. Roberts, who has been identified with newspaper and automobile trade journal work for many years, recently in New Orleans, La., and Atlanta. Harry L. Innes will be the production manager; R. A. Kettley, comptroller; J. M. Wilson, general manager of parts and service department, and C. D. Center, traffic manager.

UNIVERSAL BATTERY CATALOGUE READY FOR DISTRIBUTION.

The Universal Battery Co., Chicago, Ill., has its 1920 catalogue of starting, lighting and ignition batteries (bulletin No. 30) ready for distribution. It includes a complete table of specifications of Universal batteries for all makes and models of cars, as well as a comparative battery list of the Universal starting and lighting units and the corresponding types of other makes, and also gives general information in regard to shipping, assembling, etc.

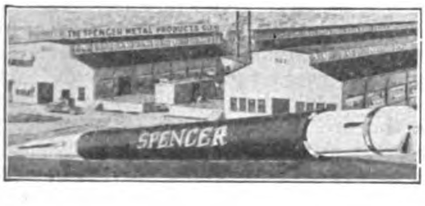
A copy of this valuable reference booklet will be sent to any service station or battery dealer on application to the main office and factory of the Universal Battery Co., 3410-3424 South La Salle street. Chicago, Ill.

JEFFERSON ELECTRIC CO.'S NEW CATALOGUE.

The Jefferson Electric Manufacturing Co., 426-430 South Green street, Chicago, is distributing its catalogue No. 15 of Jefferson automotive equipment, electric specialties, etc. This is one of the most comprehensive catalogues in its line in publication, including as it does among other features, authentic information concerning coil replacements, a complete ignition coil guide showing cars equipped with coil ignition and the type of Jefferson coil to be used in replacement. Description, specifications, prices, etc., of the Jefferson lines are accompanied by copious illustrative features, and the arrangement of contents is concise and such as to render it most available to anyone interested.

PROMPT DELIVERY OF SPENCER AXLE SHAFTS.

During the past year the shortage of replacement parts has been an increasing source of embarrassment to the car dealer. With output facilities taxed to the limit by the unprecedented demand for new cars, the manufacturer has been unable to offer much promise of relief. In this emergency dealers are turning to the jobber and should find him ready to give them prompt delivery on parts on which they have been experiencing long delays. As an instance of this, it is cited that leading jobbers carry a complete line of Spencer axle shafts, drive shafts and other replacement parts made by the Spencer Metal Products Co., Chicago, which are guaranteed to be at least of as good quality as those they replace, and the dealer can feel ample assurance that he is giving his customers good service in that respect as well as quicker deliveries.



Kenneth Cloud, Head of Cloud Accessories Corporation, Chicago.

Cloud Accessories Company Formed

The Morgan cord fan belt, Silver lining for Ford transmissions and Cloud "75" spark plug, are some of the specialties to be sold by the Cloud Accessories Corporation of Chicago, recently organized.

The new organization is composed of a group of successful automobile accessory men, headed by Kenneth Cloud of Chicago, who has been associated with the sale and manufacture of accessories for the last six years. He started in the accessory business in Long Beach, Cal., as a member of the Corey-Fitzgerald-Cloud Co., which put the "Myle Maker" and the "Forty-More" generator on the market. In connection with his work on these products he discovered "cork insert" transmission lining, and was instrumental in organizing the Advance Automobile Accessories Corporation, which took up the sale of this lining. Not only did Mr. Cloud handle sales, advertising and merchandising for the corporation, but he created the Advance house organ, "Let's Go," which is well known throughout the trade.

Later Mr. Cloud joined the Charles H. Touzalin advertising agency of Chicago, as accessory merchandising man. When the war broke out he entered the motor transport division as a chauffeur, and was discharged after the armistice as a lieutenant. He returned to the Touzalin agency, confining his efforts to the Advance Automobile Accessories Co., Auto Components, Inc., and Motor Oils, Inc. He returned to the Advance company from this connection, from which position he resigned to organize the Cloud Accessories Corporation. The main offices and store rooms of this company are at 1408 South Wabash avenue, Chicago.

The Morgan cord fan belt is built on the principle of a cord tire with a series of small cords next to the wearing surface, and five larger, heavier cords bordering the outer surfaces, all encased in rubber fabric. The cords give the fan belt unusual strength and the rubber supplies exceptional wearing quality. The Morgan cord fan belt is made in Ford size only for the present. It is guaranteed for one year.

A special weave and treatment gives the Silver lining for Ford transmissions great longevity.

PEERLESS AUTOMOBILE SPECIALTIES.

The Columbus Varnish Co., Columbus, O., reports an unusually large demand for its Peerless automobile specialties this season, as most of these products deal with the upkeep of the car rather than being adapted to new vehicles and the work of renovating old cars has been particularly heavy this year on account of the difficulty in many cases of securing delivery of new cars. The Columbus factory is way behind on its orders, but is giving everyone the best service possible, rushing goods to its customers by express instead of by freight as ordinarily.

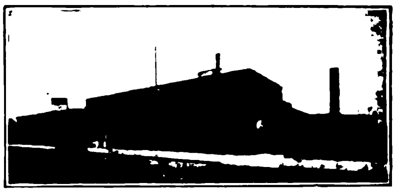
The biggest demand is for such products as top dressings, including both the mohair and leather, the enamels, and particularly the gasket shellac. Cooperative work is done from the factory by supplying garages and dealers with window display material, mailing inserts, catalogues, etc.

AN AMERICAN PATENT CO.

The American Patents, Manufacturing & Sales Co., Inc., 138 East Wyoming avenue, Olney, Philadelphia, Pa., which is in the field for the purpose of buying and selling American patents, announces the opening of a special sales service department. By virtue of its geographical location, tapping as it does the great industrial centers, this concern states that it is in a position to conduct satisfactory sales service between the inventor, manufacturer, investor, etc., and solicits business solely upon that basis.

GEMCO EXPANSION.

The Gemco Manufacturing Co., Milwaukee, Wis., has about completed the erection of a large addition to its plant, which will enable it to greatly increase its production of automobile bumpers and other automotive parts and accessories. The new building is designed, equipped and built in accordance with the most modern ideas and includes separate recreation rooms for men and women employees, complete in every detail.



AMERICAN GRINDER MANUFACTURING CO. EXPANDS.

Due to the phenomenal growth of the wrench business of the American Grinder Co., Milwaukee, Wis., it has been necessary to recapitalize this concern in order that production may be extended to fill the demand for Blackhawk steel socket wrenches for automotive use. Thus it is that Herbert, Herman and George Brumder, bankers, and George, Adam and Fred Mayer, owners of the F. Mayer Boot & Shoe Co., have become affiliated with the American Grinder Co., Herbert Brumder becoming treasurer.

Sales of Blackhawk wrenches are in the hands of C. N. and F. W. Jonas, a widely known sales organization, with headquarters at Chicago and branches at Los Angeles, Cal.; Seattle, Wash.; San Francisco, Dallas, Tex., and Atlanta, Ga. The Jonas concern also sells the American Grinder Co.'s line of American hand and power grinders west of the Mississippi, while east of that river sales of these machines are in the hands of John H. Graham & Co., which is also responsible for the foreign sales of Blackhawk wrenches.

ATTRACTIVE SAXON PUBLICITY.

The Saxon Motor Car Corporation, Detroit, Mich., is distributing a very attractive piece of publicity in the form of an interesting booklet entitled "Duplex Engineering—a Two-Year Advance Saxon," which purports to tell the inside story of Duplex engineering as applied to the Saxon product. It has handsomely designed covers in colors, and half tones of the entire executive organization are included, together with a vital message from C. A. Pfeffei, the president, and Saxon merchandising and advertising plans for the current year.

COTTA ORGANIZES ADVERTISING DEPARTMENT.

The Cotta Transmission Co., Rockford, Ill., has organized and completely equipped an advertising department with F. W. Ramey, formerly of the sales department, at its head.

This development is in line with the recently announced expansion of the Cotta organization, which at the present time has more than three times the number of commercial trucks accounts, than they were supplying when the war ended.

CARBONOX KNOWN ABROAD.

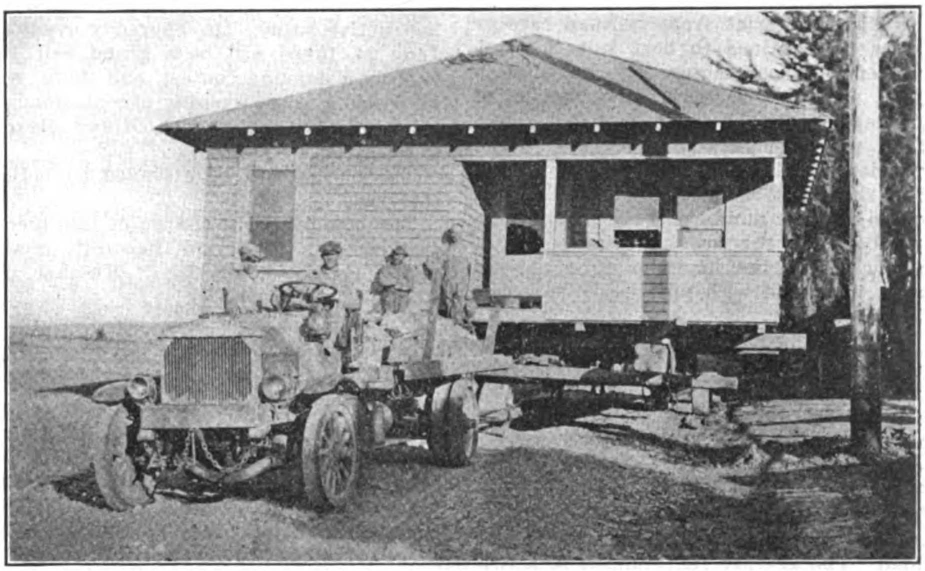
The Northwestern Chemical Co., Marietta, O., recently received an order from a firm in Norway, Europe, specifying 12,000 pint packages of Carbonox, the well known carbon removing compound manufactured and guaranteed by the Northwestern Co. This is only an instance of the development in the merchandising of the products of this company over the entire globe.

One out of every two houses in the rural districts of Ontario, Canada, has a telephone, while one farmer out of every four owns a motor car.

Moving a Bungalow by Motor Truck

When the average citizen moves his home he hires a truck or a cart or wagon and several experienced able-bodied furniture manglers to do packing and loading and unloading and setting up, and confidently expects that at least half of his property will be serviceable when he is "settled." This is because the average house is owned by others or is too weighty or bulky to be taken along with the furniture.

But seemingly the ideal removal was made a short time since by a San Diego, Cal., resident, who was dissatisfied with his location. He bought a property four miles distant and because his bungalow suited him perfectly he wanted to set this up on the new lot. Removing it appeared impossible, but H. E. Cooper, a truckman, allowed it was a practical undertaking. The building was jacked and mounted on wheels and with a big Federal truck it was hauled over the road in about six hours.



Moving a Bungalow Four Miles to a New Site at San Diego, Cal., Without Removing Contents with a Federal Truck Saves an Owner Large Expens.

Not only was the house and furnishings intact, but the cost was exceedingly small and housekeeping was not seriously interrupted. From this it is evident that while the bungalow has its limitations as a dwelling, it also has advantages that largely compensate these.

THE GREAT FLEXIBILITY OF THE "EIGHT."

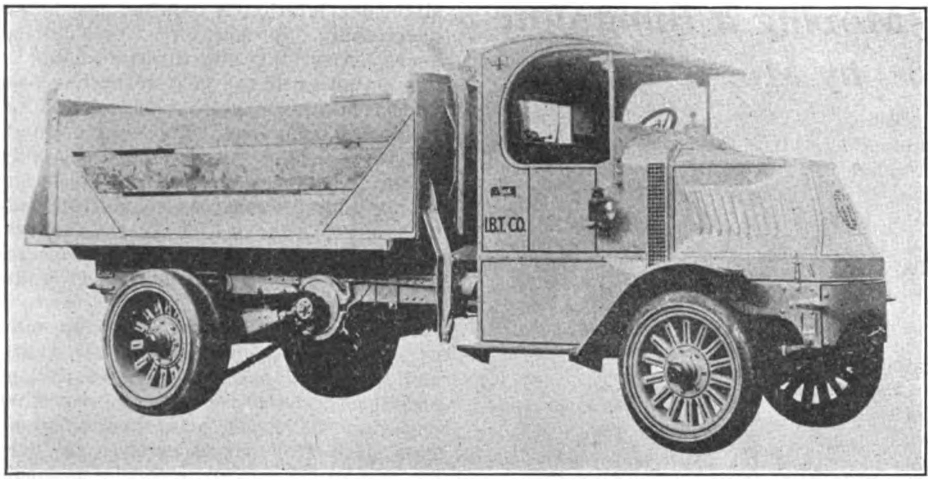
Now that many motorists who formerly drove four or six-cylinder cars are running machines of the eight and 12-cylinder type, it is well to call attention to the wonderful flexibility characteristic of eight and 12-cylinder engines.

In starting the eight or 12-cylinder car the driver naturally uses low gear as in any other type, but it is unnecessary to speed up the engine to any great extent as the clutch is engaging, as is usually required with other types. After the car is under way on low gear only a very slight acceleration is required just before declutching preparatory to shifting gears. After this the throttle should be left closed until the gear lever has been placed in intermediate position and the clutch fully engaged. The engine should not be raced as the clutch is engaging. Again accelerate but a very little before declutching preparatory to shifting into high gear, after which leave the gas closed until the shift has been made, the clutch again engaged and the car under way on high gear.

If the throttle is handled in this manner the driver can start his car gently and quietly, can shift gears easily and noiselessly and never jerk the car when engaging the clutch after gear changes. This method of driving relieves the driving apparatus of all strains, increases the comfort and pleasure of the occupants of the car and because of its quiet, steady movement, favorably impresses all observers both as to the ability of the driver and the high class of the car.

One should never drive with the left foot resting continually against the clutch pedal. It is harmful to begin with and is unnecessary because at least 95 per cent. of one's driving with an eight or 12-cylinder can be done without touching the clutch pedal. When slowing down merely transfer the right foot from the accelerator pedal to the brake pedal, assuming, of course, that the hand throttle is closed. Use the brake alone until the car has come down to less than five miles an hour. If lower speed is required, declutch. If the reason for reducing the car speed is removed while the car is still rolling at five miles an hour or more, the clutch should be engaged with the throttle still closed. Immediately after this engagement the throttle can be opened as desired. Never, under any circumstances, race the engine while the clutch is engaging.

Receipts of the automobile division of the Pennsylvania State Highway department during 1919 reached a total of $5,090,645.69.



Special Type of Body Built to Show Count of Brick in Load in Service of the Illinois Brick Teaming Co. of Chicago.

Special Body for Hauling Bricks

In hauling brick from railroad cars or kilns to locations to best suit the convenience of contractors on construction jobs, the Illinois Brick Teaming Co. of Chicago had to meet a peculiar condition, for the contractors insisted on the precise packing of loads to save counting the brick at every load. That is, with a given number in a row, by simply counting the rows, the total number of bricks in the load could be arrived at quickly and with practically no possibility of error.

The type of body that would best serve was studied and a Mack AC dump truck was equipped with specially built removable side boards. With this the brick can be loaded from either side by taking off the side boards and walking from the brick car into the truck body. The body has capacity for 4000 brick, which will weigh approximately eight tons, to a load. The average trip consists of a two-mile run and dumping the load at the job. This truck is hauling an average of 28.000 brick a day, or about 56 tons.

SOCIETY OF AUTOMOTIVE ENGINEERS' SUMMER MEETING.

The 1920 summer meeting of the Society of Automotive Engineers will be held at Ottawa Beach, on Lake Michigan, June 21-25 inclusive, the tentative programme being as follows:

Monday, June 21, standards and business session; Tuesday, June 22, fuel session; Wednesday, June 23, transportation session; Thursday, June 24, farm power session; Friday, June 25, production session.

It will thus be seen that there will be one professional session each day and that there will be ample opportunity for the programme of sports and recreation each afternoon and the lectures and dancing each evening. Over 200 prizes will be given in the sports programme, which will be conducted Tuesday, Wednesday and Thursday afternoons. The contests will include tennis, golf, baseball, trap shooting, races, water sports and special sports, directed by experts in amateur sports.

On every evening, immediately after dinner, there will be a one-hour lecture by an authority on a popular subject of instructive value. On Thursday evening, June 24, there will be a grand ball, including a dancing contest, and there will be dancing every evening except Monday in the ball room of the Ottawa Beach hotel after 9 o'clock.

The outing will be attended by ladies this year as last.

The committee in charge of this meeting consists of David Beecroft, chairman; C. F. Scott, B. C. Koether, A. Ames, B. B. Ayers.

NEW PLANT OF DORT MOTOR CAR COMPANY.

E. W. Nice, construction engineer, announces that the new motor plant of the Dort Car Co. at Flint, Mich., will be ready for occupancy in August. This is the first unit of the mammoth factory project which will be carried out on 70 acres of land on the edge of the city of Flint.

Herschell-Spillman Engine Test

The All-American Truck Co., Chicago, recently had its machinery all set at its new plant, and was forced to commence getting out rush work before its steam power plant could be installed. To meet this emergency three Herschell-Spillman Model 7000, 3½ by five, four-cylinder stock motors, made by the Herschell-Spillman Motor Co., North Tonawanda, N. Y., were utilized temporarily.

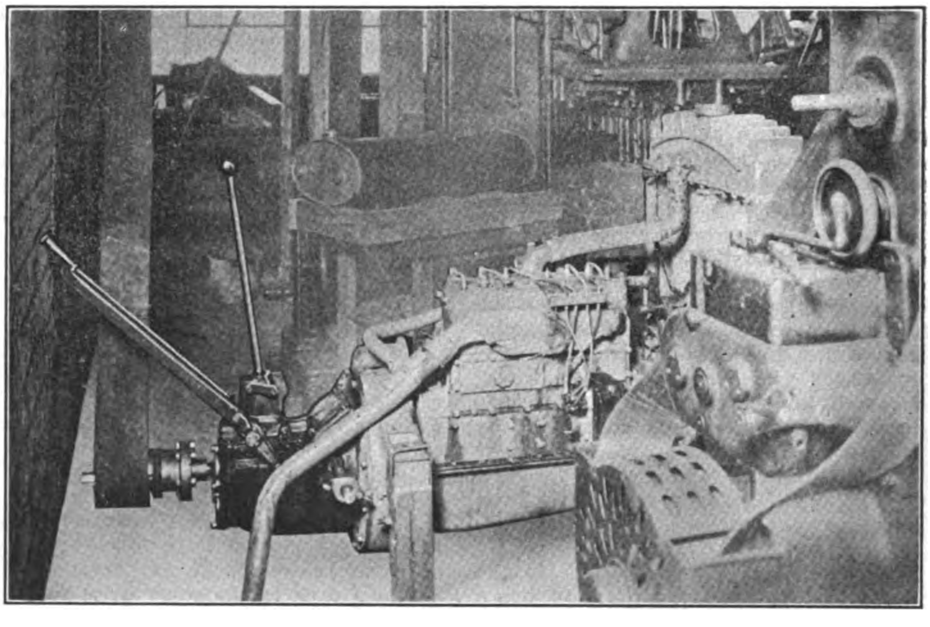
For 21 days, 11 hours a day, these engines were worked and more than met every requirement. Each motor made 1600 revolutions per minute, 1,056,000 a day, which was equivalent to running an All-American truck, model 2½, a distance of 286 miles in 11 hours, at a constant speed of 23 miles an hour, pulling a load of more than three tons in high gear.

A remarkable feature, because no water was circulating through the radiators, evaporation being taken care of by merely replenishing the water supply from time to time, was the fact that no difficulty was experienced in properly lubricating and cooling engines during run.

The Hershell-Spillman Motor Co.'s plant at North Tonawanda, N. Y., is being enlarged to supply the demand by automotive vehicle builders for four and six-cylinder engines. Before the dawn of 1921 this company will have 185,000 feet of manufacturing floor space and will be able to turn out 400 engines a day.

NEW ORLEANS AUTO SUPPLY CO. INCORPORATED.

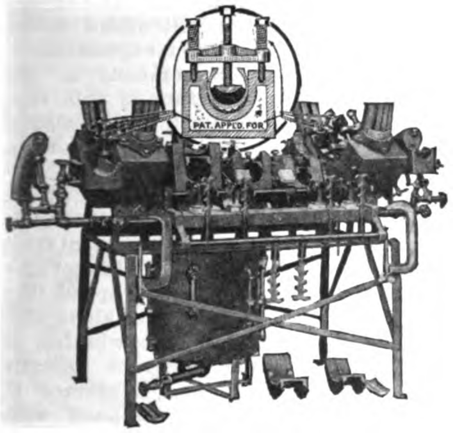
The Original Wrecking Auto Co., 1130-1140 Dryades street, New Orleans, La., has been incorporated under the name of New Orleans Auto Supply Co., Inc., with a paid up capital of $40,000. It will cater to both the wholesale and retail trade under the same management as formerly. N. Weaker, president and manager; R. E. Zerlin, secretary-treasurer.



One of the Herschell-Spillman Engines Recently Used for Emergency Power Production at the All-American Truck Co.'s Factory, Chicago.

Vanderpool Vulcanizer Springs

The Vanderpool Vulcanizing Co., Springfield, O., is marketing the patented Improved springs for use on the Vanderpool 1920 Five-Cavity vulcanizer. These springs are said to eliminate the danger of separation and blister and will enable a perfect job of retreading to be done, and they are continually forcing the rubber into the retread molds as fast as it softens, automatically giving the proper pressure, and does away with the continual adjustment of bolts.



The insert in the sketch shows a sectional view of the Vanderpool springs.

The improved type of Vanderpool vulcanizer has a capacity for the repair and retread of nine tires and five tubes at one time. Another practical feature that appeals to tire repair men is the short time in which steam can be gotten up for a rush job. The steam can be shut off from any or all parts of the machine so that one retread can be heated ready for business in from 30 to 40 minutes in the coldest weather.

NEW DEALERS FOR MIDWEST ENGINE CO.

The Midwest Engine Co., Indianapolis, Ind., maker of truck and tractor engines, has recently secured the following dealers:

Campbell Motors Corporation, Boston, Mass.; S. L. Crosby Co., Bangor, Me.; Walton Foundry Co., New York City; Clide Automobile Co., Troy, N. Y.; A. R. Robertson, Buffalo, N. Y.; DeWaters Brothers, Elmira, N. Y.; Philadelphia Tractor & Implement Co., Philadelphia, Pa.; C. P. Wenner, Allentown, Pa.; Dayton Automotive Co., Dayton, O.; Transport-Utilitor Sales, Toledo, O.; W. G. Gabriel Carriage & Wagon Co., Cleveland, O.; E. J. Knudsen, Ashtabula, O.; Winders Motor Sales Co., Columbus, O.; Brooks & Fierge, Athens, O.; Thompson Auto Co., Detroit, Mich.; City Garage, Ann Arbor, Mich.; R. S. Tracy, Princess Anne, Md.; S. M. Underhill, Cambridge, Md.; Farm Utilities Corporation, Washington, D. C.; Farwest Sales Co., Los Angeles, Cal.; Graham Motor Co., Chicago, Ill.; D. C. Schroeder, Barrington, Ill.; Fort Wayne Utilitor & Implement Co., Fort Wayne, Ind.; San Kuhns, Albion, Ind.; Utilitor-Indiana Co., Indianapolis, Ind.; Smith Power Farming Store, Anderson, Ind.; Jefferson Motor Co., Inc., Louisville, Ky.; C. F. Lyons, Beuchel, Ky.; P. R. Turner, Richmond, Va.; S. B. Karnes, Danville, Ind.; Sherwood & Hills, McAllen, Tex.; Ideal Auto Garage & Sales Co., San Antonio, Tex.; W. A. McBrayer & Co., Greenville, S. C.; Hook Brothers, New Brookland, S. C.; Utilitor Sales Corporation, Ayden, N. C.; Barnett Wilson Motor Co., Burlington, N. C.; Walter H. Bishop, Athens, Ga.; F. A. Dennis, Eatonton, Ga.; Delta Motor Corporation, Inc., New Orleans, La.; Addis Mercantile Co., Addis, La.; C. F. Woods, Meridian, Miss.; J. D. Stennis, Jr., Bailey, Miss.; Home & Farm Utilities Co., Tampa, Fla.; Capital Utilities Co., Tallahassee, Fla.; Farm Power Equipment Co., Birmingham, Ala.; Alabama Utilitor Co., Montgomery, Ala.; L. B. Wilkinson, Sharters, Ala.; Bernhardt Motor Co., Pine Bluff, Ark.; I. H. Rudolph, Arkadelphia, Ark.; Cashkut Supply Co., Texarkana, Ark.; Newell Motor Car Co., Kansas City, Mo.; Joseph Werndl, Coffeyville, Kan.; Newell Motor Car Co., St. Louis, Mo.; Northwest Utilitor Co., Seattle, Wash.; Pacific Tractor Co., Vancouver, B. C., Canada; George H. Lowe, Jr., Boston, Mass.; Framingham Motors Co., Framingham, Mass.; Rose Williams, Newark, N. Y.; Wedden Hardware Co., Falconer, N. Y.; Sears & Bowers, Easton, Pa.; Wagner Brothers Hardware Co., Hazelton, Pa.; Canton Tractor Co., Canton, O.

CAROLINA AUTO SPRING CO.

The Carolina Auto Spring Co. has just been formed at Sumter, S. C., for the purpose of distributing automobile replacement springs. The authorized capital is $75,000, and the officers are as follows:

President, W. A. Bowman; vice president, L. H. Deas; secretary, A. K. Bowman; treasurer, F. A. Bultman; manager, W. P. Middleton.

For the past six years Manager Middleton has been connected with one of the largest replacement spring companies in the United States.

307
ERICKSON TIRE CO.
TIRE REPAIRING
WAL 470
KELLY-SPRINGFIELD
TIRES and TUBES
TIRE REPAIRING
TIRE REPAIRING

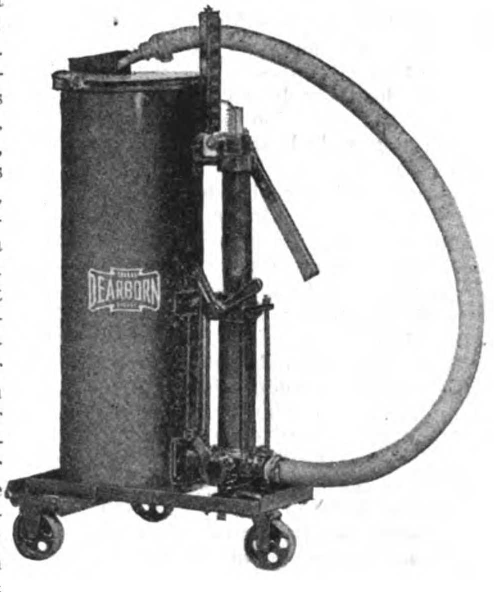
Mr. Erickson and His Oklahoma City Store

Representative Tire Repair Man Using Vanderpool Outfit.

Dearborn Improved Grease Pump

The Dearborn Engineering & Equipment Co., 1703-1704 Tower Building, Chicago, Ill., has taken over the manufacture of the O'Brien heavy duty grease pump and hereafter it will be known as the Dearborn pump. This pump is especially adapted for heavy duty in truck service stations. The tank is constructed from 18 gauge steel reinforced, with provision made for locking the cover, and has capacities of ¼ barrel, ½ barrel and one barrel and may be ordered special at an extra charge for larger sizes. The truck on which the tank and fittings are mounted is made of heavy angle steel throughout and is equipped with three large heavy duty casters. The floor space required is 18 by 21 inches.

The specifications of the pump are as follows: Cylinder, 11 gauge by 3¼ inches seamless cold drawn tubing; piston, special design, accurately machined, adjustable for wear, equipped with three rings of compositon packing; rack, cut steel, 10 pitch, one inch face; pinions, same; valve, hand operated,, accurately machined, absolutely positive in action, having large port area; handle, steel with reversing ratchet, leverage 16 inches total; gauge, conveniently located so it may be easily read, graduated for light, medium and heavy lubricant; capacity, one quart of light or two pounds of medium or heavy grease per stroke; hose, special heavy duty, long lived, one inch diameter, three nozzles.



SCHUSLER MOTOR EXPANDING.

The Schusler Motor Co., distributor of Stevens-Duryea and Templar cars at Pittsburgh, Pa., is to have new sales rooms in the heart of the automobile district on Baum boulevard, between Rebecca and Liberty avenues. The service department will be maintained at Station and Collins avenue.

France has 47 different manufacturers of motor cars.

Nazett Method Burning-In Bearings

The Ford repair man has been quick to grasp the advantages of up-to-date machinery in his shop, and foremost in demand in the list of equipment today are burning-in and work-out machines. The old method has been slow and inaccurate. The best mechanics were formerly required to scrape bearings and it took six hours to scrape in a set of main bearings on a Ford car, and then only a 40 per cent. job could be hoped for. The Nazett method requires less than one hour, occupies the time of one medium class mechanic only, and the complete job is perfect in every respect, averaging from 95 to 100 per cent. bearing surface.

Nazett machines are especially designed for repairing model T Ford and Fordson motors. The model E Nazett is for the model T motor only. The model F is for both the model T Ford and the Fordson motors. While burning in the bearing of either model, the motor is in the upside-down position and the main bearings are exposed to the view of the operator at all times. It is recommended that the main bearings be burned in first. After this job is completed the connecting rod bearings can then be burned in.

Nazett machines also make ideal motor stands. The cylinder block is firmly clamped at just the right height for the mechanic to work on the crankshaft, connecting rods and camshaft bearings in a natural standing position. An opening is provided in the main bed, which permits the removal and replacement of pistons from the cylinder block without unclamping or removing it from the stand. It is not necessary even to remove the valves from the block. The cylinder block is quickly clamped on the machine by the use of hand wheels operated from either side. No obstructing clamp is used over the center main bearings. The bearings are accessible at all times and can be taken up while the machine is operating if desired.

The Nazett machine is provided with three-point expanding clutch, lined with kiln dried hard wood shoes, practically indestructible. Provision for adjustment is made. The clutch lever is 24 inches long and three-fourths of an inch in diameter, with a knurled handle which is easily operated with one hand. The lever is removable and when inserted in the socket on the clutch spider provides a means for turning the crankshaft to test the stiffness of the bearings.

The Nazett is stated to be the only machine on which the mechanic can remove the crankshaft from the block without unclamping the block from the stand. This is an important feature, as it is often desirable to examine the bearings during the process of burning in, and no bearings should be finally passed upon until they are examined. All that is necessary to do on the Nazett is to throw the pin clutch lever out, which disengages the crankshaft from the machine. This pin clutch contains four pins for the Ford motor and six for the Fordson motor, the same number as used on the Ford and Fordson crankshaft assembly, which insures a rigid crankshaft held accurately in position during the operation of burning in.

To convert the Nazett machine for burning in the Fordson tractor block, it is necessary only to place the small machined block on the stand. To burn in the Fordson bearings, the crankshaft is driven at a lower speed. The reduction is accomplished through cut steel gears, which are completely encased and run in grease. The side arms which support the motor when it is being worked out are lowered out of the way when the machine is operated for burning in. To obtain the best results the bearings should be burned in without oil, and the crankshaft carefully cleaned before the operation is commenced. If any oil is present during the process it is liable to tear the babbitt and result in an imperfect bearing.

A special attachment to be used in conjunction with the Nazett model F machine is provided for working out the Fordson motor. It consists of a flanged connection driven from the upper pin clutch through two universal joints and a drive shaft connecting to a split steel casting, which is clamped on the Fordson starting crank for starting new tractors as well as working out those which have been overhauled.

DECISION RENDERED IN CORK INSERT CASE.

It is reported that a decision has been rendered by Judge Tuttle in the Federal court at Detroit in the case of the Advance Automobile Accessories Corporation of Chicago, et al., vs. the Howard K. Ford Manufacturing Co. of Coldwater, Mich., holding that the cork insert patent, under which the Advance cork insert transmission and brake lining for Ford car is manufactured and sold, is valid; and that the Ford cork set transmission lining made by the defendant is an infringement of the cork insert patent. It is also stated that the court ordered a permanent and perpetual injunction to be issued, and an accounting for damages and profits.

It is further reported that the Detroit Cork Co. has consented to an entry of a decree against it in a similar suit.

SHIP NEW ERA SPRING BUMPERS BY TRUCK.

The Linscott Supply Co., Boston. Mass., distributor of Reo trucks throughout New England, and extensive jobber in automobile accessories, recently brought a fleet of Reo trucks from the factory at Lansing, Mich., overland to Boston. The cortege stopped en route at Grand Rapids, Mich., and at the new factory of the New Era Spring & Specialty Co., 51-55 Cottage Grove avenue, southwest, took on freight in the form of several hundred of the New Era "Better" spring bumpers, thus participating in the "ship-by-truck" propoganda.

Laurel Motors Concern to Expand

The Laurel Motors Coporation, Anderson, Ind., manufacturer of the Roof 16 overhead valve equipment, has recently acquired several acres of land adjacent to its factory site on which it intends to erect immediately a modern factory and office building, which will afford necessary space for production expansion.

It is said that this company is the pioneer in the manufacture of this type of equipment, as Mr. Roof, who designed the first aeroplane motor to be used in this country that attained the first altitude record made by Earl Slack at St. Louis in 1910, is affiliated with it, and is continually supervising experimentation on motors in an endeavor to get the greatest amount of power and speed that can be produced. His success along this line is demonstrated by the winning of the free-for-all automobile race recently at St. Petersburg, Fla., by James C. Hackney, driving a car equipped with one of the Roof 16 overhead valve motors, manufactured by the Laurel Motors Corporation.

NEW ENGLAND MILLS INCREASES CAPITAL.

The rapid growth of the New England Mills Co., 1027-1033 West Van Buren street, Chicago, Ill., until today it is one of the country's leading automobile accessories jobbers, is phenomenal. It has increased from a stock room of 1100 square feet with $15,000 capital to 20,000 square feet, besides large warehouse space and a capital of $150,000. The company states that its success is due to superior service. Its operating policy is "orders in today and out today, enforced through careful buying and keeping its warehouse full of standard merchandise. The monthly catalogue, "The Little Salesman," is sent out regularly to dealers, keeping them as well posted on current prices as if they were standing at the counter of the world's greatest market.

The New England Mills Co. served over 15,000 dealers the past year.

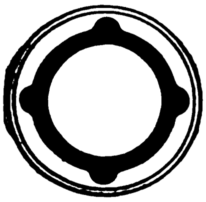
THE NIEHOFF MAG-CHARGER.

Paul G. Niehoff & Co., Inc., 232-242 East Ohio street, Chicago, Ill., is now marketing the Niehoff Mag-Charger, which is especially designed to fulfill a long felt want for recharging Ford magnets and burning out shorts in the Ford magneto case. The entire recharging is done, it is claimed, in a few minutes, and any ordinary mechanic can operate successfully.

The Niehoff Ford recharging apparatus is a complete electrical testing outfit as well, and may be used for testing Ford coil units, electric bulbs and spark plugs. With this outfit established in a convenient place so that the car can be run alongside, it is stated that in less than 15 minutes the garage man can recharge, burn out all shorts and make an entire test of the ignition system.

BECKLEY-RALSTON CO. IMPROVED HYDROMETER SYRINGE.

After years of experience with different types of hydrometer syringes for testing battery solutions, the Beckley-Ralston Co., Chicago, Ill., announces that it has perfected a new type of instrument, which is heralded as being the most accurate hydrometer made. The Master hydrometer syringe, as this new instrument is called, is built on entirely new principles. Working along the line that the principal fault of the ordinary hydrometer lies in the tendency of the float to tip against the sides of the glass tube and stick, the Beckley-Ralston Co. states that it has eliminated this defect in the construction of the new tester.



Sectional View of Celluloid Rings.

Celluloid rings, with projecting guide fingers, are attached to the float. Resting lightly against the sides of the test tube, they hold the float erect and enable it to ride freely.

It is stated that when the float tips against the glass tubing in the ordinary hydrometer, its ability to ride freely is hampered by capillary attraction, and it can thus be easily understood how the float, resting at an angle against the glass tubing, is liable to give an inaccurate reading.

The glass barrel of the Master hydrometer is extra large and of heavy glass, and the sides are absolutely straight from end to end. Large, soft rubber rings at either end afford protection from breaking should the instrument be accidentally dropped.

The Beckley-Ralston Co. has also perfected another entirely new instrument, a radiator anti-freeze solution tester, known as the Radiatometer, which will be under production in time for the opening of cold weather next fall. This is built on the same free-floating principle as the Master hydrometer and gives a car driver exact knowledge of the necessary strength of a radiator solution to prevent freezing at various temperatures.

COVERT CENTRALIZES EFFORT.

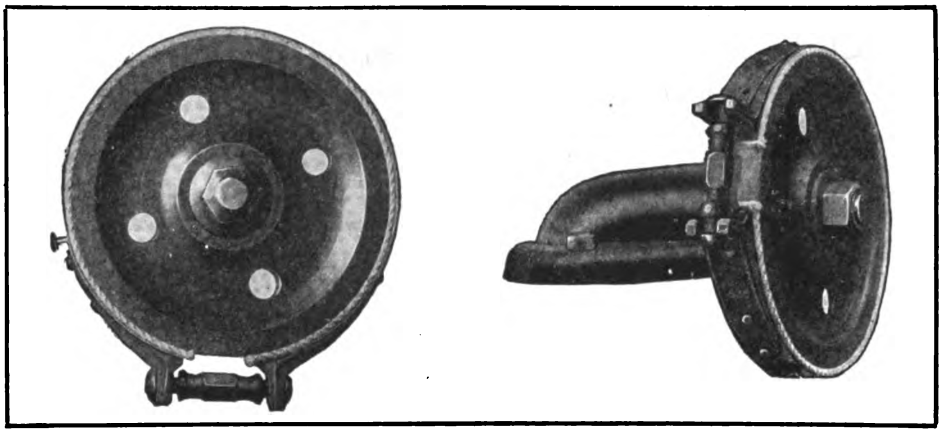
On account of the rapid expansion of its business and the resulting need for more centralized administration, President Alwin A. Gloetzner of the Covert Gear Co., Inc., announces the consolidation of all the company's departments, including sales, service and engineering, at its manufacturing headquarters in Lockport, N. Y., where recent factory additions now allow them to be adequately housed and equipped.

R. C. Merchant, sales manager, moved his offices from Detroit to Lockport several weeks ago. The Covert Gear Co.'s Detroit headquarters in the Hayward building, 967½ Woodward avenue, will be continued in cooperation with the Lonney & Carmichael Sales Co.

Approximately 8,000,000 autos have been made in the United States during the last 20 years.

Universal Tool Co. Adds to Line

The Universal Tool Co., Inc., Detroit, Mich., manufacturer of the Universal cylinder reboring tool and the Universal main bearing babbitting and boring equipment, has introduced a new brake band mandrel. This is made in three sizes, for Ford cars, for larger cars and a combination of both. This tool is stated to be so simple in construction that any ordinary mechanic can operate it with ease, enabling him to clamp the brake lining and band firmly on a circular mandrel which is the same size as the brake drum, assuring its proper alignment and conformation to the drum, upon which it is intended to function, before even starting a rivet.



Front and Side View of Universal Brake Band Mandrel.

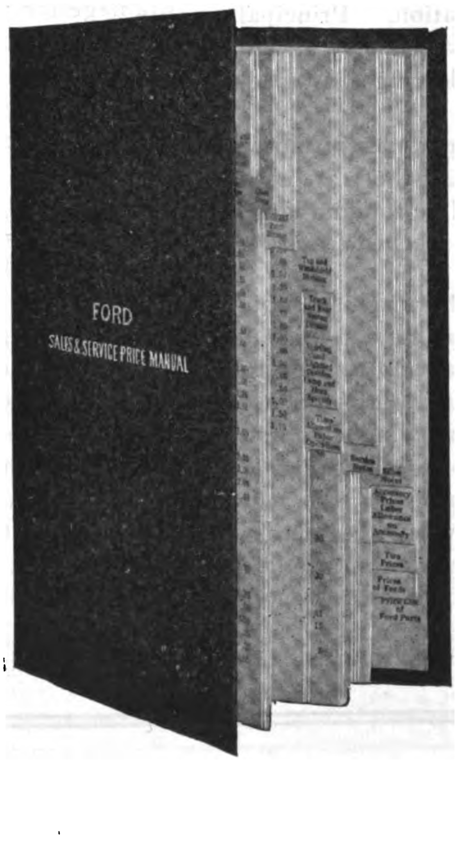
The riveting operation is also quickly and easily accomplished. The mandrel is turned until the rivet holes in the band come to an upright position; then a split rivet is driven in with a hammer blow, clinching the rivet against the mandrel on the inside, the operation being repeated until all the rivets are in place. Points claimed in favor of the tool are that it does away with any drawing of the lining between the rivets which might cause the brake to drag; that it prevents the lining wrinkling and wearing in spots; that it insures a full, even braking surface; that it makes it possible to secure a perfect adjustment of the brakes at the time of replacement, and that the job of replacement and riveting is completed in less than half the time consumed by any other method of doing work.

FORD SALES AND SERVICE MANUAL JUST ISSUED.

The Auto Service Publishing Co., 141 East 44th street, New York, has just issued the Ford Sales and Service Price Manual, which is exclusively distributed by the Fairbanks Co., Broome and Lafayette streets, New York. This manual has been compiled from data collected from the Ford Motor Co. and dealers in all sections of the country operating under widely varied conditions. The information is presented under various divisions such as motor, rear and front system, chassis, etc., and under these division headings labor charges and time allowed on labor operations on every Ford repair job have been grouped.

The book also contains a section entitled "Facts About Ford Cars," which gives many interesting points in regard to production, raw material used, motors, springs, starting and lighting systems, etc. The general plan to be followed by dealers in handling replacements, and data on shipping weights, obtaining licenses, exchange prices, etc., are also included.

Space is provided for inserting the standard Ford parts catalogue, and the size of the manual permits of its being carried in the coat pocket.



NATIONAL IN GOOD SHAPE.

The National Motor Car and Vehicle Corporation, Indianapolis, Ind., had net sales of $3,997,287 for the year ending Sept. 30, 1919, an increase of considerably more than a million dollars over the previous year. The corporation has purchased a new forge plant, body plant, extra machine shop and other facilities from the government and is in strong shape to handle future business.

PLATE XXVI.

MOTOR TRUCK SERVICE STATION

Structure Designed for Corner Location, Equipped with Every Facility for Efficiently and Economically Serving Truckmen.

SERVICE as demanded by the power truck owner differs widely from that required by the passenger car owner. Many truck dealers have established service stations for serving owners of the trucks they have sold, and have generally sought the patronage of owners of other makes of trucks when service could consistently be afforded.

The power truck service station should preferably be in building erected expressly for the business, for this will mean, if the arrangement of the structure is well thought out, economies of many items of expense, such as lighting, heating, handling vehicles, labor and time, as well as improving the efficiency of the organization and insuring satisfaction to customers.

Necessarily a plan must be definite and specific, and in the accompanying plate the architect has made provision for a structure on an ideal site, but this may be modified and the details may be amended to meet other conditions. The purpose is to suggest what shall be regarded as a structure that will meet all ordinary requirements and afford every desired facility for economical conduct of a business.

The proposed structure is shown on a corner lot, 100 by 100 feet. The dealer will at once appreciate the desirability of selecting a corner location for his building, as it has many advantages for a motor truck service station. Principal among these is the fact that entrances may be had from both streets (see plan), allowing easy placing of trucks for storage.

Special attention to the larger types of motor trucks is given in the design. At the rear, with an entrance from the street, will be found a large repair shop, which may also be reached from the inside.

Directly opposite is found the machine shop, where work of any kind may be carried on. A large door leads from this so that any unit or an entire truck may be carried to the shop for any necessary work. Between the machine shop and the repair shop is a large combination turntable and wash stand. With this trucks may be sent to the repair shop and withdrawn without leaving the building, and there would be no need of floor maneouvering that would otherwise be necessary in driving into the repair shop.

Two toilet rooms and a locker comprise the layout in the rear. From the locker room a stairway leads to the boiler room, which occupies a place underneath the machine shop, toilet and locker room.

Ample room for storage is provided in the garage proper. It has been so planned that there are comparatively few columns supporting roof.

At the front of the building will be found the main office with private office and waiting room. A salesroom for accessories and equipment will be found in the corner, having large window areas on both streets. There would be gasoline pumps outside the entrance in the highway.

The structure is of brick, one-story high, with foundations of concrete. The trimmings of the concrete are stone or terra cotta. There is a large wood door on the main street and steel rolling doors on the side elevation. There are also small doors of wood.

Windows are of metal type and of approved design. The roof is of slow burning construction, plank with tar and gravel, supported by steel I beams and C. I. columns of approved design.

A steam wall radiation system is advisable for heating, with pipe or regular radiators. Large skylights are used to give light to the machine shop, repair shop, toilets and locker room.

All floors are of concrete construction. Special attention has been given to provide adequate drainage for the floors in all the departments.

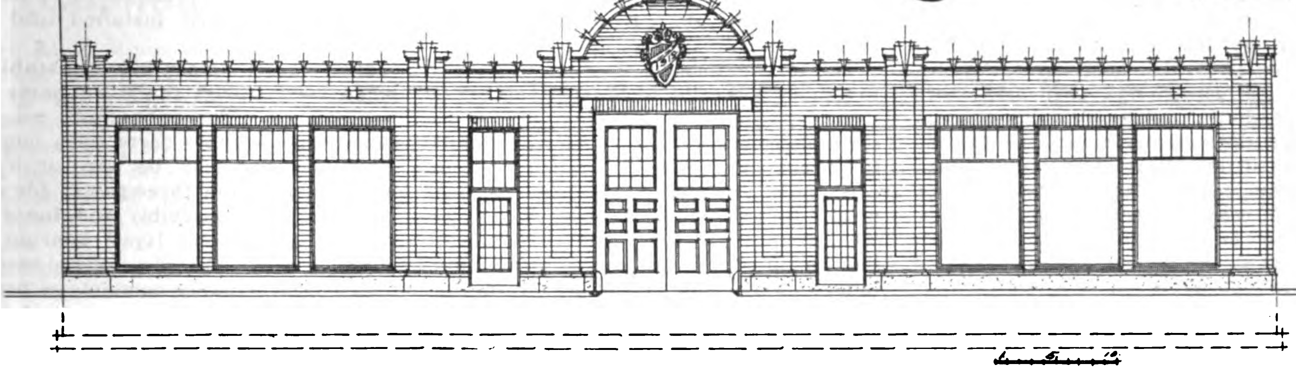
The approximate cost of construction, as shown, would be $12,000.

This design presents so many attractive features that the dealer who is planning to erect a motor truck service station will undoubtedly profit by giving attention to its details. The building would present a decidedly attractive appearance, and within there would be practically every convenience that would be necessary or desirable.

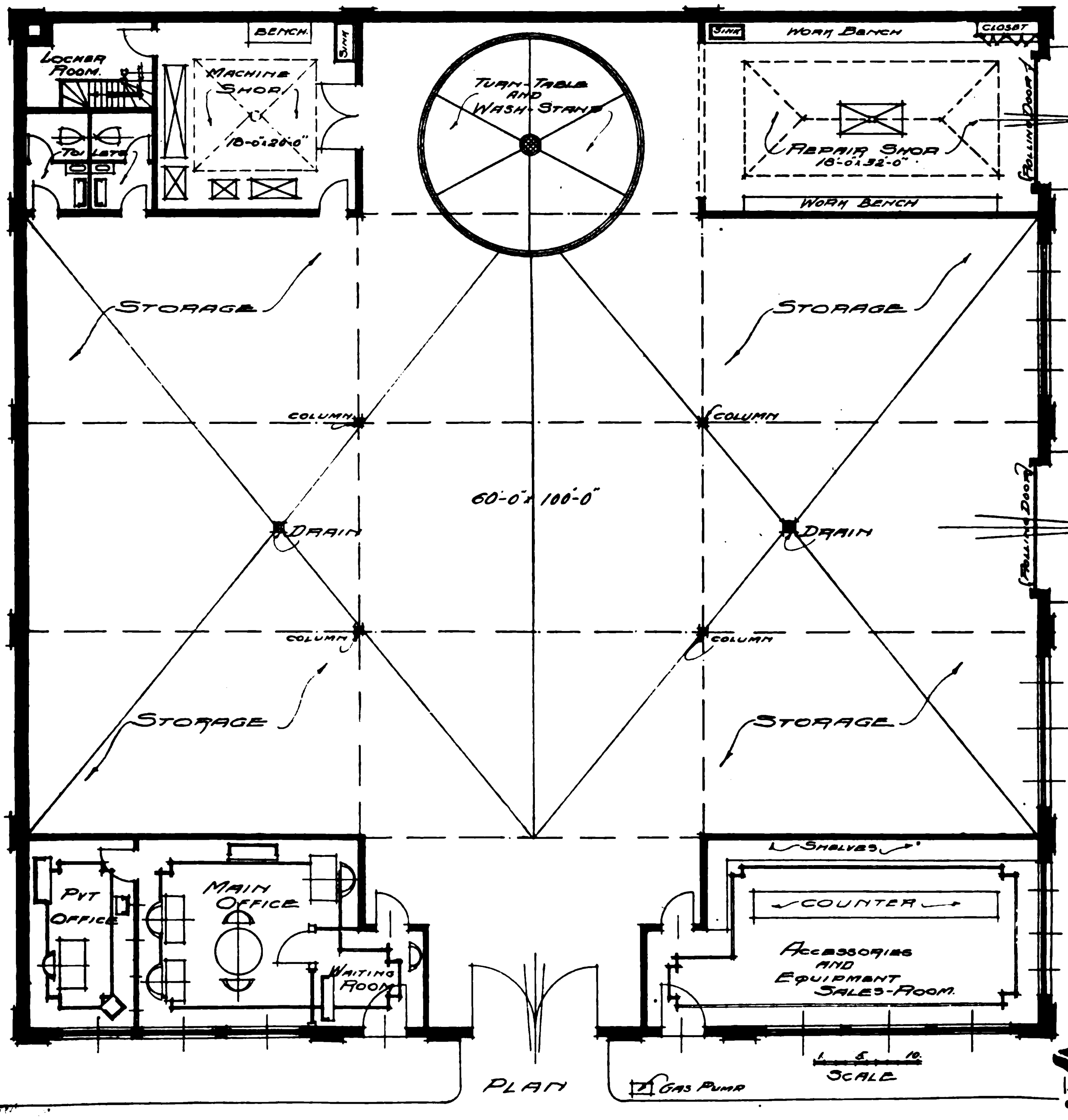
Everything is laid out with a view of affording strict efficiency and economy in all operations. Many of the conditions that tend to unnecessary delay and waste of time and labor which are to be found in many service stations, are obviated, and provision is made for handling the trucks in a manner that is bound to bring about successful results.

Any further information in regard to any of the details of construction may be secured by application to this department.

PLATE XXVI



ELEVATION


Locker Room
Bench
Sink
Machine Shop
18'-0"x20'-0"
Toilets
Turn-Table and Wash-Stand
Sink
Work Bench
Closet
Repair Shop
18'-0"x32'-0"
Rolling Door
Work Bench
Storage
Storage
Column
Column
60'-0"x100'-0"
Drain
Drain
Rolling Door
Column
Column
Storage
Storage
Shelves
Pvt Office
Main Office
Waiting Room
Counter
Accessories and Equipment Sales-Room
1 5 10
Scale
Gas Pump

PLAN

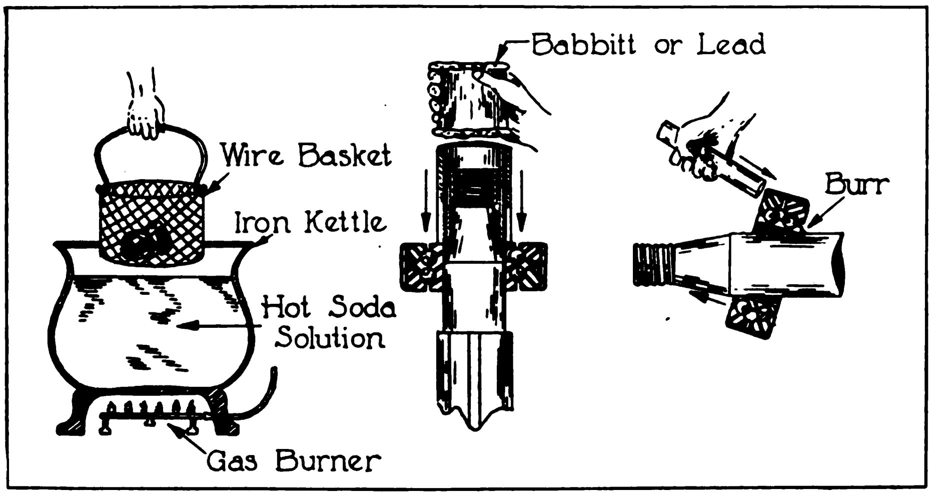
Proper Care of the Bearings of the Motor Car

(By N. B. Keller, Bearings Service Co.)

BY ALL means now is the time manufacturers, trucking companies, bus lines, individual car owners—all of them are getting their cars in ship-shape condition after the hard winter going. Motors are jerked out, rear axles torn down, fenders straightened, a dab of paint here and there, everything is O. K., and then a little later—G-r-r-Bam! Why? Somebody forgot to look at the bearings.

Those comparatively small, but exceedingly important parts of a car's mechanism—the bearings—need attention now.

Here are a few suggestions:



At Right, Ideal Apparatus for Cleaning Bearings; Center, Correct Method of Replacement by Use of Piece of Tubing; at Left Is Shown What Happens When the Incorrect Method Is Used.

Bearings are often ruined by carelessness on the part of mechanics in removing them. When removing the races of press-fit bearings a puller should be used if available. The force of the puller should be directed against the sticking race. If prying or driving is necessary, care should be used that the force is not applied to the free race and thus through the balls or rollers to the sticking race. If driving is necessary a wooden or brass instrument should be used in conjunction with a babbitt hammer, or mallet, so that the blow, while being sufficient to loosen the race, will not be hard, causing possible injury to the part.

Only the purest mineral oils and greases should be used in lubricating anti-friction bearings. When bearings are enclosed and operating at high speed under small loads, a light oil may be used. In other installations a good, light grease, or a medium grease, is more satisfactory.

Avoid carelessness in cleaning a bearing for inspection after removal. If dirty gasoline or kerosene is used, the grit and dirt is usually washed into, rather than out of the bearings. One of the most efficient methods of cleaning bearings is to dip them in a pail of boiling water containing a cupful of washing soda. This solution will cut the grease and oil and remove any grit or dirt that may be present. If the bearing is to be used again, it should be dipped in kerosene immediately after removal from the washing fluid. This will remove the cleaning solution. It should then be packed with grease.

The instructions on the care necessary to remove a bearing similarly apply when it is to be replaced. Bearing outer races are usually press-fit in the housing, while the inner races are, in general, a light drive fit on the shaft. The pressure necessary to replace the bearing should, as when removing, be applied directly to the sticking race. In replacing the inner race of a bearing consisting of two or more parts, such as Timken and Hyatt bearings, or a bearing of the single unit type, such as manufactured by the New Departure Manufacturing Co., a piece of tubing just large enough to fit over the shaft and press against the inner race is a practical tool to use. In forcing the bearing into position with this tool the pressure is applied in such a way as to distribute the force equally over the race, thus preventing a tendency to wedge. The condition of the bearing housing and shaft is a matter which should be watched carefully when replacing bearings. The housing may be worn, allowing the bearing to fit loosely, and some play might be noticeable. If this condition exists a new housing should be secured, or possibly the old housing may be bushed; shims, however, should never be used. The inner race being generally a light press-fit on the shaft, if too tight, and forced, might throw the whole bearing out of alignment and thus cause it to bind. In a case of this kind the shaft should be dressed down. Never grind down or knurl the outer circumference of a bearing in order to make it fit the housing or shaft.

Annular ball bearings cannot be adjusted. This naturally means that if a bearing is noticeably worn it should be replaced with a new one. At first thought it would seem that annular ball bearing equipment is consequently unusually expensive to maintain. However, this is not true, as a bearing of this type will give unlimited service, often outlasting the car, if properly installed and cared for.

Hyatt bearings are not adjustable and when wear occurs the worn parts must be replaced. These bearings may consist of one or more parts, as a complete Hyatt bearing may be one, or a combination of two or three parts; for example, the roller assembly and inner race may be a complete Hyatt bearing of a given number, or the roller assembly and outer race may complete a bearing. Some Hyatt bearings consist of all of these three parts as previously mentioned, while on the other hand the roller assembly only may be used, the shaft and housing taking the place of the inner or outer races, respectively, as the case may be. It does not mean that it is necessary to replace a Hyatt bearing completely if only one part is worn. A new inner race, for example, may be used with the old roller assembly provided, of course, the latter is in good condition. Examination should show the surface of the races and rollers to be smooth and in good condition if the part is to be used again. Particular attention should be given to the cage which holds the rollers in position and keeps them in alignment. The cage should be rigid, but if racked the entire roller assembly should be replaced with a new one. When reinstalling care should be used not to squeeze the cage, as it is essential that the cage containing the rollers rotate freely, which is not possible if it is jammed. Care should also be taken to see that the set screw, which is used on some Hyatt bearings, does not project through the race thus interfering with the operation of the rollers.

Timken bearings are adjustable. The following method should be practiced when adjusting them: After packing the bearing with grease screw the cone and roller assembly on the shaft tightly against the cup or race, being careful, however, not to exert too much pressure. The pressure should be only sufficient to cause the bearing to bind slightly; and the shaft, or wheel, should be rotated to see that it does not stick at any point. The cone and roller assembly should then be backed off so that the shaft or wheel turns freely, but not enough to cause any perceptible end play. The locking device should then be made secure without disturbing the adjustment. A point to be considered, when replacing the inner front wheel bearings, is the careful installation of the dust ring, which should be backed solidly on the spindle. Care also must be given to the installation of the cup in the housing. The cup must be seated firmly and the exactness of the seating checked by measuring the distance all the way around from the edge of the cup to the lip of the housing. These distances should be equal, as otherwise the cup will not be squarely seated, but will be cut of alignment with cone and roller.

FINANCIAL NOTES OF AUTOMOTIVE INDUSTRY

Allen Motor Increases Capitalization

The Allen Motor Co., Columbus, O., is carrying out a financial programme to add to its working capital as part of plans for increasing production. Under the proposed plan, which was legalized at a meeting of stockholders May 11, 14,817 shares of the present outstanding common stock, with a par value of $100 a share, will be retired and 300,000 shares of non-par common will be substituted. Arrangements for the immediate sale of 100,000 shares have been made with an underwriting syndicate headed by a group of Columbus bankers, and a large proportion of this will be taken by present stockholders of the company. This plan will provide $700,000, which will be put into the treasury immediately to increase the working capital. The balance of the issue will be reserved as treasury stock for future capitalization purposes.

The refinancing plan also contemplates the issuance of $1,000,000 in seven per cent. serial notes to be retired in five years.

WILLYS-OVERLAND'S EARNINGS.

The Willys-Overland Co., Toledo, O., earned in the four months ending April 30, in excess of $6,000,000, before depreciation and Federal taxes. After the deduction of all special charges and taxes the profits were approximately $3,600,000. The dividends on both classes of preferred and common stock for the full year call for something in excess of $8,100,000; thus, in the first third of the year the company earned its preferred and common dividends with a 15 per cent. surplus.

STEWART-WARNER STOCK INCREASE.

The Stewart-Warner Speedometer Corporation, Chicago, has increased its common stock by 200,000 new shares, no par, of which 60,000 will be exchanged for Stewart Manufacturing Corporation common stock, no par, share for share, the remainder to be kept in the treasury for later issues.

A special meeting of the stockholders will be held in Richmond, June 4, to approve of the new issue of common stock.

STROMBERG CARBURETOR SURPLUS.

The Stromberg Carburetor Co. of America, reports, for the first three months of the year a surplus, after Federal taxes, of $204,478, equivalent to $2.72 a share on the capital stock. This compares with $86,702, or $1.73 a share for the quarter ending March 31, 1919. The Federal tax reserve for the quarter just ended was $35,000, or $10,000 more than for the corresponding period of the previous year.

OLD MOTORS STOCK RETIRED.

The old stock of the General Motors Corporation has been retired from the New York clearing house list, its place being taken by the new General Motors certificates, issued on the basis of 10 shares of the new for one of the old.

For violent fluctuations on the market, it is stated that General Motors old stock probably held the record. Its widest decline was 65 points in a single day in the November break; it has made gains, however, almost as great in a single day. On the day it was retired, May 5, it was quoted at 312, having made a characteristic advance for the day of 21½ points.

It is reported that a strong pool has been formed to look after the interests of the new stock. In the curb market, before being listed, it sold above 41. Its range on the big board has been between 28 and 40. It closed May 5 at 31, a gain of two points for the day.

SPICER RECAPITALIZATION APPROVED.

At a recent special meeting of the stockholders of the Spicer Manufacturing Corporation, South Plainfield, N. J., the proposed recapitalization plan was approved, which provides for the authorization of 100,000 shares of new eight per cent. preferred stock, of which 30,000 shares are to be issued immediately, and 600,000 shares of common stock of no par value, of which 280,000 shares are to be issued at present.

The Spicer Co. called for payment on April 1 all of its first preferred stock outstanding at $115 a share and accrued dividends.

At the annual meeting Charles E. Merrill was elected a member of the board of directors, succeeding E. C. Lynch. Other directors were re-elected.

$10,000,000 TIRE CONCERN.

W. W. Wildman, former president of the Portage Rubber Co., heads the new Wildman Rubber Co., which has taken over a tract of 60 acres in Bay City, Mich., where a $2,500,000 plant will be erected, in anticipation of a daily production of 7500 tires and tubes. It is planned to employ 1500 men in the first unit, which must be built within 18 months at a cost of $1,000,000, according to an agreement with the Bay City Board of Commerce, the site being furnished free on that condition. The company's Delaware corporation is capitalized at $10,000,000.

MERCER'S NET $152,763 FOR QUARTER.

The Mercer Motors Co., Trenton, N. J., reports net earnings, for the quarter ending March 31 of $152,763, before payment of Federal taxes. This is at an annual rate of $601,000, or better than $6 a share on the outstanding stock.

New Business Enterprises in April

From returns, compiled by the New York Journal of Commerce, it is shown that 1262 companies, each with an authorized capital stock of $100,000 or over, were incorporated under the laws of the principal states in April, representing $1,354,262,400. This compares with a total capitalization of $515,665,300 in the same period a year ago, when 700 companies were organized. The March returns this year indicated that 1273 new enterprises took out charters with an authorized capital stock of $1,375,797,000.

Since Jan. 1 incorporations have involved the phenomenal sum of $6,169,381,000, or an increase of 262 per cent. over the figures of 1919, and 570 per cent. as compared with the corresponding period of 1918.

REORGANIZATION OF MARION TIRE & RUBBER CO.

The Marion Tire & Rubber Co., Marion, O., maker of pneumatic automobile tires and tubes, was recently bought by capitalists in Akron, O., and reorganized, the capital being increased from $300,000 to $750,000. The officers of the new organization are:

President, Allen F. Ayers, vice president of the Ohio Savings & Trust Co., Akron; vice president, W. E. Cameron, Marion; secretary, W. E. McLaughlin, treasurer of the Mohawk Tire & Rubber Co., Akron; treasurer, Sam F. Zillox, president of the Commercial Printing & Lithographing Co., Akron.

The company plans increased production and a sales campaign for the distribution of the Marion products through dealers.

MAXWELL-CHALMERS MERGER.

The time for the deposit of securities in the Maxwell-Chalmers merger has been extended to Aug. 1 in order to permit the organizers an opportunity to make any changes in the plans which have been under consideration. It may be decided on, it is reported, to issue $15,000,000 seven per cent. notes instead of $10,000,000 as provided in original plan.

INTERNATIONAL MOTOR PROFITS.

For the quarter ending March 31, the International Motors Co. reports net profits of $968,057, after allowing for interest charges and Federal taxes. This income was obtained on the production of 1870 trucks, it is reported.

VESTA BATTERY'S INCREASE.

The Vesta Battery Co., Chicago, formerly the Vesta Accumulator Co., announces an issue of seven per cent. cumulative preferred stock to the amount of $450,000, and 30,000 shares of common stock.

Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK EXCHANGE.

Week Ended May 15, 1920.

Company	High	Low	Last	Change
Advance Rumely	35¾	32½	33⅜	—2¼
Advance Rumely, pfd	64½	63⅛	64½	.....
Ajax Rubber	69¾	65½	65½	—3½
Allis-Chalmers Mfg	37	33	33½	—2¾
Allis-Chalmers Mfg., pfd	75½	75	75	—1
American Bosch Magneto	109⅞	101	106⅛	—2⅞
American-LaFrance Fire Engine	11¾	11⅝	11¾	+ ¼
Auto Sales	11	10	10	—1
Bethlehem Motors	24⅜	21	22½	—1
Case, J. I., Co., pfd	94	94	94	— ½
Chandler Motor	147	129½	136	—11
Emerson-Brantingham	21	20	20	—1
Emerson-Brantingham, pfd	80	78¼	78¼	—2
Fisher Body	128¼	125⅛	125⅜	—4⅝
Fisher Body, pfd	104	103½	104	.....
Fisk Rubber	32⅜	30⅝	31⅜	—1⅛
General Electric	143	140¾	141	—1
General Motors	31	26	28⅜	—2⅛
General Motors, pfd	77½	75	75	—1
General Motors, 7 per cent. deb	83	81¼	81¼	+1¼
General Motors, 6 per cent. deb	71⅝	70	70	—1¾
Goodrich, B. F., Co	64½	59¾	61½	—2½
Goodrich, B. F., Co., pfd	92	91	91	—1
Gray & Davis	27⅝	24½	24½	—2¼
Hendee Manufacturing	41¼	35⅛	36	—2
Hupp Motor	19⅛	16½	17¼	—1⅝
International Harvester, new	129	122	124	—3¾
International Harvester, new, pfd	107½	107½	107½	—1¾
International Motors	54¾	50¼	•52½	—1
International Motors, 1st pfd	80	80	80	— ½
International Motors, 2nd pfd	66	63	63	—4
Kelly-Springfield Tire	112¾	104	107	—5
Kelly-Springfield Tire, 8% pfd	99½	98	98	—1½
Kelsey Wheel	72	63½	65½	—5¾
Kelsey Wheel, pfd	90	90	90	—6
Keystone Tire & Rubber	30½	26	26¾	—4½
Lee Rubber & Tire	30½	30	•30½	—1
Martin-Parry	23⅜	23⅜	23⅜	—2⅛
Maxwell Motors	25¾	25	25	—2¾
Maxwell Motors, c. of d	21	18½	18½	—3
Maxwell Motors, pfd	45½	43	43	—1
Maxwell Motors, pfd., c. of d	39	38	38	—3
Maxwell Motors, 2nd pfd	21	20	20	...
Mullins Body	40	37½	39	—1½
Pierce-Arrow	60¾	52⅜	55	—4⅝
Pierce-Arrow, pfd	98	97⅛	97⅛	— ¾
Republic Motor Truck	42½	41⅞	41⅞	+ ⅞
Saxon Motor	14	11	11⅞	—2¼
Stewart-Warner Speedometer	44⅛	40	40¼	—4½
Stromberg Carburetor	77½	65	68½	—7½
Studebaker Corp	81	69⅛	•71⅞	—8⅛
United States Rubber	100⅞	93¼	95½	—4¼
United States Rubber, 1st pfd	108⅞	108	108	— ⅞
United States Steel	97⅛	92½	94⅝	—2½
United States Steel, pfd	107¾	106⅜	106⅜	— ¾
Westinghouse Elec. Mfg	49	46⅜	47⅛	—1⅞
Westinghouse, 1st pfd	62⅞	62⅞	62⅞	—2⅛
White Motors	54½	50⅝	51⅝	—2⅝
Willys-Overland	19¾	17⅜	18⅜	—1⅝
Willys-Overland, pfd	80	79	79	—2⅞

•Extra dividend.

DIVIDENDS DECLARED.

Company	Rate	Period	Payable	Stock of Record
Chandler Motor	33 1/3%	Stock	June 10	June 1
Continental Motors	2%	Quart	May 15	May 7
Continental Motors, pfd.	1¾%	Quart	July 15	......
Essex Co	$3	Quart	June 1	May 13
Essex Co	$5	Extra	June 1	May 13
Franklin, H. H., Mfg	250%	Stock	......	......
Hupp Motor Car	1¾%	Quart	July 1	......
Lee Rubber & Tire	50 cts.	Quart	June 1	May 15
Paige-Detroit Motor	3%	Quart	May 1	Apr. 30
Paige-Detroit Motor	33 1/3%	Stock	......	May 10
Reo Motor Car	2½%	Quart	July 1	......
Studebaker Corp	1¾%	Extra	......	......
Studebaker Corp., pfd	1¾%	Extra	......	......
Timken-Detroit Axle	4%	Quart	May 15	May 10
Timken-Detroit Axle	2%	Extra	May 15	May 10
White Motors	$1	Quart	June 30	June 15
Willys Corp	$2	Quart	June 1	May 20

AKRON RUBBER PRICES.

	April 13 Bid	April 13 Asked	May 5 Bid	May 5 Asked
Amer. R. & T. com	88	91	83	85
Amazon Rubber	..	101	..	98
Firestone, com	183	188	160	165
Firestone, 6 per cent	95½	96½	96½	97
Firestone, 7 per cent. pfd	97	98	95	96
General, com	600	..	600	..
General, pfd	100	100½	99	..
B. F. Goodrich, com	69	71	64	66
B. F. Goodrich, pfd	94½	95½	91	93
Goodyear, com	385	395	350	360
Goodyear, 1st pfd	99½	100	98	99
India Rubber	185	200	185	200
Kelly-Springfield	131	133	108	112
Mason, com	30	..	30	..
Marathon, com	50	53	..	52
Miller, com	183	188	175	180
Mohawk, com	..	335	310	..
Portage, com	95	98	89	92
Portage, pfd	..	86	..	84
Republic, com	3½	4	3½	4
Republic, first pfd	..	65	..	65
Republic, second pfd	35	40	35	40
Rubber Products	110	125	..	120
Star Rubber, com	200	300	165	185
Swinehart, com	80	90	80	85
Swinehart, pfd	..	90	80	85
Phoenix Rubber, com	..	23	..	23
Phoenix Rubber, pfd	..	90	..	90
Standard Tire com	200	225	185	200
Standard Tire, pfd	..	..	..	95

CRUDE RUBBER, NEW YORK PRICES.

	Apr. 21 Cts. Per Lb.	May 5 Cts. Per Lb.
Para—Up-river fine	.42 @ —	.42 @ —
Up-river medium	.40½ @ —	.40½ @ —
Up-river coarse	.31½ @ —	.31½ @ —
Caucho ball	.33 @ —	.33 @ —
Islands fine	.42 @ —	.42 @ —
[illegible] coarse	.22 @ —	.21½ @ —
Cameta	.21½ @ —	.21½ @ —
Ceylon—Smoked sheets ribbed	.44½ @ —	.43½ @ —
Smoked sheets, plain	.23 @ —	.42 @.42½
Madeira, fine	.44 @ —	.44 @ —
Knapsack	— @ —	— @ —
First latex pale crepe	.45 @ —	.43½ @.44½
Amber crepe	Nominal	Nominal
Clean brown crepe	— @ —	— @ —
Rio Nunez string	— @ —	.55 @ —
Palembang	.13 @ —	.13 @ —
African	.33 @ —	.33 @ —
Prime Surinam sheets	— @ —	.84 @ —
Centrals—Corinto prime	.32 @.32½	.32 @.32½
Esmeralda, prime	.32 @.32½	.32 @.32½
Balata, sheets	Nominal	— @ —
Guayule, wet	.27 @ —	.27 @ —
Balata, block, Panama	.57 @ —	.57 @ —

INCREASES IN CAPITAL BY AUTOMOTIVE CONCERNS.

Little Rock, Ark.; Motor Car Supply Co. from $100,000 to $200,000.

New Haven, Conn.; Kelly Tire & Rubber Co., $1,000,000 to $5,000,000.

Indianapolis, Ind.; Majestic Tire & Rubber Co., $250,000 to $1,000,000.

Kokomo, Ind.; Haynes Automobile Co., $2,500,000 to $4,000,000.

Muncie, Ind.; Hoosier Auto Parts Co., $100,000 to $150,000.

Sullivan, Ind.; Mutual Truck Co., $500,000 to $5,000,000.

Iowa City, Ia.; Mississippi Valley Rubber Co., $250,000 to $2,000,000.

Detroit, Mich.; Columbia Motors Co., $500,000 to $6,000,000.

Grand Rapids, Mich.; $500,000 to $1,500,000.

Akron, O.; Acme Truck Sales Co., $35,000 to $125,000; Overland-Akron Motor Mart, $20,000 to $100,000.

Cincinnati, O.; United States Auto Accessories Co., $10,000 to $25,000.

Cleveland, O.; Simmons Motor Car Co., $50,000 to $100,000.

Dayton, O.; Dayton-Piqua Motor Transport Co., $10,000 to $25,000.

Greenville, O.; York Supply Co., $100,000 to $250,000.

Mansfield, O.; Buchan Auto Supply Co., $25,000 to $50,000.

Norwalk, O.; Norwalk Auto Parts Co., $100,000 to $150,000

Pittsburgh, Pa.; Motor Parts Corporation, $450,000 to $650,000.

Columbia Pyramid Brushes Fit All Cars

TO make the largest profits from brush sales, sell Columbia Pyramid Brushes. You need not lose a sale. Any and all motors and generators can be fitted. The brushes are ready to install.

Columbia Pyramid Brushes are the choice of most manufacturers of starting and lighting sets. They put these brushes on at the factories.

Attractive Display Cases afford continuous advertising right in your own place. The cases are furnished with various assortments arranged to meet the local car requirements. They protect the brushes. They make stock keeping easy. Goods well displayed are half sold. Take advantage of this selling help.

Write your distributor today

N C C

NATIONAL CARBON COMPANY
Incorporated
Cleveland, Ohio San Francisco, Calif.

Canadian National Carbon Co., Limited, Toronto, Canada

T420

Trade and Garage Activities in Southwestern States

Bisbee, Ariz.; Robert Bixby of Nogales is to establish a vulcanzing plant here in connection with F. W. Wood of the Nogales Vulcanizing Co.

Ashdown, Ark.; James McKim is to open a garage in the building of the Ashdown Motor Co.

Bentonville, Ark.; Messrs. Newson and Allred, proprietors of the Tire Service Station of Rogers, are to open a tire service station in Bentonville on the south side of the square.

Highfill, Ark.; Lee Edwards has purchased the Glass garage and will install new equipment.

Abilene, Kan.; The Rodman Motor Co. has purchased the cement building south of its headquarters on North Bucketo street and aso a piece of land near the Parker factory on Southeast Second street on which it will erect a warehouse.

Argentine, Kan.; The Argentine Motor Service Co. has purchased a 71-foot lot west of the Argentine State bank on which it will erect a building. The Argentine company will retain its present headquarters as a service station and sales room for used cars.

Arkansas City, Kan.; E. E. Wagner has opened a tire shop at 109 East Adams avenue.

Arkansas City, Kan.; F. W. Hockaday and Lloyd Finley of Wichita are to enlarge the Hockaday Auto Supply Co.'s automobile accessory business.

Atchison, Kan.; H. L. Strout has moved his battery and electrical service station to his new quarters across the street in the new Conlon building, where he will have floor space of 30 by 90 feet.

Belleville, Kan.; Ed. Holloway has opened an automobile repair shop in the Charles Larson building, one block east and north of the square.

Blue Rapids, Kan.; The Hunter Brothers Tire Shop has purchased the vulcanizing and tire shop of the Blake Tire Co.

Burlingame, Kan.; The City Garage is now open for business with Fred V. Greane as manager.

Burr Oak, Kan.; Harry Zimmerman has taken charge of the Standard Oil company's branch here.

Douglas, Kan.; Fred Wakefield has secured the agency in the south section of the county for Chverolet cars and has leased the Palmer building for a sales room in conjunction with D. A. Mitchell, dealer in Dodge Brothers cars.

El Dorado, Kan.; John Jones and Charles Lawrence have purchased the Red Ball Garage, 117 East First avenue.

Elmdale, Kan.; Foster Shelley has sold his garage to Willard Hamm.

Emporia, Kan.; J. R. McClaskey of the Overland Sales Co. and Roy Read have purchased two lots of land on Merchant street south of the Kynaston hotel on which the Overland company is planning to erect an automobile sales building and warehouse as soon as conditions become more settled in the building trades.

Junction City, Kan.; E. A. Keitzman of Alta Vista, distributor of Paige cars, has leased the garage building on East Seventh street, just vacated by the Gretner & Son Ford agency, and will at once open a local branch for the sale of the Paige line, with Ed Eulert in charge of the service department and Frank Abbott of the sales room.

Junction City, Kan.; Thompson's Garage and Battery station has opened for business at 719 North Jefferson street.

Larned, Kan.; Homer Renfro has leased the repair shop of the Santa Fe Garage (M. L. Standish Garage).

Larned, Kan.; The Standard Oil Co. is to begin at once the construction of a filling station, 16 by 24 feet, on lots recently purchased at Fifth and Main streets.

Manhattan, Kan.; J. C. Barber has purchased the Beverly property, 426 Houston street, consisting of two lots and a house. On one lot Mr. Barber plans to build a one-story garage in which he will conduct automobile repairing and livery.

Medicine Lodge, Kan.; The new Dodge Garage is nearly ready for occupancy. W. C. Shepherd will be in charge.

Moline, Kan.; Harry E. Long of the DeBruler-Long Motor Co. has bought the interests of his partner, F. C. DeBruler, and will conduct the business under the name of Long Motor Co.

Neosho Falls, Kan.; A. F. Manske is putting up a building 50 by 80 feet for an automobile repair shop.

Oldsburg, Kan.; Fred Miller has formed a partnership, with Armstrong & Humfield of Clay Center to conduct a garage The livery barn is being remodeled and up-to-date machinery for repairs, etc., will be installed.

Parsons, Kan.; O. B. Daken has taken over the Studebaker agency with headquarters at 1722 Broadway.

Parsons, Kan.; The Oldsmobile Sales Co has been formed at 1816 Broadway and has taken the agency for Oldsmobile cars, with B. C. Holman as manager.

Pittsburg, Kan.; H. E. French has purchased the tire repair shop of the Auto Supply Co, northeast corner of Third and Locust streets. He will handle a line of Pennsylvania Vacuum Cup and Portage tires.

Russell, Kan.; James E. Lynn of St Joseph, Mo., is located in the Tisdale Garage, Russell, where he will sell Maxwell and Chalmers cars and Maxwell trucks.

Sedan, Kan.; Albert Loyd has commenced excavation for a garage to be built on the site of the old livery barn.

Smith Center, Kan.; Tom Robertson is to build a large addition to the Rock Island Highway Garage.

Smith Center, Kan.; George B. Hahn of Clay Center and Roy Attwood of Smith Center are to open a garage in the laundry building north of the Uhl office, to be known as the Hahn-Attwood Garage. They will distribute Nash cars and trucks and John Deere tractors and plows.

Smith Center, Kan.; Milo Dimond has sold the Buick agency to Tom Robertson of the Rock Island Highway Garage.

Solomon, Kan.; R. J. Havener has sold his garage to P. E. Meister and P. J. Ritter of Junction City.

Solomon, Kan.; E. S. Dunnett has purchased the auto supply business of A. W. Lee and will remodel and enlarge the store.

Topeka, Kan.; Work has commenced on a $70,000 garage to be erected by the Page Milling Co. at 912-914 Kansas avenue. The building will be of reinforced concrete, three stories high, 100 feet long, with a frontage of 50 feet on Kansas avenue.

Troy, Kan.; R. G. Larzelere has started work on the enlargement of his garage by an addition of 30 feet on the north side to extend back 140 feet, with basement under the entire building. The addition will be used exclusively for a repair shop, the present garage being retained for the storage of cars.

Albany, Mo.; J. T. Peery has sold the repair department of his garage and will devote his entire time to the sale of Scripps-Booth and Dort automobiles and accessories and tires.

Aurora, Mo.; Hood Brothers has sold its new garage on Main street to Roy Robinson.

Cameron, Mo.; Harry Lytle of Amity has bought the Wallace Garage at Cameron.

Carthage, Mo.; Charles F. Owen of Lee's Summit has bought the Phillips Tire Co., located in the Logan building, Fourth and Howard streets, and will engage in the wholesale and retail automobile tire supply business. Associated with Mr. Owen in this enterprise are his son, George Owen, and C. M. O'Connell. It is their plan to establish a chain of stores throughout the district, having headquarters in Carthage.

Galena, Mo.; Work is progressing rapidly on the Barnes Brothers Garage.

Gowena, Mo.; Price Weakley, who purchased the Starks Garage some time ago and later the Poage Brothers livery barn, has started on the work of remodeling the barn for a garage.

Houston, Mo.; Howell, Howell & Womack is building a large garage.

Kansas City, Mo.; Boden & Hentschel, proprietor of the new garage at 3616 Indiana avenue, has secured the agency for Willys-Overland cars.

Kansas City, Mo.; The Southwest Sales Co., headed by E. D. Nelson, formerly with the Kansas City Auto Supply Co., has bought the business of the Weldon Sales Co., local distributor of Oildag and Gredag lubricants. Mr. Weldon will retain a financial interest in the Southwest Sales Co., but is directing his personal efforts to the sale of axles and gears manufactured by the Replacement Parts Co., which concern has a contract covering the entire territory west of the Mississippi river.

Kansas City, Mo.; The firm of Smith & Rukes, expert repairer on Cadillac and Buick cars, has moved from McGee street, near 15th, further down McGee street to No. 2326, near the corner of 24th street.

Kansas City, Mo.; The Butler Motor Co. is moving into its new building on Walnut and Grand streets, between 26th and 27th streets.

Kirkville, Mo.; Fred Still and Harry Jones have purchased the garage owned by Bret Stephenson and will add one or more stories and when completed this will give the Auto Sales Co. the largest floor space of any automobile establishment in this section of the state.

Marshall, Mo.; Russell Nicholas has moved his garage from the Star mill to a building on the south side of West North street which he is equipping with modern automobile repair tools and appliances.

Mayview, Mo.; The Bertson & Roack Garage has been purchased by Carl Brothers.

Peculiar, Mo.; The Farmers' Garage has been sold to Thomas Hill and Charles Trog. Mr. Hill has been in charge of the business since its inception. The new concern will purchase new equipment and supplies.

Rolla, Mo.; R. T. Montgomery has sold his interests in the Ozark Garage Co. to George W. Castleman, Robert Castleman and Rowe E. Carney.

Stanberry, Mo.; Rose L. Wharton has bought the garage of Mr. Murry on Park street and will make extensive improvements.

Bigheart, Okla.; Vandervort & Crawford has opened a vulcanizing shop in the building opposite the Times office.

Chickasha, Okla.; The Brawley Motor Co. has been formed, headed by Sidney Brawley, which will represent the Chandler and Buick lines. It will be located in the building opposite the Early hotel, recently vacated by the Buick agency, which has moved into its new quarters opposite the postoffice. Earl Barton of Barton Brothers is also interested in the Brawley Motor Co., which will operate a garage and service station.

Deer Creek, Okla.; The Motor Sales Co.'s garage is nearly ready for occupancy. The new building will afford 15 by 40 feet of office space, a 30 by 40-foot show room. 50 by 40 for the mechanical department and 50 by 50 for storage.

Guyman, Okla.; J. W. Jordon is soon to commence the erection of a large garage and supply store.

Idabel, Okla.; J. B. Wyrick is constructing a building to house his rapidly growing automobile business.

Pawhuska, Okla.; The J. R. Laws Ford Sales & Service Co. is to erect a garage at the corner of Leahy street and the Midland Valley right of way just south of the new home of the Hudson-Osage Motor Co. The new building will be 140 feet square and will afford 19,600 feet of floor space. The contractor is the Love & Martin Construction Co., Oklahoma City, and the cost will be approximately $60,000.

Tires & Tire News

Smith Superintendent Syracuse Rubber

One of the notable instances of success among young men in the tire and rubber industry is that of K. D. Smith, the newly appointed factory superintendent of the Syracuse Rubber Co., Inc., Syracuse, N. Y. Mr. Smith was formerly with the Miller Rubber Co., Akron, O., and has had 11 years' experience in both the chemical and manufacturing end of the industry. From 1909 to 1915 he was engaged in experimental, analytical and research work for rubber corporations of the Akron group. In 1916 he went to the Miller company as a compounding chemist, where he remained until November, 1919, when he joined the Syracuse Rubber Co. Under his supervision production at the Syra-Cord tire plant has been increased from 100 to 200 to 700 a day, and by fall Mr. Smith states, it is planned to again double this capacity.

GOODRICH TIRE REPAIR SCHOOL.

Every 30 days a new contingent of men from various trades arrive in Akron. O., to attend the tire school of the B. F. Goodrich Rubber Co. at its factory. Classes are started at definite periods, the next opening date being May 24. Approved factory methods of repairing fabric and cord tires and tubes are learned by actual service with tools and apparatus at the bench, and the course includes lectures on advertising, accounting and every subject the prospective tire merchant or repairer will need when he starts his own business.

Complete information may be obtained by addressing the Goodrich Tire Repair School, Akron, O., or any of the Goodrich branches in the principal cities.

BURDICK TIRE CO. TO INCREASE PRODUCTION.

The Burdick Tire & Rubber Co., Noblesville, Ind., hopes to have its new plant ready for occupancy by the first of June and, by the last of July, to be turning out 250 casings and 500 inner tubes a day. The new unit will be one story, of brick, 15 by 120 feet. By the end of the present year the company plans to increase its production to capacity, which will be 200 tires and 5000 inner tubes daily, and 450 people will be employed.

GOODYEAR AERIAL FIELD AT LOS ANGELES.

To stimulate public interest in aerial transportation, the Goodyear Tire & Rubber Co. of California, cooperating with the city of Los Angeles, has established a municipal aviation field at its new factory now under construction in that city. It comprises over 80 acres and has four hangars for the accommodation of airplanes and a fifth is to be added in the course of the next month.

It is the intention of the Los Angeles officials to have this coast, Wingfoot field, open for use by any planes wishing to land to discharge or take on passengers, or for refuelling. It is three-quarters of a mile long and half a mile wide, entirely level and composed of hard ground, allowing landings to be made anywhere. To mark the field so that it may be easily distinguished by aviators there will be a stretch of fine turf, 400 feet wide, running diagonally across it. Painted stripes on one of the 130-foot smoke stacks of the Goodyear factory will also serve as further guide to fliers.

K. D. Smith, Factory Superintendent, Syracuse Rubber Co., Syracuse, N. Y.

Growth of Akron as Rubber Center

Recent reports from the United States Census Bureau give justice to the claims of the residents of Akron, O., that it is the fastest growing, most remarkable city in America. Ten years ago it had a population of 69,067; according to the latest census returns, it now has 208,435, an increase of 201.8 per cent., which is considerably more than that shown by any other city of 50,000 inhabitants or more.

The mushroom growth of Akron started about 12 years ago, just about the time the rubber industry passed out of the chrysalis stage and began to show certain signs of becoming what it is today—one of the foremost industries of the country. And it is averred that all that Akron is today it owes to rubber. The first rubber factory in Akron is stated to have been founded in 1870, just 50 years ago, by Dr. B. F. Goodrich, a resident of New York. He started with 35 employees in a building 40 by 100 feet. Today the B. F. Goodrich Rubber Co. has 28,000 employees and 62 buildings with hundreds of acres of floor space.

The rubber industry received its first pronounced impetus when the bicycle was invented and rubber tires were first needed. The tremendous growth did not come, however, until automobiles were invented. Factories were expanded and thousands of new workers added to meet the demand for automobile tires. The demand has never been fully met and today the rubber companies are growing as fast or faster than they ever grew before.

In 1910 the rubber companies had 13,631 employees and produced goods valued at $40,000,000. Last year the employees numbered 72,282 and the production was valued at $427,796,000. During the same 10-year period the annual tire production increased from 4,000,000 to 20,000,000. At present the Akron rubber companies have about 80,000 employees and are manufacturing tires at the clip of a tire a second.

Word has been received of the death of C. R. Hatcher, general southern representative for Portage tires in Raleigh, N. C. He had been connected with the Portage Co. for three years.

Rudisell Heads Overland Tire Co.

Among the tire manufacturing companies that have just gone into production is the recently organized Overland Tire & Rubber Co., Omaha, Neb. This concern is headed by Fred C. Rudisell, who is known throughout the western territory as a tire salesman of superior ability, his official title being general manager, secretary and treasurer.

Ten years ago Mr. Rudisell started in the tire business as a salesman for the Gustin Bacon Manufacturing Co., Kansas City, Mo., distributor of Diamond tires in that territory. Shortly afterwards he was appointed manager of the Diamond branch in Omaha, Neb. Seven years ago he left the Diamond company to take charge of the Firestone interests in Omaha as branch manager, with territory embracing the states of Nebraska. Colorado, Wyoming, southern South Dakota and western Iowa. While in charge of Firestone affairs in Omaha, that territory rose from a place 11th in volume of Firestone sales and ninth in cost of operation, until five years later it was first in volume of sales, first in economy and lowest in percentage of operating cost, and the amount of business during his last year with Firestone was $2,000,000.

When Mr. Rudisell considered embarking in the tire manufacturing business on a personal basis, the formation of the Overland Tire & Rubber Co. offered the desired opportunity. As an example of the confidence placed in Mr. Rudisell by the tire trade in general it may be cited that several of the new company's most important distribution centers were contracted for even before an Overland tire had been seen by the distributors. The company today is working at full capacity with plans agreed upon for a largely increased production next year.

Since August, 1914. hourly earnings at the Goodyear plant at Akron. O., have increased at the rate of 119 per cent.

W. R. McCarthy, Sales Manager, Standard Tire Co., Willoughby, O.

Fred C. Rudisell, General Manager, Secretary and Treasurer, Overland Tire & Rubber Co., Omaha, Neb.

NEW SALES MANAGER FOR STANDARD TIRE.

W. R. McCarthy has recently assumed the duties of sales manager for the Standard Tire Co. of Willoughby, O., maker of "Tiger-Foot" tires. Mr. McCarthy has been connected for a number of years as branch manager with such well known tire concerns as the Firestone Tire & Rubber, Rubber Products and Portage Rubber companies. His activities have always been confined to the sales department, in which he has gained an enviable reputation as an organizer and executive.

The Standard Tire Co. is erecting buildings to take care of its increased business and the total sales for 1920 bid fair to exceed the allotted quota for that period.

SYRA-CORD TIRES SURMOUNT FREIGHT EMBARGO.

The Syracuse Rubber Co., Syracuse, N. Y., during the recent freight embargo, used its test car, a Pierce-Arrow "66" for a double purpose, by employing it for the delivery of Syra-Cord tires to dealers to such points as Altoona, Pa.; Cincinnati and Cleveland, O.; Chicago and a number of other cities and towns in the middle west, and at the same time the tires on the machine were given the severest of tests. The tires with which the Pierce-Arrow machine is equipped have now traveled 8000 miles and show little signs of wear. It is also interesting to note that, although 36 by 5½-inch tires are recommended for this model of car, the tires were 35 by five-inch, to make the test more severe.

REMOVAL OF STANWOOD RUBBER.

The executive offices of the Stanwood Rubber Co. have been moved from 9 East 40th street to 6 East 39th street, New York City.

Portage Rubber Co.'s New House Organ

The initial number of the Portager, a very attractive house organ, to be issued monthly under the editorship of Clyde S. Thompson, by the Portage Tire & Rubber Co., Akron, O., bespeaks a warm welcome among all Portage dealers, distributors and branches for whose benefit and service it is primarily intended. Its scope and purpose are clearly outlined in the salutatory and the publication promises to be somewhat unique in its field both in the treatment of subjects and matter of make-up.

The "Portage Creed" by John W. Maguire, vice president and general manager, on the last cover page, makes a fitting climax to its contents, as follows:

> "To make a tire is not enough; to wrap it and pack it and ship it is not enough; to sell it to the dealer is not enough. We must all cooperate so that the tire will be the best, the handling the best, the advertising the best, the salesmanship the best and our customers the best satisfied users of tires in motordom."

NEW FIRESTONE BRANCHES.

The Firestone Tire & Rubber Co., Akron, O., has opened branches, for the distribution of its product, at Duluth, Minn.; Portland, Me., and Denver, Col., bringing the total number of Firestone branches up to 65 in the United States, which serve more than 47,000 dealers.

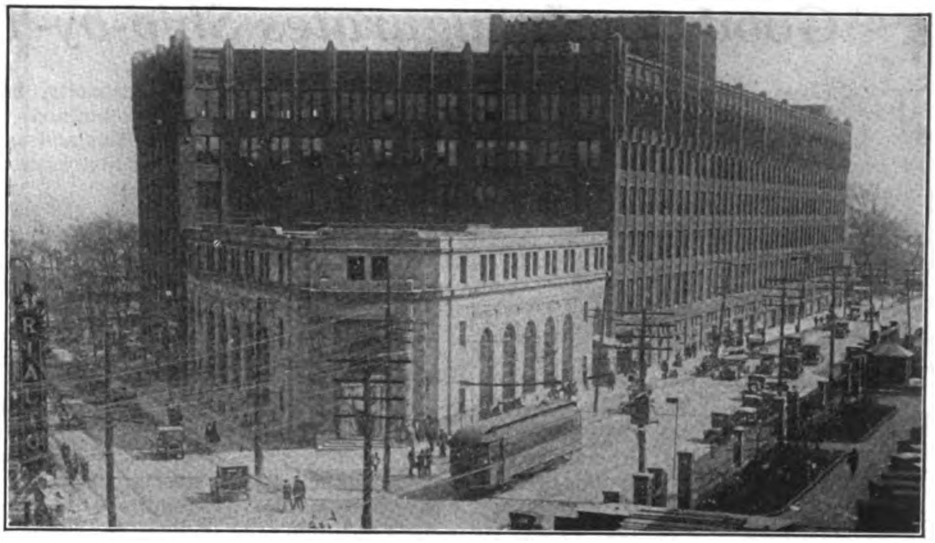
The company's sales forecast for the present year places the value of its production for that period at $150,000,000.

HOAGLAND WITH MALAY RUBBER.

The Malay Rubber Co., the new distributing tire company of Cleveland, has retained the services of E. M. Hoagland, formerly western district manager of the Amazon Rubber Co.

E. M. Hoagland, Malay Rubber Co., Cleveland, O.

Beautiful Goodyear Hall at Akron, O.



Goodyear Hall, Headquarters of New Industrial University and Recreational Activities of Goodyear Tire & Rubber Co. at Akron, O.

Conceded to be perhaps the finest industrial university and recreational institution in the world, Goodyear Hall represents one of the most pretentious buildings ever erected by an industrial concern for the welfare of its employees. Complete in every detail, the building includes an auditorium of handsome appointments and with a seating capacity of 1686, the largest stage and theater in Akron and one of the largest in Ohio; a gymnasium which ranks in completeness of equipment and size with the greatest college indoor athletic stadiums in the United States, bowling alleys, target and rifle ranges, bath rooms and lavatories for Goodyear university, a cafeteria capable of accommodating 8000 daily. And dormitory rooms for both men and women, in addition to recreational rooms and the spacious library.

In the basement are locker rooms with 5500 lockers, 12 bowling alleys, six rifle ranges, a large clothes checking room and barber shop. Wide corridors bisect the main floor longitudinally, separating the 12 store rooms and the auditorium and gymnasium. The auditorium is regarded by architectural experts and interior decorators as one of the most elegantly appointed auditoriums in the state. The main floor and suspended balcony will seat 1686. The stage is 40 feet across, with double apertures, so as to permit its use by both the main auditorium and gymnasium. The gymnasium will seat 5000 people. An indirect lighting system is used throughout the auditorium with the exception of hanging candle fixtures casting a mellow glow upon mural panels arranged in attractive manner on the side wall. French Renaissance decoration scheme is used.

The immense gymnasium, with gallery, has a floor space of 172 by 100 feet, large enough to permit five basketball games simultaneously.

On the second floor, in addition to the auditorium balcony and emporium and balcony to the gymnasium, are tool rooms, writing and music rooms, a spacious and well equipped library and a large community room for men. In the triangular space near the intersection of Goodyear avenue and East Market street are located dormitories for 300 men.

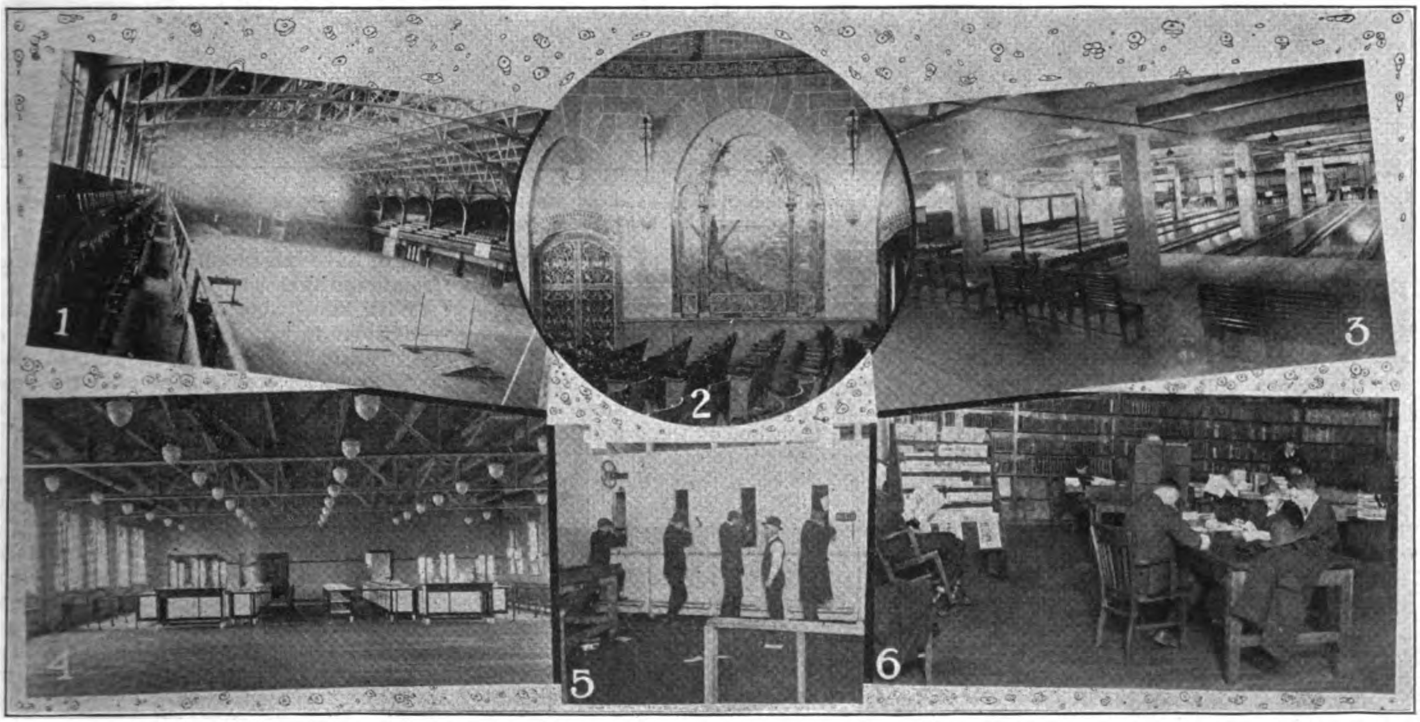
On the third floor are located the legislative chambers of the House of Representatives and Senate of the Goodyear Industrial Republic.

The remainder of the same floor is devoted to women's recreational rooms, including a large and airy assembly room, planned for sewing and domestic science classes. This floor also includes dormitory provisions for women.

The Goodyear Industrial university will occupy the entire fourth floor. It includes accommodations to permit an enrollment of 5500, the 65 class rooms and studies being augmented by fully equipped laboratories on the fourth and fifth floors for various courses of study. Near the front of the building a large student's assembly room also is provided

An industrial cafeteria, equipped with every up-to-date culinary appliance, will occupy the second floor.

On the seventh floor are well equipped picture departments.



Interior Views of Goodyear Hall: 1—Gymnasium, One of Largest in Country; Will Seat 5000; Floor Permits Playing of Five Games of Basket Ball Simultaneously. 2—One of Two Murals in Auditorium; Painting Is of the Bay of Naples. 3—Bowling Alleys, 12 in Number. 4—Cafeteria, One of the Largest in the Country; Will Accommodate 2000 an Hour, and Is Equipped with Conveyors for Dirty Dishes and Automatic Dish Washing and Drying Machines. 5—Six Rifle Ranges in Basement. 6—Goodyear Library for Employees.

Goodyear Inaugurates Ship-by-Truck Movement

THE resourcefulness of the Goodyear Tire & Rubber Co., Akron, O., in the organization and dispatching of truck trains for the transportation of fabric and other materials overland from the East during the railroad labor troubles and consequent freight embargo has been a matter of general interest.

The Goodyear plant employs about 33,000 workers. The output of tires is upwards of 30,000 daily, but this is not sufficient to meet the enormous demand, and if the works should be closed for even a brief period the production loss would be reflected in every branch and accessory. Obviously the main object was to maintain the production of tires, the shipping problem being of secondary consideration, for even the utmost efforts of the company could not make general distribution possible or practicable until normal railroad operating conditions could be restored.

The Section of the First Train Loaded at Goodyear, Conn., Composed of Mack Trucks Chartered in New York City, and Driven 175 Miles to Be Freighted, Awaiting the Last Units in the Highway Near the Mill.

In a number of towns and cities in New England are located mills which produce cotton fabric used in the manufacture of Goodyear cord and fabric tires. Among the prominent plants are the Goodyear mill at Goodyear, Conn., formerly Williamsville; the Connecticut mills at Danielson, Conn.; the Jenckes Spinning Co. at Pawtucket, R. I.; the Naushon Weaving Co. and the Passaic cotton mills at New Bedford, and the Ninigret mills and the Westerly Textile Co. at Westerly, R. I. Some of these mills were working constantly to keep up production to the delivery schedule. Production, therefore, was not threatened, but deliveries were delayed on account of embargoes outside of New England.

From the viewpoint of Goodyear officials this was the greatest industrial emergency they had ever faced. The Goodyear plants at Akron must have the fabric to continue operating; the mills were turning it out to capacity, but transportation could not be obtained.

Between the mills of New England and the Goodyear plant were the highways of the nation, open to all, unobstructed, and traffic over them could move to the limitation of the vehicles. At the beginning of the war the Goodyear company had inaugurated a truck service, hauling fabric from Goodyear, Conn., to Akron, and shipping tires from Akron to various points between that city and Boston. This had been continued during the war and then reduced as the railroad transportation had improved.

The officials of the company saw that if production of tires was to continue uninterrupted, the resumption of truck transportation was imperative, but on a scale more extensive than that adopted during the war, and it was decided to undertake what was to be the largest emergency freightage enterprise ever engaged in by an individual concern, and which, from the results obtained, will no doubt have material bearing on the future of long distance highway haulage in this country.

Decision to haul fabric from New England to Akron was, however, by no means a solution of the condition. The company did not own a sufficient number of trucks to carry the tonnage required. Vehicles must be obtained. There was no certain source of supply. To assemble them in the vicinity of Akron and send them East would require time, and time was extremely valuable, to say nothing of the cost. To obviate this delay the trucks must be chartered in some of the eastern cities. There was no organization that could be depended upon to undertake such a contract. The Goodyear company must develop its organization and obtain equipment, and quick work was necessary.

When decision was reached to do its own freightage the project was referred to three departments, transportation, fabric and publicity, and the heads of these were summoned and instructed to leave for the East at once and ship Goodyear fabric as quickly as possible. The transportation department was represented by C. W. Cockrell, who normally would deal with railroads, and by M. D. Scott, who has directed the operation of the Goodyear Boston-Akron truck freight service; the publicity by Carl H. Stubig, and the fabric department by the representative stationed in New England, who divides his time between the mills.

Engaging trucks and organizing the trains was assigned to M. D. Scott, who is known as the Goodyear transportation engineer. Mr. Cockrell was to make the contracts and look after the detail of shopping and distribute the trucks to the different mills after conference with the fabric department's representative, who was to have information of the volume of freightage that was available.

With knowledge of the roads and the conditions in which the truck trains must be operated, Mr. Scott determined that each group of trucks sent over the road should be led by a pilot, who would be practically in charge, and who would necessarily have a car.

Assembling Trucks Quickly Imperative.

As there was no knowledge of trucking contractors in New England or the trucks that might be available, decision was reached to hire a considerable number of machines in New York and send them over the road to Providence, rather than lose the time that might be required to obtain them nearer the mills. There was every reason to make the smallest number of contracts for trucks, and good ground to assume that contractors of fleets with standardized vehicles would be better able to engage in such haulage than owners of one or two trucks, whose

A Group of the Houses Erected at Goodyear Expressly for Employees of the Goodyear Mill and Rented for Nominal Weekly Payments.

experience was limited to comparatively short distances. Contracts were made for three groups of machines. One was with the Pierce-Arrow Trucking Co., Brooklyn. Another was with Callan Bros., and a third was with the Forwarding Auto Trucking Co.

All Trucks Five-Ton Units.

The trucks accepted for the work were nothing but five-ton units.

As each truck accepted was loaded with approximately 10,000 pounds of fabric, worth about $2.30 a pound, having a gross valuation of from $23,000 to $25,000, and this was insured against fire, damage of different kinds, theft, etc., much care was taken in covering and protecting the bales against every probable source of danger.

The Goodyear truck train organizers made headquarters at Providence, where a Goodyear branch is located, and practically in the center of the group of mills.

Between Tuesday morning, April 13, and the following Saturday afternoon the Goodyear traffic department started five truck trains, all five-ton machines, each loaded to capacity and carrying an aggregate of 800,000 pounds of tire fabric, valued at $2.30 a pound. Assuming 10,000 pounds of fabric to a load, which is as near an estimate as is practicable, the total shipments had a valuation of about $1,840,000, which far exceeds the value of any truck fleet freightage ever made for any concern.

Planned to Carry Return Loads.

It was planned to have the trucks carry capacity return freights of rubber products from the factory at Akron, such as shoe soles and heels and rubber mechanical goods for distribution in some of the eastern commercial centers in order to cut down as much as possible the cost of transportation of the fabric from the East. But there was no probability that they would bring full loads of tires, for these goods are too bulky for the average truck body.

The total number of trucks loaded, making up the first five trains, was 80; 23 at Pawtucket, 20 at Goodyear, 20 at Danielson, 12 at New Bedford and five at Westerly.

The progress of the trucks was followed very carefully by the traffic department of the Goodyear company, each pilot making report by telephone or night letter to Providence, and later on to the Goodyear factory at Akron, giving the mileage and the condition of the trucks, the weather, mishaps and the prospects.

The route chosen was the Lincoln highway from New York, and the best known roads and those that were considered to be in the best condition were used for the connecting points.

The first fleet was absent 24 days from the time the start was made from New England to the date of the return, and the mileage reported for the round trip was 1610 miles. However, owing to condition of the roads, which necessitated a number of detours, and various mishaps to the vehicles en route, serious delays were found inevitable, as it was necessary for all the components of each fleet to proceed as a unit under the direction of a pilot experienced in service over the regular Goodyear Akron-Boston express route.

GOODYEAR PROTECTS EMPLOYEES AGAINST PROFITEERS.

The Goodyear Tire & Rubber Co., Akron, O., believes in protecting its 31,000 employees in Akron as far as possible from profiteers; so, through a committee of its Industrial Assembly, food has been bought for distribution at cost prices. Three car loads of sugar and one of ham were bought recently, and during the winter all kinds of food was resold at reasonable prices and the activities in this field extended even to made-to-measure clothing.

GOODRICH MAINTAINS MODEL POLICE FORCE.

A police force as large as that maintained by the average city of 50,000 inhabitants is employed by the B. F. Goodrich Co., Akron, O., to safeguard the interests of the company and its 25,000 employees. The system of surveillance that has been established is very comprehensive and efficient and, although the company's buildings cover more than 100 acres, every nook and corner of each building is visited hourly throughout the day and night. The force is always on hand to quell disturbances or recover stolen property. Detection of fires is also part of the patrolman's duties.

INTERCONTINENTAL REPORT.

The report of the Intercontinental Rubber Co. for 1919 shows net profits, after deducting all charges and federal taxes of $101,111, equal to 35 cents a share eaned on the $29,031,000 capital. The surplus account for the year shows total profits and income from investments amounting to $215,237. The profit and loss surplus at the close of the year was $4,446,079.

M. J. O'Connor, who has been identified with the McLean Tire & Rubber Co., E. Liverpool, O., since its organization, 14 years ago, has been appointed general sales representative in New England, with headquarters in Boston.

A General View of the Tire Fabric Mill at Goodyear, Conn., Formerly Williamsville, in the Town of Killingly, One of the Sources of Material Supply Operated by the Goodyear Tire & Rubber Co.

Up-to-Date Methods of Vulcanization and Tire and Tube Suggestions

(From Goodyear News.)

TRUCK SIZE TUBES NEED LONGER CURE.

The method of repairing Goodyear truck tire tubes is very much the same as that followed in the repair of automobile size tubes.

In order to make a proper repair, vulcanizers must increase the length of the cure and instead of using G-180 as a tube stock, G-170 should be used.

In repairing a break or puncture the opening should be kept as small as possible and should be beveled so that the bottom of the hole will be smaller than the top. This should next be buffed carefully, making sure that the inside of the tube is roughened with a rat-tail file for at least a distance of 1½ inches around the hole.

C-25 cement should then be used, applying one fairly heavy coat to the side of the hole and also to the buffed surface on the inside of the tube.

G-190, 5/64 inch gauge should then be inserted through the break or puncture by means of a pair of sharp-nose pliers. Care should be taken that this patch is cut large enough so that it will overlap the break by at least one inch.

The stock should be washed well with benzine and slipped through the hole before it is dried completely. When this is done and before stitching the patch down, great care should be taken to hold the G-190 away from the cemented surface inside the tube until the benzine has evaporated completely. It is essential that the uncured side of the G-190 be placed against the cement on the inside of the tube.

After this the hole should be filled with small strips of G-170 and stitched. The repair should be built up so that it is slightly higher than the surface of the tube. When this is done it can be placed on a hot plate with a piece of holland over the repair and cured.

It has been found that in curing repairs on six-inch and seven-inch truck tire tubes, best results can be secured by curing the repair for 25 minutes at 60 pounds steam pressure, while repairs on eight-inch, nine-inch and 10-inch tubes should be cured 30 minutes at 60 pounds.

NEW HOLE FOR VALVE STEM.

When repairing a torn or broken valve hole the valve stem should be pressed back into the tube and a new hole cut in the tube somewhat smaller than the valve stem.

The surface around the hole in the tube should then be buffed and a Goodyear valve patch applied. In applying the valve patch, C-25 cement can be used or it may be put on with a small amount of C-35 Self-Cure or Acid Air cement.

The old valve hole should be repaired the same as in repairing punctures or cuts.

When it is found necessary to put in a new valve stem, a hole should be cut in the tube large enough to get the old valve out and to insert the new one.

The hole should be cut on a level and repaired as described. A repair man should never try to remove the valve through the regular valve hole and insert a new one, as there is danger of tearing the valve patch and ruining the tube.

STEAM SHOULD NOT BE USED IN AIR BAGS.

One repair man has asked if it would be all right to use steam instead of air pressure in bags used for sectional repairs to eliminate the necessity of curing on an inside vulcanizer.

It is not advisable to use an ordinary air bag for this purpose for the reason that it is not constructed for use as a steam container. As it has no outlet, condensation would result and water would form in the bag. Never apply the section to an inside patch vulcanizer to finish the cure. The time specified gives 40 pounds steam pressure with Goodyear repair material without the aid of the inside patch vulcanizer.

CASINGS SHOULD BE DRY BEFORE REPAIRS ARE BEGUN.

Certain porous conditions resulting from moisture in the casing to be repaired can often be traced to numerous tread cuts through which water has penetrated and soaked the fabric of the carcass. Before repairing, casings should be carefully inspected for tread cuts and consequent moisture in the carcass and allowed sufficient time to dry thoroughly. If there is moisture in the casing when it is built up the heat applied in curing will cause steam to form between the plies and the result will be bubbles and an imperfect cure.

DON'T DELAY CURES.

Should repair jobs hang 10 days after being built up? asks a northern repair man. No; there are two good reasons why repairs should not be allowed to stand or hang longer than 24 hours. Hanging without pressure will probably result first in loose spots upon which bloom will collect and, secondly, reduce the adhesion of the repaired parts when the cure is applied. The outside repair material toughens with age and will prevent a smooth repair.

BUFF OFF AT SLANT.

In cutting off rubber for spots on a casing it is well to remember that the buffing should be done at a slant, not perfectly straight, to insure the best results.

TO PREVENT RUSTY RIMS FROM DAMAGING CASINGS.

Iron rust eats into canvas very quickly and for this reason the rims should be examined and cleaned a few times each season. Assuming that the rim is clean, as it should be when the tire is attached, it may be kept so indefinitely if proper attention is given to keep the rims straight and if the locking nut on the valve stem is drawn tight so that no water can work in through the hole in the rim.

If, on inspection, the rim is found to be rusty, even though merely in small spots, the rust should be sand papered off and the rim given a coat of graphite or thin shellac. Ordinarily stove polish, which contains graphite, is also excellent for preventing rust and making it easy to remove a tire in case of an emergency.

Any dent or bend in a rim should be corrected as soon as discovered, for if the bend is inward a great strain is brought on the bend and side of the casing. If the bend happens to be outward there is a fine chance for water, oil and dirt to work in between tire and rim.

FABRIC KNIFE FROM RAZOR BLADES.

A repair man writes that an excellent fabric knife can be made from a safety razor blade. The handle can be made of wood, into which a piece of iron or steel block has been inserted with two holes bored. This blade can be gauged to any thickness of stock and, being very thin, will handle neat trimming jobs.

POROUS CONDITIONS AFTER CURING.

One repair man has complained several times about the porous conditions of repair jobs after curing. Upon investigation the fault was found to be damaged bead molds. The bead molds had been battered and bent until they would no longer fit the cavity snugly and would not slide forward. The sectional mold being tapered, the beads wedged before being placed into position. The clinch on the bead held the casing firmly and did not allow it to rest on the bottom mold of the cavity.

STEAM IN SECTIONAL MOLDS.

In the use of a sectional mold in which air bags are employed in the curing of pneumatic truck casings, the question has been asked, how is the steam turned on into the mold?

In the type usually used for this sort of work a steam trap and regulator are part of the equipment and the steam is turned on in the mold by means of a separate steam line.

ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The Bestall Coil Tester has been designed for the service station repairer, its chief feature being that coils that have become short circuited or damaged can be tested on the car without the necessary work of removal. This feature proves a time saver in determining what is wrong with the coil and makes testing practically an instantaneous operation.

The equipment is compact in the extreme. the entire outfit measuring only 11x6x4 inches, put up in a neat mahogany finished, nickel trimmed case and equipped with all the necessary wire leads with slip and clip terminals.

The simplicity of the equipment is unusual in view of its high efficiency.

Manufactured by the Bestall Electric Co., 14 East Jackson boulevard, Chicago, Ill. Prices and literature on application.

The Roberts Cut Out and Safety Valve is designed to prevent bursting the muffler shell when an excess of raw gas collects in the muffler. The device is equipped with a spring controlled pop valve which acts automatically. When raw or burnt gases enter the exhaust pipe faster than they can pass through the muffler, the pressure opens the spring valve, permitting the gas to pass out without damaging the muffler. As soon as the pressure is relieved the valve automatically returns to its seat.

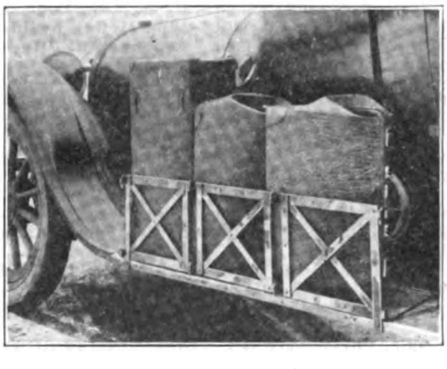
PATENT PEND
ROBERTS CUTOUT & SAFETY VALVE
G.E. ROBERTS 172 FIFTH ST. MILWAUKEE WIS.

This attachment also serves as a cut out operated by hand control at the driver's seat, which is attached to the valve by a light cable. It is claimed that this attachment can be made to the exhaust pipe without cutting the pipe. The cut out valve is located at the exhaust end of the muffler and when open there is a clear, unobstructed passage for the gas. The device is stated to be leak-proof and will not rattle or work loose. The attachment can be very easily made in a few moments time, as all that is necessary is to remove the old muffler head and loosen the nut on the center rod.

Manufactured by the G. E. Roberts Co., 172 Fifth Street, Milwaukee, Wis. Prices on request.

"Kompak" Luggage Carriers are designed to be fastened to the running board of the car, to carry the extra luggage of the occupants. The carrier consists of three sections joined to each other by hinges which fasten in a vertical position to the edge of the running board. Metal strips slip under the running board at the ends of the carrier frame, while the fastening bolts fit the top of the running board.

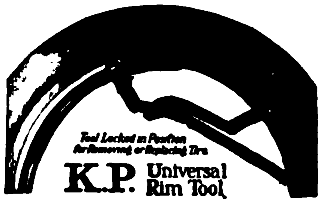
The device can be folded compactly for storing the car, and when wanted for use can be opened and extended in a few minutes time. The manufacturer states that the fastening device is so simple that a child can operate it, the luggage being held in position securely by the upright frame and the fastening device.



Manufactured by the Bersted Manufacturing Co., 765-771 Mather Street, Chicago, Ill. Price, $4.50.

The K. P. Rim Tool is designed for the rapid removal or replacement of the tire on the demountable rim, locking the rim in an open position when removing the tire and holding the rim in such a position when replacing the tire that the tire and tube are easily slipped on to the rim without the use of other tools. It is stated that tube pinching is done away with when this tool is used, as it is unnecessary to use a tool to pry the tire on or off the rim. The device consists of two adjustable jaws which can be clamped firmly to the rim at either side of the break, and are drawn up tight by two thumb screws and two bolts passing through the sides of the clamp jaws. The jaws are connected to the handle by two toggle connections in such a manner that the pressure exerted on the handle will open the rim and pass one end over the other, freeing the tire from the rim and allowing its removal.

The manufacturer states that this tool fits all sizes and makes of rims, including the Kelsey, Stanweld, Firestone, Goodrich and Baker, and locks the rim in a collapsed position while the tire is being removed or replaced.

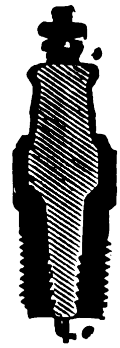

Tool Locked in Position for Removing or Replacing Tire
K.P. Universal Rim Tool

Rapping the inside of the rim at the point where it is fastened will loosen the locking device and cause the rim to open easily, it is claimed.

Manufactured by the K. P. Products Co., Inc., 250 West 54th Street, New York. Price at dealers, $4.

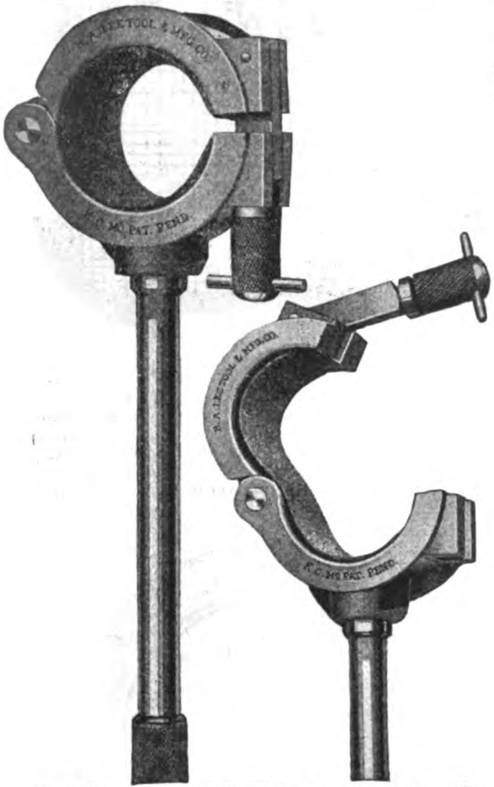
New Carbon Proof A C Plug for the Ford Car differs from the regular A C plug in the grade and shape of the porcelain used in its construction, which, it is stated, will not be cracked by heat and is superior, as it prevents the current from leaking through the insulation.

The plug is of the familiar one-piece construction adopted by the A C company as standard, having the porcelain insulator embedded in the steel bushing. The lower end of the insulator is tapering in shape towards the tip of the center electrode, the end for about one inch having a corrugated surface. It is stated that plugs constructed in this manner will not show short-circuiting defects nor will they collect carbon readily. The corrugated or saw tooth edges, it is stated, attain a sufficiently high degree of heat to burn away the carbon formed on them, thereby keeping the edges free from deposits and breaking up any short circuit.

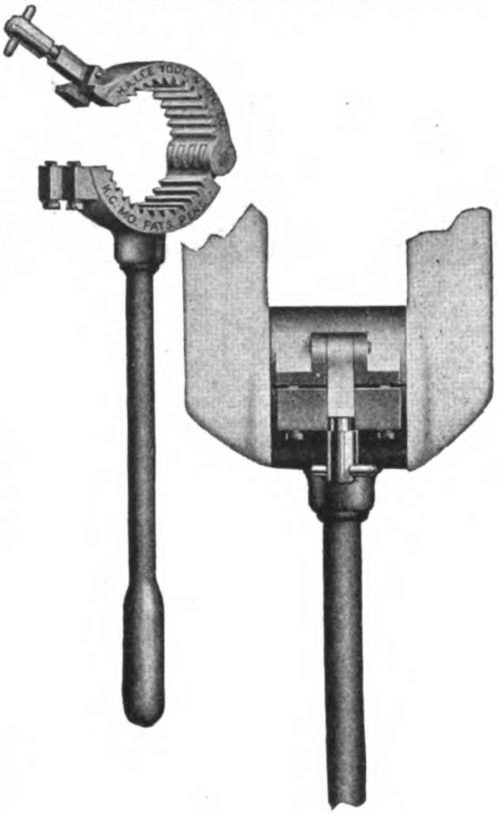


Manufactured by the Champion Ignition Co., Flint, Mich. Price, $1.

The Halee Crankshaft Reamer and Polishing Tool is designed primarily for the service station repairer and by its use that class of work, often sent out to the machine shop, can be performed by the repairer in a few minutes time in the service station. The reamer is designed for cutting down the ridges on the bearing surfaces of the crankshaft and trueing the surface, while the polishing tool, which accompanies the reamer, is used for imparting to the surface a mirror like finish.


H. A. LEE TOOL & MFG. CO.
K. C. MO. PAT. PEND.

The use of these tools is especially desirable on cars employing the pressure system of oil distribution to the bearings, as play or looseness at the bearings will cause the oil to flow out at the side of the bearings too freely, preventing the bearings from receiving proper lubrication and causing them to score or burn out rapidly. It is stated that these tools enable the repairer to do perfect work in a fraction of the time ordinarily taken, and that the necessary work can be performed by the operator from underneath the car, without disassembling the engine, by simply removing the pan, and the lower half of the crankcase. It is claimed that the Halee reamer, which is a portable hand tool, will true up worn or out of round crankshaft throw bearings to an accuracy of less than .001 of an inch in approximately 20 minutes time per bearing, leaving a very smooth, true finish.


HALEE TOOL
K. C. MO. PATS. PEND.

Manufactured by the H. A. Lee Tool & Manufacturing Co., 1505-1509 McGee building, Kansas City, Mo. Prices and literature on application.

The Red Spot Display Stand is designed for a counter display of the Red Spot Double-Duty searchlight and, as illustrated, suggests to the customer to light the searchlight by pressing the button located on the base. Two searchlights are mounted on an upright steel shaft, the lamps being connected by wires with a storage battery or other source of current, the circuit being completed by pressing the button.

This method of showing the searchlight to the trade is unique and gives the customer an idea how the light acts when in use.

Putting a display stand with a "Try it yourself" invitation within reach of the waiting customer tempts him to see how it works. He touches the button, catches on to the unique feature of the Red Spot and is half sold, the maker claims, before the clerk has a chance to say a word.

Red Spot searchlights are distributed exclusively through jobbers, who also supply the Red Spot display stands to dealers.

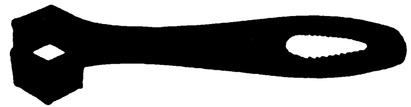
Manufactured by the F. W. Wakefield Brass Co., Vermillion, O. Prices and literature on application.

The Permaseal Oil Groove Piston Ring is a new product that is being manufactured by the same company that makes the Permaseal piston ring. This later product takes the form of an oil wiping ring for use in engines of all types where oil trouble is excessive and beyond normal. This ring is practically the same as the standard Permaseal ring, possessing its one-piece feature and dove-tail, interlocking joint, with the exception that it has a groove machined into it, which upon coming in contact with the wall of the cylinder, creates a vacuum within the groove, which wipes off all excess oil and returns it to the base of the engine. Similar to all Permaseal rings the oil groove ring has a turned, not a ground surface, this, the manufacturer claims, practically eliminating the necessity of "running or lapping in," and makes the ring quick and even seating. The Permaseal oil groove ring is now in production and the trade is being supplied through the usual channels.

Manufactured by the Grundy Manufacturing Corporation, Detroit, Mich. Prices and literature on application.

The Five-In-One Tool, a patented wrench device, is designed for many uses about the Ford car, but may also be used for work on other cars. It is made of the best malleable iron and is so arranged that when the hexagon wrench is being used for the removal of a spark plug the plug is held firmly and the porcelain is protected by the upper part of the socket.

The five-in-one tool consists of a socket at one end provided with two different sized openings, one for plugs, ½ or ⅝ inch, while the smaller opening is of correct size for the smaller hexagon nut holding the porcelain in place in the plug shell. The alligator part in the handle removes the round and square nut which holds the wire to the plug. The smaller machined part in the extreme end of the handle may be used as a spacer, giving the proper distance for the ignition of the plug. This part can also be used as a screw driver for light work.

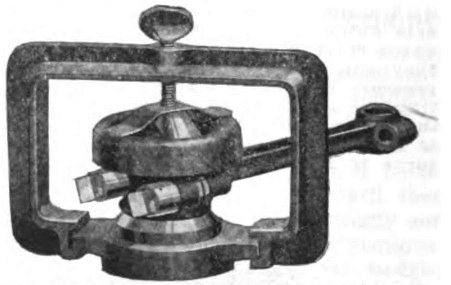


Besides being particularly adapted to the various nuts and fastenings of the spark plug, the tool will fit many of the nuts about the chassis of the car and the drain plugs under the transmission and differential.

Manufactured by William E. Rosel & Co., 858 South 17th Street, Columbus, O. Price, 50 cents.

The Babbitter for Ford Rods is especially designed for rebabbitting Ford engine connecting rod bearings. By means of the specially formed metal mandrel the bearings are cast to the exact size and shape to fit the crankshaft without any scraping or fitting. All that is necessary to be done after the rod has been removed from the babbitter is to remove the sharp corners and fins with a few strokes of a coarse file and the rod is then claimed to be ready for the crankshaft.

It is stated that the metal, being machined to the thousandth part of an inch, it is possible to cast all Ford bearings ready to fit the shaft for the usual burning-in process.



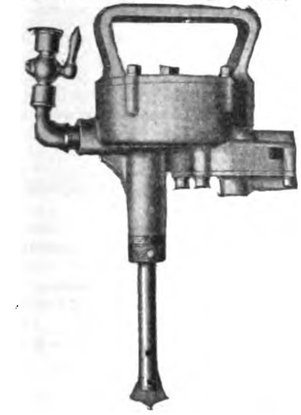
After the metal is cast and hardened the top of the mandrel is struck a blow with a hammer to shear the babbitt in the rod from that in the pouring funnel. It is stated that three to four rods an hour can be rebabbitted with this device at a considerable saving.

Manufactured by the O. A. Bremer Co., 222 Division Street, Burlington, Ia. Prices and literature on request.

If for any reason it is difficult to observe the rate of flow through the sight feed oilers mounted on the dash, try slipping a piece of white paper between the tubes to give a light background, against which the contents of the glass will show with considerable distinctness, even in a poor light.

The Jackson Pneumatic Valve Grinder consists of a compact air driven motor enclosed in an aluminum alloy case and is driven from the air pressure obtained from the ordinary garage outfit. The pneumatic valve grinder, while lower in price than the electric grinder, will after a few weeks use, it is claimed, pay for itself, and then continue to be a source of profit to the owner.

The capacity of the valve grinder is sufficient to take valves up to 3½ inches in diameter. All working parts, the motor and grinding shafts, operate in phosphor bronze bearings, while all steel wearing parts are hardened.



The grinder is furnished complete with standard bits for slotted valve, spanner for Ford valves, valve lift springs and shut off valve.

The Jackson pneumatic valve grinder, it is stated, can be used with any medium sized compressed air tire pump at a pressure of 60 pounds, as it consumes from two to three cubic feet of air a minute and has sufficient power to grind any size valve or valve cage.

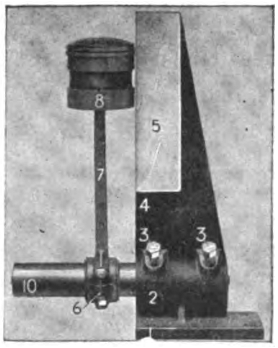
Manufactured by the Kalamazoo Railroad Supply Co., Kalamazoo, Mich. Price, $28.

The Co-Zee Battery Apron is designed for repairers who work in and about battery service stations, and come in contact with more or less acid. They are made from the best rubber stock, reinforced by a heavy backing of a special material that is extra strong and, it is stated, will not tear in ordinary use. It is claimed that acid has no effect on the rubber of the Co-Zee apron, as it has been specially treated with a substance making it acid proof.

Manufactured by the Omaha Auto Top Co., Omaha, Neb. Prices on application.

Stevens Piston Aligning and Bearing Fitting Gauge is designed to furnish the repair shop mechanic with a device which insures precision in fitting and aligning connecting rod bearings, or wristpin bushings and pistons.

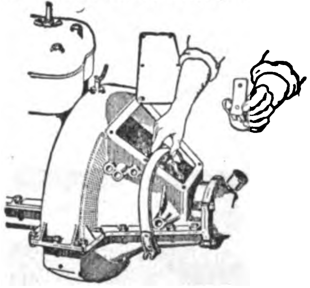
The aligning gauge consists of the following: 1, foot on which the aligning stand rests and by which the stand is fastened to the work bench; 2, body of stand with 1½-inch hole for arbors; 3, set screws for holding arbors; 4, front surface machined perfectly square with axis of arbor; 5, machined surface perfectly parallel with axis of shaft, used for testing if connecting rod is twisted, 6, connecting rod with bearing; 7, connecting rod stem; 8, piston; 10, arbors are made standard crankshaft size.

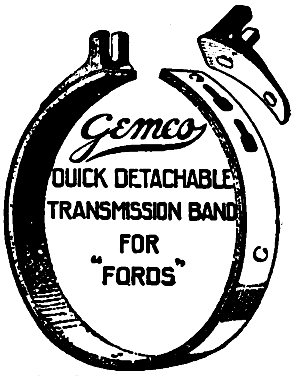


Special easily understood instructions accompany each aligning gauge, so that the mechanic will have no difficulty in testing connecting rods, bearings, wristpins or pistons for misalignment. These gauges are machined to .0001 of an inch and are extremely accurate.

Manufactured by Stevens & Co., 375 Broadway, New York City. Price, Stevens gauge with any size machined arbor, $24; extra machined arbor up to 2⅜-inch diameter, $5; special gauge for Fords, $10; special reamer for Ford gauge, $6.25; special arbors to fit Ford gauge, $5. Discount to the trade.

Quick Detachable Transmission Band for the Ford Car is a new device designed to facilitate the removal and replacement of Ford transmission bands. It consists of a steel band of heavy spring steel, lined with the best grade of brake lining. Attached to the band are two drop forged ears, one of which is removable. This allows the band to be easily inserted into place on the drum, cutting down considerably the time required to put it in position. After the band has been located the detachable ear is fitted to it by projections on the ear and slots in the band, which form a very convenient fastening, holding it in position equally as well as if the end were riveted.

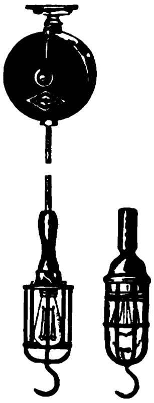




Manufactured by the Gemco Manufacturing Co., Milwaukee, Wis. Prices on request.

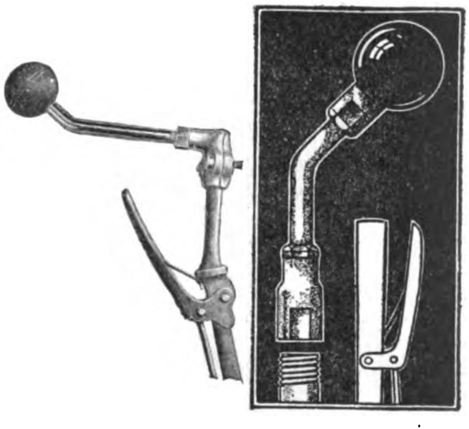
The Reelite consists of a reel unit carrying an approved reinforced cord, suspended from the ceiling of the garage or service station and equipped with an extension cord, allowing the lamp to be used anywhere within reach of the cord about the garage. The reel works similar to a curtain rod, allowing the cord to unwind and rewind without unnecessary effort.

The Reelite is made in two types, a portable and a fixed type. The fixed type has a 12-foot cable, providing flexible lighting for the machine shop, while the portable type has 25 feet of cord and may be fitted to any convenient lamp socket, providing light for garages, service stations, etc., where work is to be performed on a larger scale.



Manufactured by the Anderson Electric Supply Co., 118-124 S. Clinton St., Chicago, Ill. Prices, drop cord type, $8; portable type, $15.

Gear Shift Extension. The gear shift lever on practically all of the present day cars is not adjustable, therefore the person with short arms finds that considerable body movement is often necessary in changing the gears. To obviate this difficulty Mellin's adjustable gear shift extension has been designed. This device is practically an extension lever, in three sections, that may be adjusted to suit any driver and by means of which the operator with a single arm movement can shift gears easily and without moving the body. The device is ornamental and neatly finished in nickel plate.

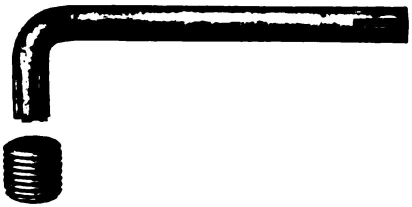


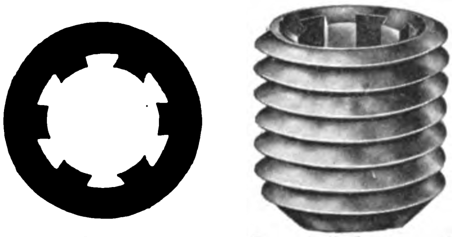
Adjustable
Gear Shift Extension

Manufactured by M. & H. Novelty Co., 1466 West 28th street, Los Angeles, Cal. Prices, No. 2, $1.25; No.'s 14, 15 and 19, $2; all others, $1.50 each.

The Bristo Patented Safety Set Screws were designed to take the place of the many different types of set screws used in the automotive industry and are constructed along lines making them standard for this class of work.

The Bristo Safety Set Screw is equipped with dove tailed slots or flutes into which the corresponding dove tail projections of the wrench fit. When these screws are being set up by means of this special wrench there is no tendency for the wrench to expand or split the screw, it is stated, even if great pressure is applied to the handle of the wrench, but instead there is a tendency for the wrench to contract the screw on account of the angles at which the faces of the dove tail flutes and slots bear against each other.

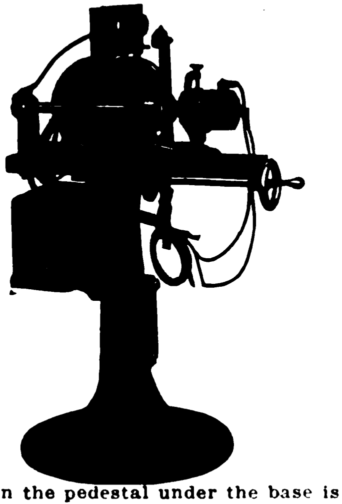




Bristo Safety Set Screws are specially heat treated which, it is stated, makes them very tough, insuring long wearing qualities even though the screw is constantly being released and tightened.

Manufactured by the Bristol Co., Waterbury, Conn. Prices and literature on request.

Model TF-1 Electric Test Unit is designed for the quick and accurate testing of generators, motors and the electrical units of the passenger car. It consists of a stand on which is mounted the various units used in carrying out the test, these including a one-half horsepower motor, friction drive, flexible coupling, universal bracket, Weston ammeter, Weston voltmeter and tachometer, all assembled on a base, which is mounted on a metal pedestal. On the pedestal under the base is the double six-volt battery with battery box.

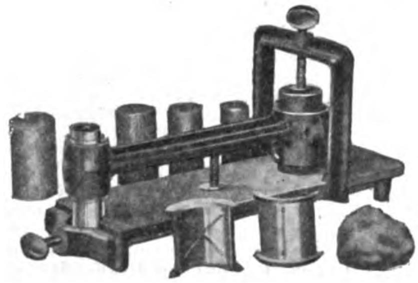


The model TF-1 is a "universal" machine, motor driven, having variable speeds ranging from 0 to 3000 in either direction of rotation. It is furnished with a double six-volt battery with a series multiple switch for testing both six and 12-volt generators and motors. It has a universal clamp for testing all types of motors and generators in size from four to seven inches in diameter. It is stated that it is possible with this machine to test all types of magnetos. It is equipped with a universal flexible coupling which, it is claimed, does not cramp the bearings, and a chuck which takes shafts 5/16 inch to 1¼ inch and gears 1¼ to 3¼ inch. Only five leads are used in making all the tests—two for the generator, a voltmeter lead and two heavy leads for starting tests. Instructions for operating the machine on the different tests accompany each machine, so that a repairer who has had slight experience in this line of work will have excellent results, the manufacturer states.

Manufactured by the Service Products Co., Springfield, O. Prices and literature on request.

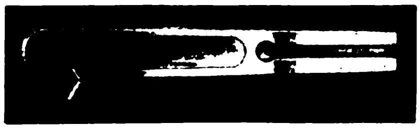
The N-A Size Babbitter, it is claimed, rebabbitts any size of automobile engine connecting rod bearing up to 12½ inches in length from center to center, and of any bore from ½ to 2½ inches. It casts the bearing very accurately to the size required, either solid in the rod or the removable type, and but very little scrapping or fitting is required to make a perfect fit on the crankshaft.

The N-A size babbitters are packed in wooden boxes complete with instructions and four different diameter wooden mandrels as follows: 1¼ inch, 1½ inch, 1¾ inch and two inch. Other special sizes may be purchased as desired.



Manufactured by the O. A. Bremer Co., 222 Division Street, Burlington, Ia. Prices and literature on request.

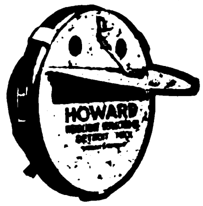
The Spring Oiler is a small device that is easily carried in the tool box, for separating and oiling the spring leaves of the automobile. The tool consists of a steel stamping wedge shaped at one end, having a groove cut in the bevel of the wedge through which oil flows and the opposite end fitted with a flat wrench. The wedge is used to open the spring leaves after the car body has been raised with a jack while the lubricant is supplied to the leaves by squirting oil from a cup into the groove the oil flowing in between the leaves by gravity. The wrench is used to tighten the spring clip nuts, while the thick portion may be used as a light hammer.



The spring oiler is made in two sizes, six-inch for light cars and eight-inch for heavy cars and trucks.

Manufactured by Cochran Manufacturing & Forging Co., 7800 Woodlawn Avenue, Chicago, Ill. Prices and literature on request.

The "Howard" Deflector for automobiles, trucks and motorcycles snaps over the front of any standard headlight and is held in place by three powerful spring steel clamps. A slot a few inches wide and about two inches high allows the rays of light from the electric lamp to show through to illuminate the road, while the rays are prevented from being thrown upward by a half circle hinged cover that may be adjusted either up or down by means of a short brace fastened to the cover at one end and to the upper front of the deflector by a bolt and wing nut. The two holes above the deflector provide protection to pedestrians on brightly lighted streets. Without the auxiliary holes, it is stated, the car is not perceptible within a distance of 30 feet.

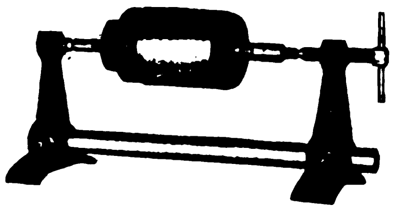


Special instructions are included with the deflectors, describing the different ways in which they may be adjusted on the lamps to get desired results.

Manufactured by the Howard Headlight Deflector Co., Detroit, Mich. Price, $2.25 a pair.

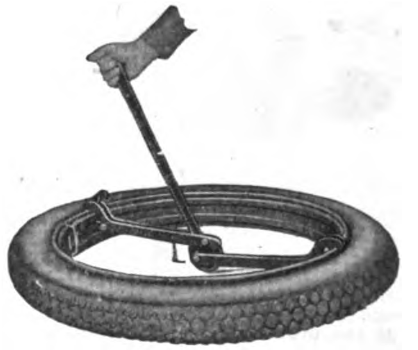
The Onan Armature Stand is designed to facilitate the work of the electrical repairer of automobile electric starting and lighting systems, in undercutting mica, banding, soldering leads and rewinding.

This device takes the place of a vise for this class of work doing it, it is claimed, in a much more satisfactory manner and with greater speed. It is a bench tool that is adjustable for various lengths of armature shafts and holds the armature easily, allowing it to be turned freely or with a slight drag as desired. By adjusting the large thumb screw at the end of the shaft the shaft may be tightened or loosened as desired.



Manufactured by David W. Onan, 1224 Penn Avenue, Minneapolis, Minn. Price, $4.50.

The Duplex Rim Device is designed to facilitate the removal and replacement of pneumatic tires on demountable rims. The device consists of two arms and a lever. The arms are shaped on the ends in the form of a hook which fits over the rim, giving a firm grip. Their centers are joined to an eccentric plate at the end of the handle and are operated by movement of the handle, the eccentric motion opening or closing the break in the rim as desired. The rim is held in the open position while the tire is being removed or replaced, by fitting a small pin, attached to a chain, to an opening through one of the arms and the eccentric plate.



The Duplex rim changing device is made unusually strong for its purpose, and when not in use can be folded into small space and stored in the tool box or under the seat. It is claimed that in case a tire is rusted to the rim this device will open the rim without straining or injuring the sides.

Distributed by the Fairbanks Co., Broome and Lafayette Streets, New York City. Price, No. 1 car size, $6; west of the Rockies, $6.50. No. 2 garage size, $7; west of the Rockies, $7.50.

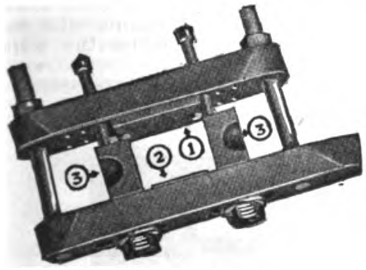
The Peerless Radiator No. 14 for Chevrolet Cars is designed for replacement on Chevrolet cars and in design and quality of finish is equal to the well known line of other Peerless products.

This radiator is equipped with the efficient Peerless honeycomb core, which is employed on the highest class of cars. A new feature is the mounting of the angle brackets on spring steel side frames. They absorb the severest road shocks, it is stated, thereby preventing damage to the radiator. All parts coming in contact with water are of durable brass and the flexibility of the core construction allows ample expansion—permitting core to thaw if frozen, without strain or breakage. The dimensions of the Peerless radiator are the same as those of the regular Chevrolet radiator, insuring quick and easy installation. The Peerless No. 14 guaranteed radiator is equipped with a cap for the filler neck, which is not regularly included as part of replacement radiators.

Manufactured by the Corcoran Manufacturing Co., Cincinnati, O., Department F. Prices and literature on request.

The Atlas Abrasive Tool is designed for repair shops and garages. It is small in size, inexpensive and, it is claimed, very easy to operate. With this tool, it is stated, the repairer can smooth crank pins that have become roughened or scored, with fully as good results as those attained by the machinist after spending many hours on the same type of job with a lathe.

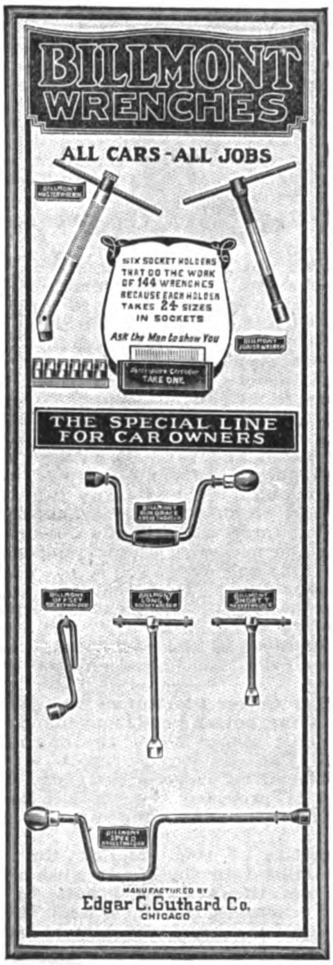
Only one cutter is used in the Atlas abrasive tool and each cutter is good for from 10 to 20 jobs before it becomes necessary to fit a new one. The cutter works only in one direction and, it is stated, that no other tools are required to complete the job as Atlas abrasive tool finishes it to a close degree of accuracy. On account of its small size the necessary work on the crank pins can be performed without removing the crankshaft from the car.



Manufactured by the Atlas Manufacturing Co., Pittsburgh, Pa. Price of tool, $10; extra cutters, 30 cents each.

Billmont Master Wrench and Socket Wrench Set comprises a complete outfit for the service station. It includes the Billmont Master wrench, the Billmont Junior, the Long T and Short T socket holders, the Speeder, rim brace and offset socket holders, the outstanding feature of which are the universal nose pieces that are so constructed as to permit the use of 24 sizes of sockets, both hexagonal and square.

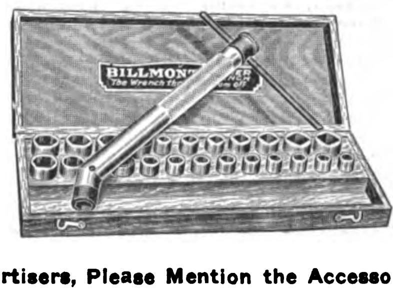
The Billmont master wrench is a universal socket tool, driving through an outside stationary member having a heavily knurled hand grip. The inner driving part, with its curved, revolving nose, is turned by a T bar handle, which slides back and forth so that a complete turn can be made on any nut without removing the wrench. The nose piece takes any of the Billmont sockets of 24 sizes, and the special Billmont adapter permits the use of any standard size socket. The Master wrench is put up in three styles, namely, with six sockets in hard wood case or with 24 sizes in sockets in case.


BILLMONT WRENCHES
ALL CARS - ALL JOBS
SIX SOCKET HOLDERS THAT DO THE WORK OF 144 WRENCHES BECAUSE EACH HOLDER TAKES 24 SIZES IN SOCKETS
Ask the Man to show You
TAKE ONE
THE SPECIAL LINE FOR CAR OWNERS
MANUFACTURED BY
Edgar C. Guthard Co.
CHICAGO

Next in popularity is the Billmont Junior. This is a large wrench, 11½ inches long, powerful enough to handle the most stubborn hexagon nut up to 31/32 inch or square up to ¾ inch, the manufacturer states. The Junior is similar to the Master except that the nose is straight. The sliding T bar handle permits tremendous pressure to be brought to bear on the nut, while the nut is turned completely around with great speed. A nickeled hand grip gives the operator a firm hand hold.

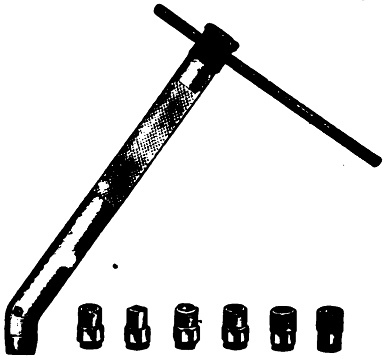
The long T and short T socket holders are identical in construction except that the former is 12, while the latter is six inches long. The T bar handle, which is a feature of the four wrenches described, equalizes torsional strain, making these wrenches very powerful tools.

Another popular tool is the Billmont rim brace, having adaptability for 24 sizes, which cuts down the original outlay to the purchase of one brace and 24 sockets, and affords the repairer a wide range of uses.



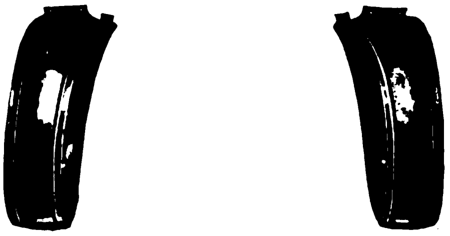
To give proper display and help dealers move the line, the manufacturer furnishes a large display board, lithographed in three colors on sheet steel, backed and mounted with finely finished hard wood, which can be used as an easel or a hanger. The wrenches are attached to this board and brief lettering on the board gives the prospective customer, as well as the clerk, all needful information relating to the wrenches. The company makes the claim that this equipment is adapted for all cars of all makes and with the complete line the buyer has an equipment equal to 144 different wrenches.

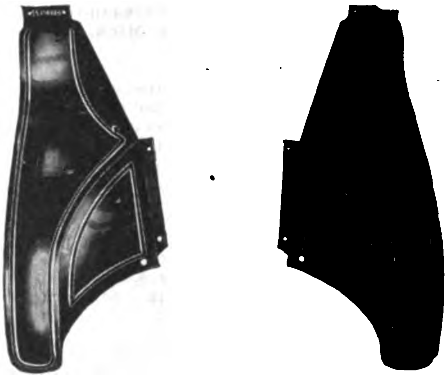
BILLMONT *MASTER WRENCH*
"The Wrench that Spins'em off"



Manufactured by Edgar C. Guthard Co., Chicago, Ill. Prices on application or through dealers.

Peerless Fenders for Ford Cars are designed for replacement purposes on any model T Ford made during the various years that this model has been on the market. They are constructed especially to withstand the severe jarring and vibration of the Ford engine. They are built throughout of No. 20 gauge steel and finished with two coats of lustrous black enamel baked on, which gives to the fenders a durable finish.

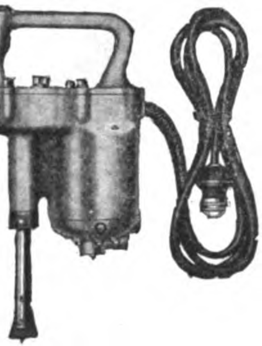




Peerless crown fenders are made to fit all models of Ford cars, but it is necessary, when ordering, to give the model and year in which the car was made and the model number. It is stated that Peerless fenders are built to the standard of excellence for which Peerless products are noted.

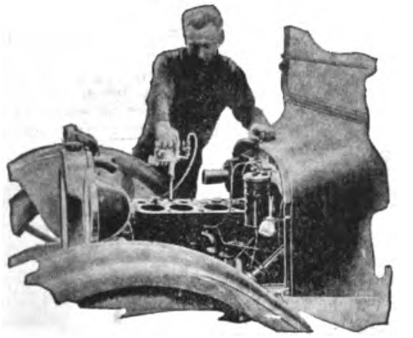
Manufactured by the Corcoran Manufacturing Co, Cincinnati, O. Prices and literature on application.

The Jackson Electric Valve Grinder is designed for either garage or service station use, and it is stated that it has already won an enviable reputation for itself during the war, especially for its ability to stand up under rough, hard usage. It is claimed that a repairer is able to grind a valve to its seat perfectly in from 15 to 30 seconds. The plug and cord are connected to the nearest electric light socket and the tool is ready for instant use. The motor is of a special design, operating either on direct or alternating current, and consuming approximately 75 watts. The casing is constructed of a tough aluminum alloy, while all working parts, motor shaft and grinding shaft operate in phosphor bronze bearings, with all wearing parts hardened.



The grinder has a capacity to include valves up to 3½ inches, while special attachments can be obtained making the grinder adaptable for grinding valves of the valve-in-the-head type of engine.

The complete outfit contains the grinder, standard bits for slotted valve, spanner bit for the Ford engine, valve lift springs, flexible cord and attaching plug.



The grinder is guaranteed as to performance and construction for a period of one year, and if unsatisfactory, may be returned to the factory within a reasonable length of time.

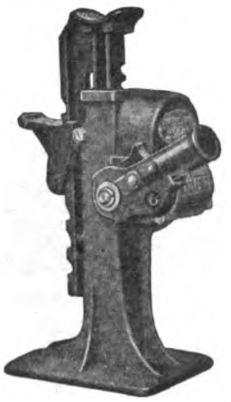
Manufactured by the Kalamazoo Railroad Supply Co., Kalamazoo, Mich. Price, $45.

The New Duff Universal Automobile Jack (No. 411), possesses many novel features that will appeal to the wide-awake dealer. The operating handle is twice as long as the ordinary jack handle, making it easy to operate on account of the greater leverage.

The long handle easily clears all obstructions at either the front or rear of the car. In placing the ordinary type of jack, operated by a chain or short handle, under the car, or removing it, necessitates crawling on the ground with the risk of accident or soiling clothing. The new Duff jack is placed in position and removed by means of the long handle, eliminating this annoyance. When not in use the long handle uncouples to half of its length, easily fitting into the smallest tool compartment.

The jack may be operated by as long or as short a stroke as desired and with the operating handle inclined at any angle, a feature particularly desirable in the case of cars having gasoline tank, tires or other obstructions in the rear.

The Duff jack may be either raised or lowered without reaching under the car, by simply turning the handle half way around. To raise the operating handle is inserted in the socket with the side of the operating handle marked "raise" on top. To lower, the operating handle is withdrawn until it disengages the operating mechanism, but still remains in the socket, and is then turned half way around with the side marked "lower" up. A spring maintains the socket in a raised or horizontal position, so that the operator can insert the handle without bending down to adjust the socket.



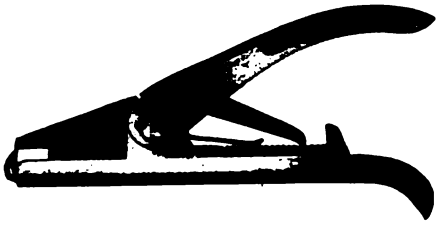
By means of an adjustable foot lift this jack can be instantly made to fit under the lower axle of any car. The range of adjustment possible, from four to 18 inches, is wide enough to handle any car in any position on or off the road. This feature is of great importance to the dealer, as it obviates the necessity of carrying a large stock of various sizes.

The capacity of the jack, 1½ tons, is ample to handle the heaviest modern passenger car.

Manufactured by the Duff Manufacturing Co., Pittsburgh, Pa. Prices on application.

The May Cotter Pin Puller was designed for removing cotter pins from inaccessible and difficult places about the engine and chassis. The device is made of steel, nickel plated to prevent rust from forming and is provided with a handle grip to facilitate the drawing of the cotter pins.

It consists of two handles, the upper being fastened to the lower a short distance from the end by a bolt and nut forming a bearing for the jaws. The cotter pin puller consists of a steel bar fitting a recess in the lower handle, is in the form of a hook in the jaw and is slidable in the handle for different sized pins. The bar is positioned and held fast by a pawl and ratchet arrangement on the top of the bar and under the upper handle After the puller is attached to the cotter pin the pin is easily removed and held in the puller, preventing the pin from dropping into the chassis or engine.



Manufactured by the Brewer-Titchener Corporation, Cortland, N. Y. Prices and literature on application.

A New Electric Automobile Engine Heater has been designed which is claimed to keep the engine warm during normal winter weather, when the car is standing in the garage, thus filling a long felt want among automobile owners.

By the use of this method the heat is concentrated at the engine and carburetor, where it will do the most good. Thus, on cold mornings, no difficulty will be experienced in starting the engine, as the temperature of the latter will always be well above that of the outside air.

The appliance is ruggedly built and practicaly indestructible. The heating unit is protected by a strong perforated sheet metal guard entirely surrounding the heater. A rigid metal hook allows the heater to be hung anywhere under the hood. The flexible cord is long and the plug can be attached to any lamp socket. Altogether, it is well built with no delicate parts to get out of order.

The power consumption is only 100 watts. The initial cost and the expense while in use are stated to be almost negligible. The cost of operating is less than one cent an hour (based on power rate of 10 cents a kilowatt-hour).

Manufactured by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Prices and literature on request.

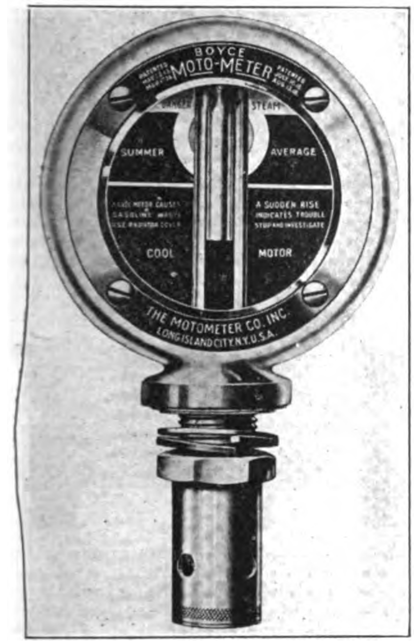
The "Eck" Vaporizer and Primer consists of a small metal container fastened to the inside of the dash of an automobile or truck and is used for priming the engine for starting during cold weather and also to supply the engine with moisture when operating during the warmer months of the year.

The vaporizer and primer is fitted with special tubes that require adjusting when using either gasoline for priming or water when supplying moisture to the engine, and these tubes are easily reached at the top of the container for adjusting.

A valve is fitted below the tank and this is controlled by means of an offset handle fitting the valve and a pull wire connected through a copper tube to a button on the dash, so that the flow of gasoline or water can be continuous or shut off when desired.

Manufactured by Chester C. Eckhardt, Rochester, N. Y. Price, $6.

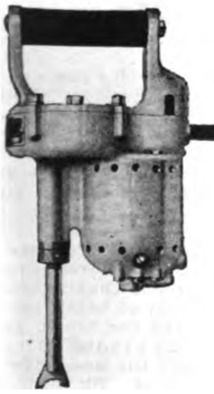
De Luxe Model Boyce Moto-Meter is the latest creation of the manufacturer and is designed for the highest grade passenger cars. The temperature tube is one-half inch in diameter, having a broad column of red liquid readable at a great distance. The case is silver plated and the finish of the entire instrument is of the highest quality of workmanship. The wording is of large size so as to be readily seen by the operator when driving. The Moto-Meter is easily attached to the filler cap of the radiator by drilling a hole for the insertion of the tube, a suitable lock nut and washer being provided by which it is fastened.



Manufactured by the Moto-Meter Co., Inc., Long Island City, N. Y. Size, 3⅝x5¾ inches. Weight (packed in cartons) 20 ounces. Price, $15.

The Jackson Special Ventilated Valve Grinder No. 4 was designed for continuous heavy use in factory service. This model, it is stated, has been tested under the most severe grinding conditions, and in every instance has proven to be a most capable device.

The grinder has a capacity up to and including valves of 3½ inches in diameter, weighs but six pounds. The motor is of special design, universal type, operating on either direct or alternating current at a full load rating of 75 watts. The gears are packed in grease, while the bearings are provided with wick oilers. The motor casing is constructed from tough aluminum alloy, with all the steel parts of the grinder hardened and highly finished and provided with bronze bushings throughout.

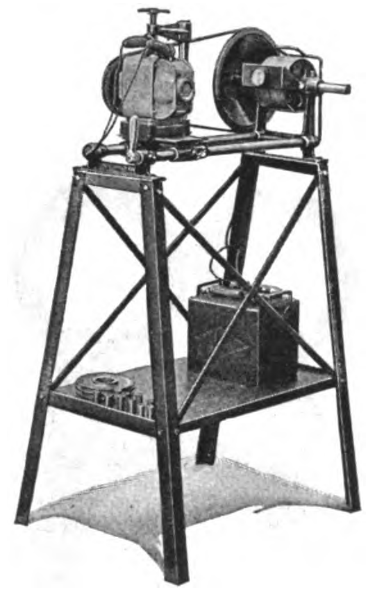


This grinder carries the regular guarantee as to performance and construction and if, after a fair trial, any Jackson drill or grinder does not effect the saving claimed for it, or if it fails to give satisfaction to the customer, it may be returned for credit at the end of a reasonable period. The material and workmanship are guaranteed for a period of one year.

Manufactured by the Kalamazoo Railway Supply Co., Kalamazoo, Mich. Price, $50.

The Onan Testing Device is equipped with the necessary apparatus to successfully drive and test all kinds of electrical units after they have been removed from the engine, and is especially adapted for garages and service stations. With this device it is possible to test starting, lighting and ignition equipment under such conditions as when functioning on the engine and from this test to determine the accuracy of the assembled unit.

The Onan testing device consists of two feet or legs, which can be fastened to a bench or special stand, which can be obtained with the device at additional cost; two lengths of hollow tubing forming the frame; bearing supports fastened at one end of the frame, supporting the drive shaft and bearings, equipped with tight and loose pulleys and a five-step cone pulley by which the speed of the tester is varied; a slidable stand fitting the frame tubes, held in any position by thumb screws at the sides, and a vertical tube to which is attached a clamp holding the generator or motor to be tested. The pulleys included in the outfit include members to fit the Northeast unit of the Dodge, Society of Automotive Engineers tapers and one with a set of special bushings to fit the different sizes and styles of shafts.



In using the Onan testing device it is necessary to connect a storage battery in the circuit with the generator, an ammeter being provided, which shows the condition of the generator when being driven at varying speeds. A round leather belt supplies the final drive to the generator or motor and is claimed to be noiseless in operation.

The Onan testing device is stated to be particularly valuable for such work as installing brushes in generators, platinum points bearings, etc., in magnetos in such manner that they will give long and satisfactory service.

Manufactured by David W. Onan, 1224 Penn Avenue, Minneapolis, Minn. Prices, complete with meter, mounting, cables and stand, $75; with meter mounting and cables, $65; without meter or cables, $55.

The Wellman Spark Plug has been developed after three years of careful experimenting on the part of the manufacturer and testing the plug under gruelling conditions. It is stated that the plug can positively be cleaned without removing it from the engine cylinder. It is of the one-piece type and is fitted with two sharp knives by means of which all carbon and oil deposits on the porcelain can be quickly cut away. This operation is claimed to be very simple, requiring but a few simple turns of the head of the plug.

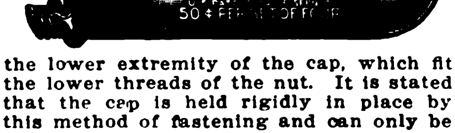
The Wellman spark plug embodies a positive priming channel running down through the central body of the plug and conveying the fuel direct to the spark gap. No petcock is provided for this purpose. Its one-piece full nickel electrode is constructed with an air chamber, which permits of free expansion and contraction, thereby reducing the chance of breakage from excessive heat or cold. Because of this construction it is believed that the plug is practically unbreakable from sudden changes of temperature within the plug, and by means of a heavy brass reinforcing sleeve within the porcelain, damage from external blows is prevented.

WELLMAN
PATENTED

Manufactured by the Wellman-Muter Corporation, Chicago, Ill. Prices and literature on application.

The Kwik-On-an-Off Dust Cap is designed to fit all Universal and Schrader valve stems and was recently patented by the Schrader Co. The object of the device is to provide a means of instantly removing or replacing the dust cap on a valve stem in a few seconds time by slipping the cap down over the valve stem and giving it a slight twist, locking it tightly in place. While its removal is accomplished by turning in the opposite direction and slipping the cap from the valve stem.

The device consists of a ribbed cap similar to those usually in use, having at the bottom a wire spring, open at the ends, which slips over the threads of the fastening nut, while threads are provided on the lower extremity of the cap, which fit the lower threads of the nut. It is stated that the cap is held rigidly in place by this method of fastening and can only be removed when given the slight twist of the hand. This is claimed to be a decided improvement over previous caps designed by this firm and is, besides, a time saver.



Manufactured by A. Schrader's Son, Inc., 783-91 Atlantic Avenue, Brooklyn, N. Y., and 1200 Michigan Avenue, Chicago, Ill. Prices and literature on request.

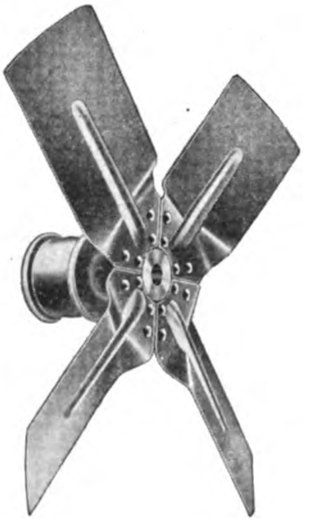
The Norwesco Three-An-One Valve Grinding Compound is put up in a container consisting of three ounces of coarse abrasive and one ounce of fine abrasive. The manufacturer states that it has been found upon inquiry among garages and service stations that the average repairer uses three ounces of coarse grinding compound and one ounce of fine when grinding valves. The old form of container held two ounces each of coarse and fine and it is claimed that there was waste by this method, while the new container proves more economical to the repairer, as the item of waste is eliminated.

VALVE GRINDING COMPOUND
NORWESCO
THREE-AN-ONE PACKAGE
THE NORTHWESTERN CHEMICAL CO.
MARIETTA, OHIO
MADE IN U.S.A.

The position of the two containers, in which the coarse and fine abrasive is packed is such that either container can be removed without reversing the larger container. The grinding compound, it is stated, contains no ground glass, sand or emery, but does contain the highest grade valve grinding compound obtainable.

Manufactured by the Northwestern Chemical Co., Marietta, O. Prices on application.

Spencer Fan Pulley Assembly for Ford Cars is designed primarily for replacement purposes. The fan blades are made from pressed steel, while the bushings are high grade bronze and all parts are thoroughly machined and guaranteed to fit. The hub and fan assembly is in one unit, so that fitting to the Ford engine is easily accomplished by anyone handy with tools.

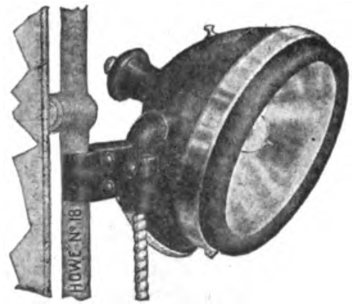


Manufactured by the Spencer Metal Products Co., Spencer, O. Price, No. 3960 for Fords cars, on request.

The Howe Searchlight, No. 18, consists of a spotlight for the windshield made entirely of brass, with the exception of the windshield clamps, which are of cast metal. The light is equipped with a heavy French plate mirror substantially mounted at the rear. The switch is of the turn button type, enclosed and water proof, with all wires leading to it enclosed in armored conduits. The lens is a heavy convex plate, mounted in the door in a substantial manner. The door is held in place by a wide detachable nickel plated band, making the lamp, it is stated, dust and water proof.

HOWE Searchlight

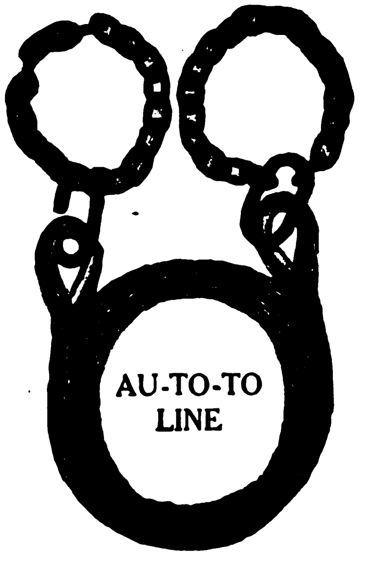
The reflector is of the parabola type, triple silver plated, while the body of the lamp is finished in black enamel, baked on with a semi-gloss finish.



Manufactured by the Howe Lamp & Manufacturing Co., 115-123 E. Ontario Street, Chicago, Ill. Price, $12.50.

The Au-To-To Line is recognized, wherever known, as the "tow line without a jerk," so its manufacturer claims. This feature is made possible by the use of a special combination of fiber woven into steel cable wire, doubling the strength of the complete cable and making possible the towing of unusually heavy weights for the size of the cable.

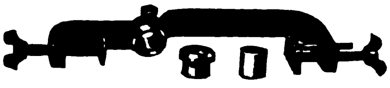
This cable has only been on the market a short time, but is reported to have become very popular. It is stated that tests have demonstrated the fact that the manufacturer has not over-estimated the strength of the cable.



The Au-To-To line is made in two sizes, passenger car and trucks. The length is 17 feet, while the weight, including a canvas bag, is about five pounds. It is guaranteed on the passenger car size to pull without a jerk and has been tested for a tow load of 6000 pounds. If for any reason the line should fail to give satisfaction it will be replaced with a new one free of charge.

Manufactured by the Waite-Rhodes Co., Denver, Col. Price on request.

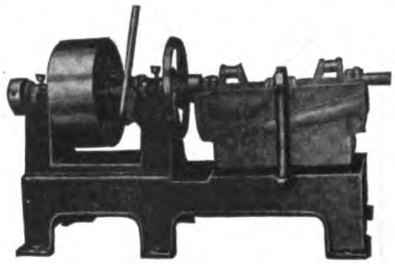
The Battery Post Builder Model TF-503 has been designed to meet the requirements of battery service stations for supporting post building molds. With the different forms of constructions now being used on batteries, it is necessary that there should be very good work performed on the post building and, it is stated, this unit will build the posts up square and eliminate tipping. The unit clamps the mold firmly in place and permits the work man to do a perfect job. It can be furnished with different types of molds and is made in such a manner that most standard molds can be fitted into it by service stations.

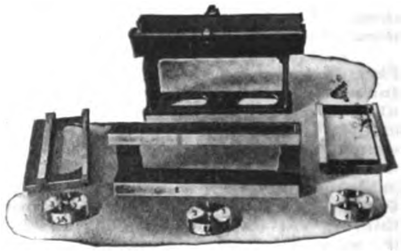


Manufactured by the Service Products Co., Springfield, O. Price and literature on request.

Model FS-50 Burning-In and Running-In Machine, belt driven, possesses the advantage of being adapted either to burning-in or running-in the Fordson tractor and the Ford model T engine, as well as to practically all of the other popular priced car engines, furnished with detachable heads. A unit is now being furnished with adapters for burning-in Dodge, Chevrolet, Maxwell and the new Overland Four.

The Model FS-50 unit has been designed for heavy duty and the main shaft is made from very high grade shaft steel, 2¼ inches in diameter. The bearings are made from nickel bronze, all wearing surfaces being hardened. The engine blocks are clamped in position with two single bolts so designed that the block is held perfectly rigid while burning-in or running-in, this construction also permitting access to all bearing bolts. The raising blocks or adapters for various types of engines are fitted in machined slots in the bed of the unit, so that there is positively no chance of misalignment of the bearings. The clutch on this unit has been designed so that it is positive in operation, easy to adjust and, the manufacturer claims, will stand extreme loads and shocks. The clutch is very simple, and in connection with the heavy driving pulley, makes a perfect combination for burning-in work.



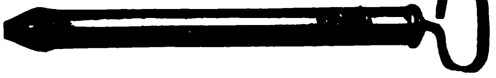


1. Fordson & Model T Ford Running-in Adapter.
3. Chevrolet "490" Raising Block. 2. Model T Ford Raising Block. 4 Dodge Raising Block.
3A. - " Adapter Disc. 2A. - " Adapter Disc. 4A. - Adapter Disc.

The model FS-50 carries parts which include burning-in adapters for Ford, Chevrolet, Dodge, Maxwell and Overland Four cars, while the main machine takes care of the Fordson.

Manufactured by the Service Products Co., Springfield, O. Prices and literature on application.

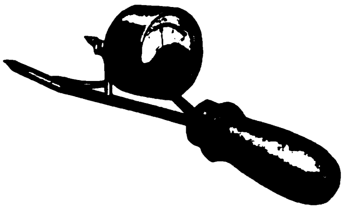
The Rose Truck and Tractor Grease Gun is similar to the Universal grease gun in construction, except that it has a cone shaped nozzle instead of being curved and is especially adapted for truck and tractor work, as it will handle all transmission greases without the necessity of having the nozzle removed. By taking off the nozzle, however, heavy greases may be handled with ease. The gun measures 19½ inches over all, has a capacity of one pound of grease or oil and weighs two pounds.



Manufactured by J. H. Haney & Co., Hastings, Neb. Price, each, $2.50.

The Springfield High-Rate Discharge Instrument Model TF-501 is designed for battery service stations and is used for the purpose of detecting damaged cells in storage batteries.

It consists of a special high grade voltmeter with a center reading 2-0-2, graduated in 10ths. The voltmeter is mounted on two steel posts which terminate in a convenient handle. Between these posts the current is short-circuited through a fixed resistance which determines the rate of discharge. The resistance has a current capacity of 80 amperes cold and 70 amperes when hot. When a cell is in good condition the voltmeter needle will hold its position somewhere between 1.3 and 1.7. It will not register higher, it is stated, because the high rate discharge produces an immediate drop in the voltage. If the cell has defective insulation, it is claimed, the needle will then gradually recede towards the center, as the high rate discharge of the cell takes place. If the cell has an open circuit or broken connectors inside or outside the jar, the needle will remain at zero. From 10 to 20 seconds should be the limit of the test.



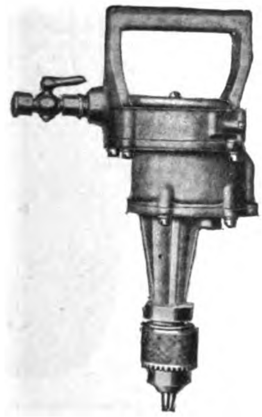
In testing batteries, a comparative reading of the cells is important. A perfect condition is indicated by all the cells registering the same voltage and any variation indicates a weakened condition.

Manufactured by the Service Products Co., Springfield, O. Prices and literature on request.

The Jackson Pneumatic Drill is designed especially for the garage and service station trade where a powerful yet compact light weight drill, capable of operating in close quarters, is demanded. The pneumatic drill is intended to be used in connection with the regular tire inflating compressor equipment and will work on pressures varying from 80 pounds when drilling a ⅜-inch hole to 110 pounds when drilling a ½-inch hole in steel.

The casing is constructed of tough aluminum alloy, while the gears are made of heat treated steel. Norma ball bearings are used on the high speed shaft, while phosphor bronze bushings are used on low speed spindles.

The chuck is a Jacobs, is regular standard equipment on this tool and has a capacity from 0 to ½ inch. The drill is throttle adjusted and is under the control of the operator at all times.

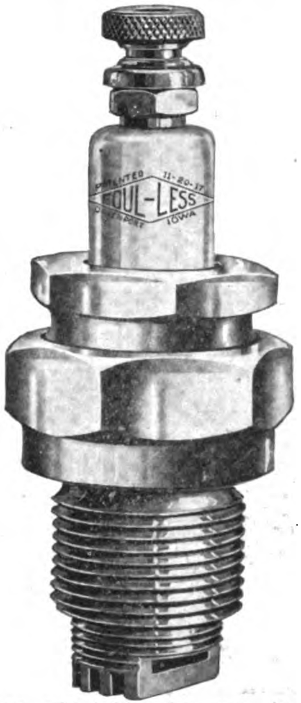


The regular Jackson guarantee applies to this drill, and is good for a year from date of purchase against imperfect material or poor workmanship.

Manufactured by the Kalamazoo Railway Supply Co., Kalamazoo, Mich. Price, $50.

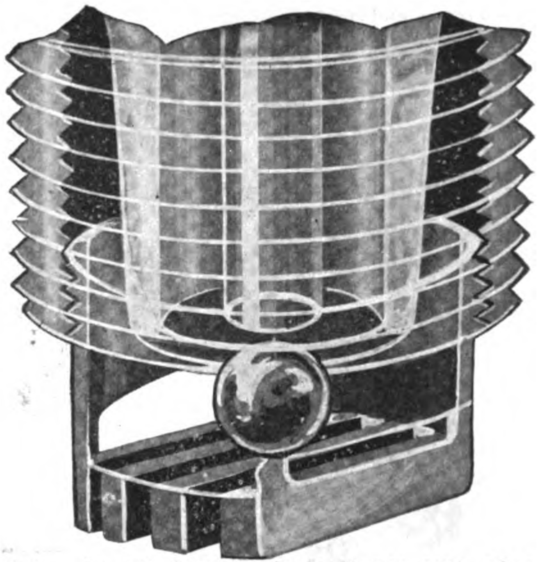
The Foul-less Spark Plug is not the result of accident or some radical mechanical idea, it is stated, but is the product of painstaking effort and research on the part of a corps of able mechanics and automotive engineers who have devoted years of time and study to the problem of more perfect combustion.

Foul-less plugs are built substantially and incorporate the highest grade material and the most skilled workmanship, and are adaptable for use in engines where heavy duty, high compression and extreme temperature conditions prevail. One and one-eighth inch special carbon hexagon steel is used in the body parts of all sizes. Each part is carefully inspected and gauged, and all are interchangeable. The center electrode is extremely heavy, being ⅛-inch diameter. Its composition is monel metal, to insure against pitting, scaling or corrosion. This gives positive assurance of the highest possible conductivity with the least possible electrical resistance. The porcelain is composed of a special formula and is capable of resisting high voltage and radical changes in temperature.



The ball is monel metal and functions at the bottom of the cage between the two parallel sparking surfaces, namely, the bottom of the center electrode and the bottom of the slotted cage. The current passes through the center electrode to the ball which, acting as a condenser, intensifies the spark. This ball, being in constant motion through the vibration of the engine and its explosions, keeps the sparking surfaces and also a sufficient portion of the porcelain, free and clear of all deposits of oil or carbon, thus insuring, it is stated, an ever clean spark plug.

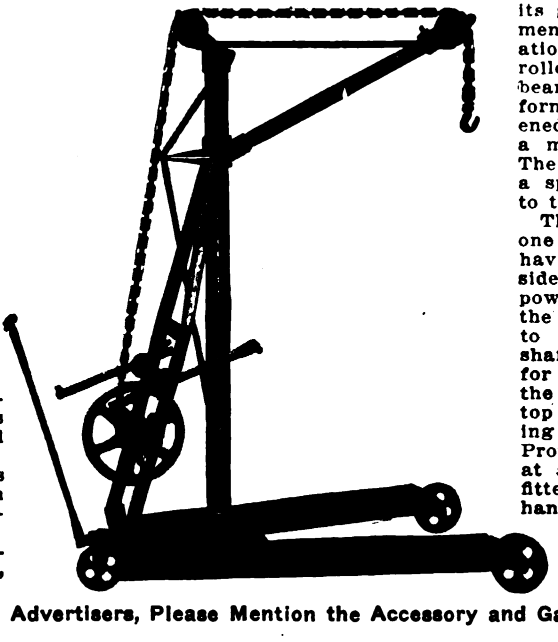
The manufacturer recommends that the needle valve adjustment of the carburetor be cut down at least 10 per cent. after Foul-less plugs have been installed, as these plugs give a more intense spark, they are able to function on an extremely lean mixture.



Foul-less spark plugs are guaranteed against any defect in material or workmanship. Claims for any breakage can be made to the nearest dealer. Adjustment of the gap at the bottom of the plug is made in a few moments time by means of a threaded nipple and a square end to which a wrench may be fitted.

Manufactured by the Foul-less Spark Plug Co., 220 East Third Street, Davenport, Ia. Price, $2.

The R-W Portable Floor Crane No. 365 is particularly adapted for lifting engines and other heavy units out of automobiles and trucks, because of its high lift and long reach. The crane is built throughout of cast iron and steel combined so as to place all heavy tensile and bending stresses on the steel members.



This device is particularly adapted for garage and service station use because of its great strength and freedom of movement about the garage and ease of operation. The crane is mounted on three rollers, while the base is made of two I-beam sections riveted together, firmly forming a base to which the mast is fastened. The mast is braced and trussed in a manner that gives it great strength. The mast arm is fastened to the mast by a special fixture and is suitably braced to the top of the mast.

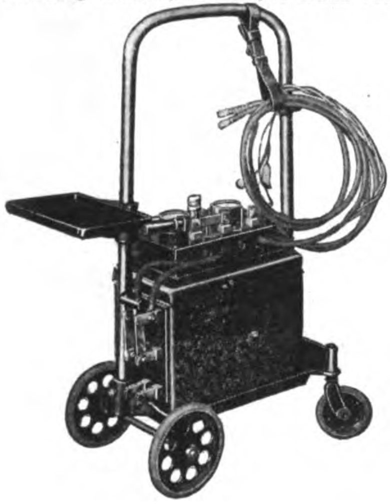
The winch is operated by two cranks, one at either side, fitted to a short shaft, having bearings on the braces at the sides. A small pinion gear transmits the power from the shaft to a large gear on the winch drum, which is likewise fitted to bearings at each end of the drum shaft, to the side braces. A chain, used for hoisting, is fastened at one end to the drum and passes over a pulley at the top of the mast and mast arm, terminating at a hook at the end of the chain. Provision is made for holding the hoist at any desired point by a pawl ratchet fitted to the cross shaft and operating handles.

Manufactured by the Richards-Wilcox Manufacturing Co., Aurora, Ill. Prices and literature on request.

Model TF-300 Electric Portable Test Unit consists of a unit designed and built for detecting defects in the electric equipment of passenger cars It is a "first aid" or trouble shooter for use in electric and battery service stations and garages. Motors, generators, ignition distributors, coils, relays, ammeters and switches may be tested without removal from the car. By means of an external battery and precision meters assembled with the necessary leads, it is possible to give quick and accurate service.

This model consists of a double six-volt battery with special double-pole, double-throw switch, Weston ammeter, double-reading, ranges 30-0-30 and 600-0-600; Weston voltmeter, 0 to 15; single-pole, double-throw switch; carrier for motor, generator and tools; mounted on a rubber tired truck.

The method of testing is very simple. Two heavy leads are provided for testing starting motors, two light leads for generator and ignition tests and one light lead for recording voltage.

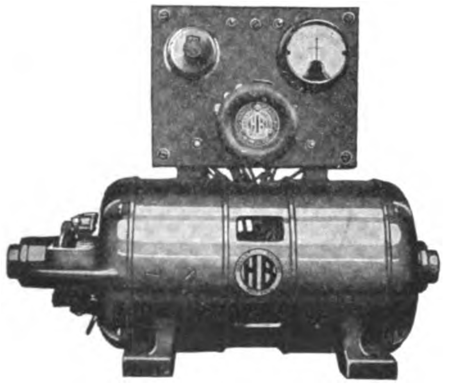


The double six-volt battery permits the testing of both six and 12-volt systems, the operation being controlled by a switch mounted on the battery box. The double-range ammeter allows full range of meter for testing both motors and generators.

With this unit, it is stated, the service station sells "service" instead of tim conserving the patience of the car owner and his time. The unit, it is claimed, eliminates makeshift methods and introduces standardized scientific service.

Manufactured by the Service Products Co., Springfield, O. Prices and literature on request.

The New HB-250 Watt Battery Charging Outfit is especially designed for the small garage that wishes to give service to customers only, and desires a dependable, continuous operating outfit that is economical to install and operate. It enables the small garage to give the complete battery charging service that customers demand, and its economy of operation allows the garage to make a big profit on a small investment.

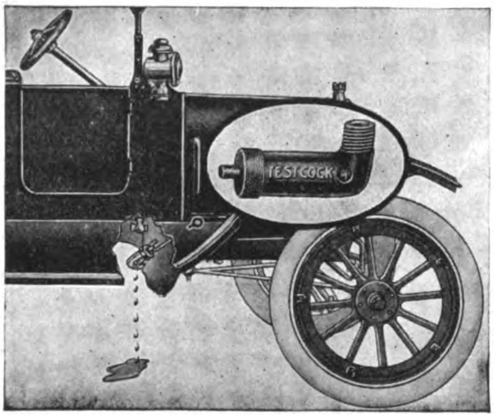


This sturdy little outfit, though much smaller than the other products of this manufacturer, maintains the same special features throughout as the rest of the line ball bearing equipment, automatic voltage control, allowing different voltage batteries to be charged at the same time, ample capacity for the rating, and complete panel board, mounted on top of the motor generator.

Manufactured by Hobart Brothers Co., Troy, N. Y. Prices and literature on application.

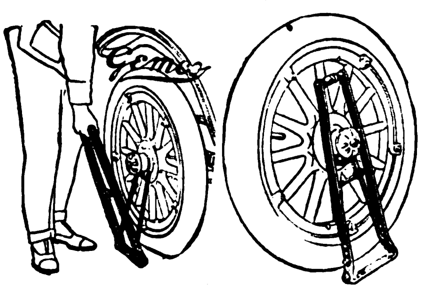
The "Test Cock" for Ford Engines is a small device that screws into the lower crankcase in place of the lower petcock and is used for testing the oil in the base of the Ford engine. A wire is connected to the plunger of the test cock, passing out through a hole drilled in the apron at the side of the car and terminates in a ring, by means of which the operator can open the cock when testing the oil.

The test cock is made of brass, with the exception of the valves, which is of cold rolled steel. It is stated that the device cannot break, clog or get out of order, and will last indefinitely. As shown in the illustration, a small hole is drilled in the test cock slightly above the elbow, through which the oil flows when the plunger is pulled out.



Manufactured by the F. L. Huber Co., 219-221 North Channing Avenue, St. Louis, Mo. Price, $1.

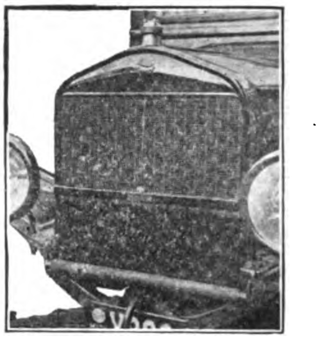
The Gemco Tire Saving Jack is designed to raise the car wheels from the floor of the garage, taking the weight of the car off the tires. The jack is made entirely of steel, with the exception of the hub saddle, which is covered with harness leather to protect the hub and cap from being marred. The jack is easily placed in position and can be adjusted to fit different sized wheels. A lock is provided which holds the jack in place after the wheel has been raised. Four jacks comprise a set. They are made in three sizes, as follows: Small, adaptable for Fords and other light cars; next larger for cars weighing 1800 to 2400 pounds; largest, for cars over 2400 pounds.



Manufactured by the Gemco Manufacturing Co., Milwaukee, Wis. Prices, $4.50, $5.50 and $7.50 respectively per set.

The Mayhew Curtain for Ford Cars is an adjustable radiator shield of the roller curtain type, controlled from the driver's seat by a cord running through the dash, over the top of the engine, passing through a tube inserted in the top of the radiator core in an air passage and connecting with the cross bar of the flap at its top.

The flap is fastened to the sides of the radiator by supports similar to those used for suspending a roller window curtain, the roller operating similarly to an ordinary curtain roller. The flap is raised and lowered and caught at any desired point and may be operated when the car is in motion.



The Mayhew Ford curtain is made of the best of materials throughout. Its use is primarily for quickly warming up the Ford engine, after which the flap can be lowered to any desired position.

Manufactured by the Sutter-Mayhew Co., 174 Canfield Avenue, Detroit, Mich. Prices on request.

The Victor Service Cord Tires, known as "Mileage Hogs," are composed of six layers of heavy cotton cords, criss-crossed to neutralize road shocks, each cord treated with tough, live rubber gum, which gives it extra strength and resiliency. The large amount of rubber used in the tread of this tire gives it both the appearance and durability of unusual strength. The name "Mileage Hogs" has been given to these tires, it is stated, by users who have been able to get from 8000 to 12,000 miles of service from them.

Victor tires are made from the best material, under ideal manufacturing conditions, and by workmen skilled in tire manufacture. The rubber used is the finest quality Ceylon and Para. The fabric is specially woven for strength and lasting qualities. Victor tires are guaranteed for positive mileage satisfaction and it is stated that the users forget the guarantee as the tires are built to outlast it, and that mileage is the only real basis of adjustment.

MILEAGE
HOGS
VICTOR

Manufactured by the Victor Rubber Co., Springfield, O. Prices and literature on request.

Highway Motors Co. at Defiance, O.

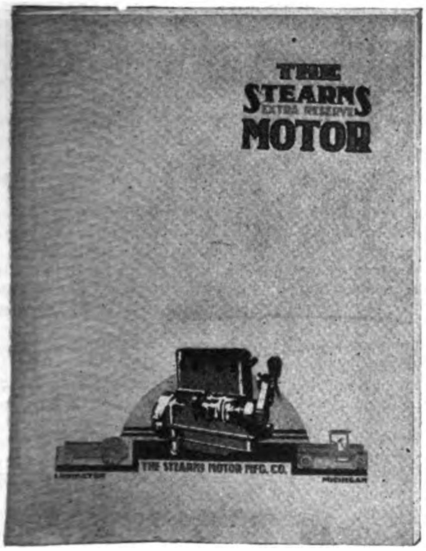
The Highways Motors Co. has been formed at Defiance, O., and has taken over the plants, good will and business of the Golden, Belknap & Swartz Co., and the Fruchery Machine Co., both of Detroit. The new corporation is capitalized at $1,500,000, $75,000 being preferred and $750,000 common stock. The officers are:

President, Charles H. Kettenring, Defiance; vice president, R. P. Kettenring, Defiance; vice president and chief engineer, E. H. Belknap; vice president in charge of purchases, J. W. Schwartz; secretary and treasurer in charge of sales and advertising, J. W. Wright; factory superintendent, W. R. Fruchery: the last four named all from Detroit. In addition to the officers named the directorate includes Albert M. Pearson and T. T. Shaw, both of Defiance; Harold S. Reynolds, a banker of Toledo, and Mr. Fraser of the Guardian Savings & Trust Co., Cleveland.

Plans have been developed for the production of a minimum of 150 motors a day on an eight-hour shift. A factory which has just been completed at Defiance, is being equipped with a complete line of modern machinery which will give the Highway Motors Co. one of the most up-to-date motor producing plants in the world. Production in the new factory will be concentrated on the model AA, 3¾ by five-inch. four-cylinder motor, heretofore manufactured by the Golden, Belknap & Swartz Co. and designed for both passenger car and truck service. The factories at Detroit will continue to supply present demands. The problem of housing its many hundreds of employees is being given attention and by the time the new plant is ready for operation 500 new homes will have been built at Defiance.

NEW STEARNS MOTOR CATALOGUE.

A new, attractive and exceptionally interesting catalogue has just been issued by the Stearns Motor Manufacturing Co., Ludington, Mich., in which are described the Stearns Extra Reserve motors. The details of the engine are photographically illustrated and blue prints and a phantom view of the 4¾ by 6½ motor, as well as a power curve chart, are shown. Installation charts are given showing the 4 by 6, 4¼ by 6, 4½ by 6 and 4¾ by 6½ motors.



This catalogue will be cheerfully sent upon request to tractor and motor truck engineers and others interested in industries utilizing gasoline and kerosene motors.

CRAIG-HUNT MOTORS INCORPORATED.

The Craig-Hunt Motors Co., Indianapolis, Ind., was recently incorporated with a capital of $1,000,000, to manufacture a small low-priced pleasure car to be known as the Craig-Hunt, with the slogan, "The Character Car." It will be made in two models, a five-passenger touring car and two-passenger roadster.

The Craig-Hunt Motors Co., has absorbed Craig-Hunt, Inc., which has, for the past five years, been making Ford Speed specialties. The following officers have been elected: President, J. B. Craig; vice president, W. L. Hunt; secretary and treasurer, C. L. Zechiel. The The executive offices will be in the Claypool hotel, Indianapolis, until the completion of the administration building, which will be located at the corner of Meridian street and Maple Road boulevard.

The new company will continue to manufacture and market the Ford Speed specialties, consisting of 16-valve head with overhead cam shaft, underslung parts and Speedway bodies.

VISIBLE PUMP CO. MOVES TO FORT WAYNE.

The Visible Pump Co., formerly of Montpelier, Ind., has recently reorganized as the Visible Pump Co. of Fort Wayne, Ind., with capital of $1,000,000. Following is the personnel:

President, H. E. Dean; vice president, L. E. Francis; secretary and treasurer, W. M. Roth; general manager, C. S. Fair.

The factory and general offices have been moved to Fort Wayne, where the manufacture of the August Bowser air pressure systems will be continued.

Champion Dealers Transport Plugs

The Champion Spark Plug Co., Toledo, O., recently found itself in the same predicament as thousands of other manufacturers, due to the embargo on freight and express shipments. The wires were kept hot by jobbers who were in urgent need of Champion plugs to supply their needs. It so happened that the sales forces of two prominent New York City jobbing houses, the A. J. Picard Co. and Whittemore-Simms Co., were in Toledo at the time when the freight tie-up was at its height, as guests of the Spark Plug Co. While going through the plant they noticed the congestion of freight in the shipping department, one keen-eyed salesman pointing out a case of plugs with his own firm's name stencilled on it. As a joke he suggested that they carry the case back with them, and was given the laugh when told that the box weighed over 600 pounds. He then proceeded to convince the head of his department that such a feat was not only possible, but practical, if each man would carry his share of the 2500 plugs, and when the delegation left for home each had at least one package containing 100 Champion plugs.

Dealers of Champion Spark Plug Co., Toledo, O., Laden with Shipment of Plugs.

WILLYS-OVERLAND CO. INCREASES CAPITAL.

An increase of $25,000,000 common stock has been authorized by the stockholders of the Willys-Overland Co., Toledo, O. With this new issue the authorized capital becomes $100,000,000, $25,000,000 preferred and $75,000,000 common. The Willys Corporation, in its re- $5,364,683 before taxes. After dividends and taxes there was a surplus of $3,250,800. The figures cover operations of the constituent companies for the first six months of the year, to July 1, the date of the original consolidated balance sheet, and for the six months thereafter. Total profits during the last half of the year, after providing for taxes, were $3,300,729, which, it is stated, were 5½ times dividend requirements.

The company's daily production is reported to be 650 cars and that schedule is to be increased to 750 soon.

RECORD OF BUILDING OPERATIONS FOR MAY

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Birmingham, Ala.; Standard Oil Co.; one-story brick and concrete garage and machine shop; $17,000.

Camden, Ark.; N. S. Ward & Co.; one-story concrete block garage and display room, 100x120.

Pine Bluff, Ark.; Sinclair Oil Co.; one-story garage and two filling stations; $10,000.

Texarkana, Ark.; Texarkana-Overland Co.; one-story brick and terra cotta sales room, 50x60.

Wilmington, Del.; Charles E. Litzinger, 3678 Falls road; one-story brick garage; $10,000.

Wilmington, Del.; Federal Motor & Sales Co., 303 Lou street; three-story brick garage and show room, 106x141, at North avenue and Lord street; $100,000.

Wilmington, Del.; Wilmington Leather Co.; one-story brick and cement garage, 25x50, at Second street and Greenville avenue; $12,000.

Wilmington, Del.; Joseph Kitchenbaum, care J. J. Kennedy, Ford building; two-story brick and cement public garage, 35x75.

Washington. D. C.; James H. Keane, Colorado building; one-story brick and concrete public garage, 66x72, at 1908-1914 L street; $10,000.

Washington, D. C.; H. Winninger; one-story garage; $25,000.

Washington, D. C.; Nicholas P. Chaconas, care A. S. J. Atkinson, 3801 Macomb street, northwest; two-story brick and concrete garage, 31x80; $30,000.

Arcadia, Fla.; E. T. Smith; two-story fireproof garage, 50x150; electric elevator: $18,000.

Jacksonville, Fla.; Ford Motor Co., Detroit, Mich.; four-story assembling plant, 200x250 site; $400,000.

Key West, Fla.; Trevor & Morris; three-story brick repair shop, 48x145; purchased $2500 machinery.

Tampa, Fla.; Reagin-Denton Motor Co.; one-story reinforced concrete garage; site, 105x210; $45,000.

Atlanta, Ga.; Atlanta-Cadillac Co., 183 Peachtree street; three-story reinforced concrete automobile building, 93x150: $150,000.

Augusta, Ga.; E. J. Trelding and Henry H. Cummings; one-story garage; site 29x199; lessee, Pollock & Johnson.

Aurora, Ill.; Sinclair Refining Co., 111 Washington street, Chicago; one-story service station at Lake and Galena streets; $5000.

Berwyn, Ill.; F. Kunsel, 2736 West 64th street; one-story brick public garage, 52x80; $15,000.

Charleston, Ill.; Grant Childress, care Cole County Motor Car & Garage Co.; one-story brick garage, 115x145; $30,000.

Chicago, Ill.; S. N. Crowen, 30 North La Salle street; one-story brick garage, 40x20x120; $15,000.

Chicago, Ill.; O. W. Johnson, care A. Sandgren, 25 North Dearborn street; one-story brick garage, 22x85.

Chicago, Ill.; A. Craver, 6928 Woodlawn avenue; one-story brick private garage, 22x34, south side Woodlawn avenue; $3000.

Chicago, Ill.; F. B. Purviance, 6935 Chappell avenue; one-story brick garage at 6937 Chappell avenue; $5000.

Chicago, Ill.; Illinois Brick Co., 111 Washington street; one-story brick garage, 67x92; $7500.

Chicago, Ill.; New Central Garage Co.; one-story brick public garage, 122x125, at Fillmore and Central Park avenue; $38,000.

Chicago, Ill.; P. A. Pottinger, 4030 Irving Park boulevard; one-story brick garage and shop, 113x133, at Irving Park boulevard and Kedvale street; $45,000.

Chicago, Ill.; E. C. Waller, Jr.; one-story garage, 80x160, at 1523 North Wells street.

Chicago, Ill.; Hyman Brothers, care Axel V. Teisen, 3133 Logan boulevard; one-story brick garage, 24x25, at 2412-2414 Logan boulevard; $4000.

Chicago, Ill.; S. Zarzyckis, 2500 Sacramento boulevard; one-story stone private garage, 29x51; $7500.

Chicago, Ill.; J. E. Faget, care E. J. Ohrensetin, 58 West Washington street; one-story garage and service station, 50x120, on Cottage Grove avenue, near 63rd street; $20,000.

Chicago, Ill.; A. F. Hallman, 10 South La Salle street; one-story stone public garage, office and display room, 100x125; $25,000.

Chicago, Ill.; Otten & Woermer, care A. J. Fischer, 4011 North Robey street; one-story brick and stone public garage, 50x140, on Greenview, near Belmont avenue; $15,000.

Decatur, Ill.; Amos Wheeler, 235 Wood street; one-story reinforced concrete garage, 54x152; $15,000.

Evanston, Ill.; A. D. Sheridan, 510 Church street; one-story brick private garage, 20x24; $10,000.

Evanston, Ill.; Lansing B. Warner; one-story private garage; $5000.

Highland Park, Ill.; O. Kelley, 208 South La Salle street; two-story brick and stone private garage, 24x40.

Wilmette, Ill.; Warble Furniture Storage Co.; two-story garage, 40x50, Railroad avenue, near Wilmette street; $85,000.

Albany, Ind.; McCormick Brothers; one story brick garage, 55x65.

Argos, Ind.; W. L. Rudd Motor Co., Plymouth, Ind.; one-story brick commercial garage, 45x160; $15,000.

Bluffton, Ind.; O. E. Shafer, 510 South Morgan street; one-story brick garage, 60x100; $25,000.

Fort Wayne, Ind.; G. N. Fitch & Sons, Berry and Clinton streets; two-story brick garage and sales room, 110x120; $55,000.

Oakland City, Ind.; A. L. Maxwell Co., Lawrenceville, Ill.; one-story brick, steel and concrete commercial garage and sales room, 85x130.

Richmond, Ind.; Webb & Coleman, 19 South Seventh street; three-story commercial garage and sales room, 94x105.

Des Moines, Ia.; Hippe State Co., 710 Mulberry street; five-story reinforced concrete and terra cotta garage and sales room; $60,000.

Grinnell, Ia.; Hagen Brothers; one-story garage, 50x165; $30,000.

Treynor, Ia.; Carl Karrer; one-story brick and stone trim public garage, 52x102; $20,000.

Lincoln Center, Kan.; Lincoln Motor Co.; one-story brick and stucco garage, 100x120.

Topeka, Kan.; Page Milling Co.; three-story brick and stone trim garage, 50x150, at 912-914 Kansas avenue; $65,000.

Glasgow, Ky.; Glasgow-Buick Co.; two-story garage, 50x100; $25,000.

Louisville, Ky.; G. F. Lowe, 1215 Cherokee street; one-story brick garage, 41x152, at 434 East Broadway; $15,000.

Louisville, Ky.; Jacob Weber & Sons, 53 East Market street; one-story brick garage, 50x110; $20,000.

Biddeford, Me.; Cleaves & Sawter, Saco, Me.; one-story brick, steel and concrete public garage and sales room, 40x80.

Baltimore, Md.; George Klein, 2921 Belmont avenue; 45 one-story garages, 10x18 each; $18,000.

Baltimore, Md.; John Mennsteil, 1512 East Lanvale street; one-story brick garage, 47x70, at 1713 Spring street; $5000.

Baltimore, Md.; Guilford Building Co., 2802 St. Paul street; one-story brick garage, 50x50; $7500.

Baltimore, Md.; Charles E. Litzinger, 3678 Falls road; one-story brick garage at 38th and Elm avenue; $10,000.

Baltimore, Md.; R. S. Whiteford, 2633 Pennsylvania avenue; one-story brick garage, 46x100; $20,000.

Baltimore, Md.; Louis Blaustein, 2312 Callow avenue; one-story brick garage, 57x130, at 13 Fremont avenue; $30,000.

Baltimore, Md.; H. S. Born Motor Corporation, 798 Waesche street; one-story brick garage, 100x150.

Baltimore, Md.; Gotch Supply Co., Raspeburg, Md.; one-story garage, 75x100; $10,000.

Cumberland, Md.; Scott Kelso; three-story garage, 50x120.

Pocomoke, Md.; J. Milton Clogg; one-story brick garage, 69x140; $20,000.

Chelsea, Mass.; F. A. Glazier, 107 Addison street; one-story garage, 21x65: $50,000.

Lynn, Mass.; J. Callum, 27 Neptune street; one-story reinforced concrete garage, 73x85, at Washington and Suffolk streets; $23,000.

Battle Creek, Mich.; Post Tavern hotel: one-story brick public garage, 122x126; $150,000.

Detroit, Mich.; L. G. Grimm, 395 Military avenue; one-story brick garage, 95x130, at Lintwood and Ferry Park avenue; $50,000.

Detroit, Mich.; J. Shevitz, 144 East Berry street; one-story brick and stone garage, 50x70; $65,000.

Detroit, Mich.; Varney & Varney, 307 Palmer building; one-story brick garage and show room, 50x180; $40,000.

Detroit, Mich.; Frank Knoblock, St. Aubin avenue and Superior street; one-story brick garage, 60x100.

Flint, Mich.; A. Davidson: four-story brick, stone and reinforced concrete garage, 40x90; $75,000.

Grand Rapids, Mich.; Bird Taxi Co., 147 Maple street; one-story garage, 48x125; $20,000.

Kalamazoo, Mich.; Moulton-Dagliesh Auto Co.; one-story brick garage and show room, 70x100; $50,000.

Mendon, Mich.; Cline Brothers & Wright; one-story brick and concrete garage and repair shop, 60x100; $20,000.

Cambridge, Minn.; E. F. Gillespie; one-story brick and concrete public garage, 50x100; $12,000.

Faribault, Minn.; Foss Motor Co.; one-story brick and concrete public garage, 66x108; $33,000.

Hinckley, Minn.; L. N. Hopkins; 1½-story public garage, 40x80; $3000.

Luverne, Minn.; Page Brothers; one-story public garage, 50x100.

Montevideo, Minn.; W. F. Bonde; two-story public garage, 100x100; $55,000.

Spring Grove, Minn.; E. J. Foss; one-story garage, 50x100; $15,000.

Two Harbors, Minn.; E. V. Pearson; one-story brick garage, 50x100; $12,000.

Jackson, Miss.; Pote Automobile Co.; two-story brick fireproof garage and sales room; $90,000.

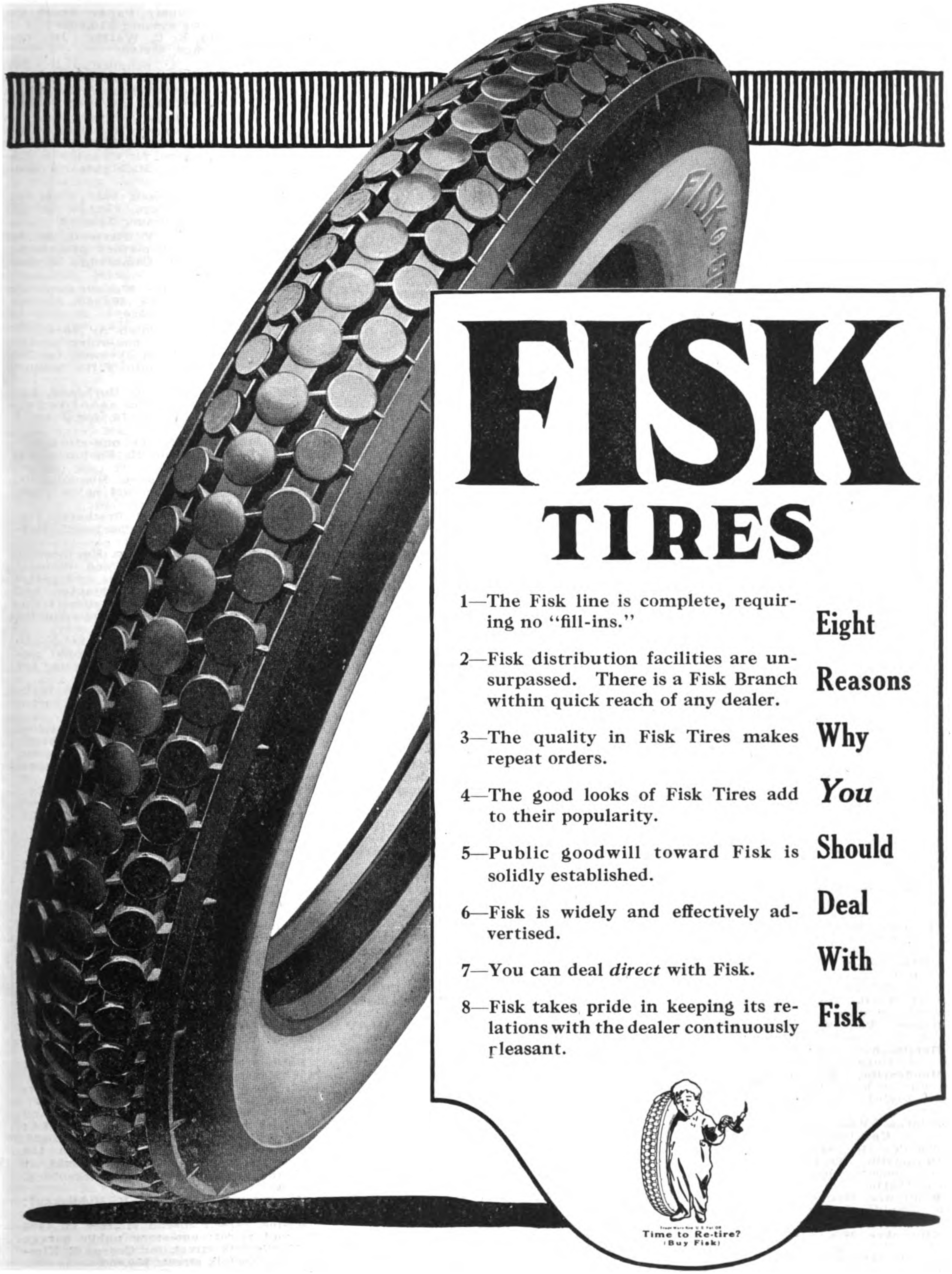
Rosedale, Miss.; J. C. Brooks; one-story brick garage, 50x120; wood trusses, tile floor, plate glass window front; $16,000.

Kansas City, Mo.; A. M. Clark, 3500 South Benton avenue; one-story brick and reinforced concrete sales room, 50x100.

Kansas City, Mo.; Sinclair Refining Co., Conway building, Chicago, Ill.; one-story white enamel brick service station, 25x25, at Admiral boulevard and Lydia avenue; $8000.

Kansas City, Mo.; Sinclair Refining Co., Conway building, Chicago, Ill.; one-story white enamel brick service station, 25x25, at 15th and Van Brunt avenues; $8000.

Lincoln, Neb.; J. H. Markel, 1724 O street; four-story garage, 60x142, at 18th and O streets; $125,000.



FISK

TIRES

Eight Reasons Why *You* Should Deal With Fisk

1—The Fisk line is complete, requiring no "fill-ins."

2—Fisk distribution facilities are unsurpassed. There is a Fisk Branch within quick reach of any dealer.

3—The quality in Fisk Tires makes repeat orders.

4—The good looks of Fisk Tires add to their popularity.

5—Public goodwill toward Fisk is solidly established.

6—Fisk is widely and effectively advertised.

7—You can deal *direct* with Fisk.

8—Fisk takes pride in keeping its relations with the dealer continuously pleasant.

Sapulsa, Okla.; Sapulsa Motor Co., Main and Hobson streets; two-story brick and reinforced concrete garage, 120x150; concrete floor.

Tulsa, Okla.; T. J. Carter, 207 South Detroit street; one-story garage; $30,000.

Tulsa, Okla.; J. J. Burke, 1809 East 15th street; one-story garage; $3000.

Allentown, Pa.; Pennsylvania Motor Co.; one-story public garage, 80x120, at 1313-1319 Linden street; $50,000.

Beaver Falls, Pa.; J. Clem Campbell; one-story commercial garage, 60x80; $6000.

Bethlehem, Pa.; Bethlehem Paper Co., 607 West Market street; one-story brick private garage; $3000.

Bethlehem, Pa.; Adolph Weiher, 39 West Broad street; one-story brick garage, 86x105; $30,000.

Hollsopple, Pa.; Fred Sann, Boswell, Pa.; 2½-story brick commercial garage, 51x70.

Johnstown, Pa.; Twin Valley Motor Co., Inc., 216 Dibert street; two-story brick and concrete commercial garage, 66x152; $75,000.

New Brighton, Pa.; Guy D. Oatania; two-story brick and reinforced concrete commercial garage, 24x150; $18,000.

Northampton, Pa.; Northampton Garage, 1716 Washington avenue; one-story public garage, 35x75; $12,000.

Philadelphia, Pa.; Samuel J. Lyons, 2252 North Front street; one-story brick private garage, at 6448 North 13th street.

Philadelphia, Pa.; Diamond Garage, care Neubauer & Supswitz, 929 Chestnut street; three-story garge; $20,000.

Philadelphia, Pa.; Emanuel Asher & Son, 1602 Diamond street; one-story brick private garage, 25x40, rear 1309 North Broad street; $7000.

Philadelphia, Pa.; F. Ferrison, 102 South street; two-story brick public garage, at 119 South street; $20,000.

Pittsburgh, Pa.; Neville Land Co.; five-story brick and reinforced concrete garage and show room, 175x200.

Scranton, Pa.; Drickworth Brothers, Coal Exchange building; two-story public garage; $40,000.

Uniontown, Pa.; National Auto Co.; four-story brick and reinforced concrete commercial gargae, 100x100; $175,000.

Cranston, R. I.; George Gray, Jr.; one-story public garage, 60x60 and 30x30; $23,000.

Pawtucket, R. I.; Francis Conlon, Summit and Division streets; one-story concrete block public garage, 60x147; $35,000.

Providence, R. I.; Leon E. Danforth, 76 Dorrance street; one-story brick public garage, 100x200; $12,000.

Columbia, S. C.; C. Bardson; one-story galvanized iron filling station; $5000.

Greenville, S. C.; J. C. Redmond; two-story brick and tile garage, 45x84; $15,000.

York, S. C.; Courtney Motor Car Co.; one-story garage and sales room; $15,000.

Sioux Falls, S. D.; George Rallis, 303 South First avenue; one-story brick public garage, 44x150; $30,000.

Memphis, Tenn.; Colyear, Reese & Co.; one-story brick garage; install 12 gasoline tanks; $9500.

Dallas, Tex.; General Motors Truck Co.; six-story concrete automobile building, 100x100; $125,000.

Fort Worth, Tex.; U. M. Simon; one-story brick garage, 100x116; $25,000.

Bristol, Va.; Kite-Barker Motor Co.; onestory automobile building, 50x150.

Harrisonburg, Va.; Harrisonburg Motor Co.; one-story fireproof garage; $60,000.

Moundsville, W. Va.; W. H. Batson; three-story brick, tile and stone trim garage, 60x109; plate glass windows, fireproof.

Delevan, Wis.; W. H. Tyrrell, care Bradley Knitting Co.; one-story stucco and hollow tile garage, 22x24; $5000.

Hortonville, Wis.; Otis Brothers; two-story concrete block garage and sales room, 38x110.

Manitowoc, Wis.; Dicke Motor Car Co., 1101 Franklin street; one-story brick and hollow tile sales room, 60x120; $15,000

Milwaukee, Wis.; C. J. Keller, 608 Majestic building; one-story stucco-on-frame, 20x22, at 1582 Prospect avenue.

Milwaukee, Wis.; Osmond Motor Car Co., 503 Broadway, northeast; four-story brick and reinforced concrete sales room, 120x180; $275,000.

Milwaukee, Wis.; C. E. Koehler, 800 Marietta avenue; one-story brick garage, 18x32.

Milwaukee, Wis.; Dr. E. F. Wilde, 602 49th street; one-story stucco-on-frame garage, 18x18, at 602 49th street.

Shorewood, Wis.; Henry C. Hengles, 1225 First National Bank building; one-story garage, 24x32.

Stevens Point, Wis.; Northern Motor & Supply Co.; one-story garage and sales room, 55x95.

Wauwatosa, Wis.; J. E. Wiener, 4711 Woodlawn court; one-story garage, 12x20.

CONTRACTS AWARDED.

Hartford, Conn.; Henry M. Neilson, 246 Laurel street; two-story garage, 50x140, for J. P. Neilson, 40 Temple street; $50,000.

New Haven, Conn.; Papa Brothers, 165 Franklin street; one-story brick public garage, 63x135, at 214-216 Chapel street; $25,000.

Berwyn, Ill.; F. Kunal, 2736 West 64th avence; one-story public garage, 52x80, at 6307 West 26th street; $15,000.

Bethany, Ill.; Hagerman & Horschman Construction Co.; one-story public garage, 30x60, for Vadakin Garage & Repair Co.; $10,000.

Chicago, Ill.; Carrie O. Meacham, 2458 South Michigan avenue; one-story brick and reinforced concrete sales room and service station, 60x111, at 2456 South Michigan avenue; $40,000.

Chicago, Ill.; Charles Johnson & Son, 111 West Washington street; two-story sales room, 36x50, on Washington street, near Crawford avenue; $12,000.

Chicago, Ill.; William Mayor Co., 72 West Adams street; one-story show room and service station, 57x132, southwest corner 28th and Michigan avenue.

Chicago, Ill.; B. J. Reynell Co., 19 South La Salle street; one-story service station, 49x83, at 18 East 36th street, for Henrickson Motor Truck Co., 36th and Wabash avenue; $10,000.

Chicago, Ill.; Wells Brothers Co., 53 West Jackson boulevard; two and three-story sales room and service station, 180x200, at 2220-2238 South Michigan avenue, for Marmon Co., 2430 Michigan avenue.

Chicago, Ill.; Engel Stephan & Co., 1237 Eggleston avenue; one-story garage, 130x150, at 4217 South Mashfield avenue, for Wilson & Co., Union stock yards; $75,000.

Chicago, Ill.; N. C. Anderson, 4937 Barry avenue; one-story garage, 120x126, at 2633-2641 North Clark street, for Benjamin Schwartz, 3653 South Halstead street; $50,000.

Chicago, Ill.; E. W. Sproul & Co., West 39th street; one-story garage, 50x125, at 39th street and Winchester avenue, for Goodyear Tire & Rubber Co., 1550 South Indiana avenue; $22,000.

Chicago, Ill.; A. Votava, 1616 South Karlov avenue; one-story public garage, 50x125, at 1634 South Crawford avenue; $14,000.

Chicago, Ill.; P. Christiansen, 2948 Albany avenue; one-story garage, 50x125, Paulina, near York street, for David Labowitch, 166 North State street; $15,000.

Chicago, Ill.; F. J. Biffas, 400 North Cicero avenue; one-story public garage, 50x65, at 4733-4735 Chicago avenue; $12,000.

Chicago, Ill.; Fred Klypel & Son, 133 West Washington street; one-story garage, 22x26, at 4957 Kimbark avenue, for Mrs. G. G. Sutcliffe, 1714 East 56th street; $8000.

Chicago, Ill.; H. P. Jensen, 4601 Monticello avenue; one-story garage, 24x32, at Pearson and Cass streets, for A. T. Farwell, 1301 Ritchie county; $4000.

Chicago, Ill.; Barr & Miles, 1142 Hickory avenue; one-story private garage, 48x140, at 1144-1146 Hickory avenue; $150,000.

Chicago, Ill.; Rowley Brohers, 8 South Dearborn street; one-story private garage, 40x190, at 3131 South Kedzie avenue, for Cook County Paper Stock Co., 3201 South Kedzie avenue; $10,000.

Chicago, Ill.; E. C. Waller, Jr.; one-story brick garage, 65x100.

Chicago, Ill.; A. Schmallhouse, 2448 South Michigan avenue; four-story brick sales room and service station, 50x186, at 2449-2451 South Michigan avenue; $150,000.

Chicago, Ill.; Johnston Brothers, 109 North Dearborn street; two-story sales room and service station, 50x160, at 23rd and Michigan avenue, for Charles S. Rieman, 2427 South Michigan avenue; $100,000.

Chicago, Ill.; J. Mrazek, 1448 West 16th street; one-story garage, 99x120, at 2220 South Winchester avenue; $30,000.

Chicago, Ill.; John V. Farwell, Market and Monroe streets; two-story private garage, 26x74, at 2320 Cambridge avenue; $16,000.

East St. Louis, Ill.; Weber Brothers; one-story public garage, 55x150, for Selfelt Auto Sales Co.; $15,000.

La Grange, Ill.; Rudolph A. Nordin, 47 West Calendar avenue; one-story garage, 20x30, at Elm and Fifth avenues, for Edward E. Gore, 200 South Fifth avenue; $3400.

Lake Forest, Ill.; Oscar Burkland, 5959 West Chicago avenue, Chicago, Ill.; two-story private garage, 21x26, for John A. Chapman.

Paris, Ill.; Fred Stevens; one-story public garage, 50x70, for M. Enshmer, Assumption, Ill.; $30,000.

Streator, Ill.; W. Sweet, Bloomington, Ill.; two-story garage and sales room, 140x160; $200,000.

Annapolis, Ind.; Lloyd Brothers; one-story garage, 35x87, for Charles H. Martin; $4000.

Fort Wayne, Ind.; Indiana Engineering & Construction Co., Berry and Webster streets; three-story garage and sales room, southeast corner Washington and Fairfield streets, for E. W. Steinhart Co., 11th and Meridian streets, Indianapolis, Ind.; $150,000.

Lafayette, Ind.; A. E. Kemmer, 644 North Seventh street; one-story commercial garage, at Third and Alabama streets, for Big Four Sales Co.; $20,000.

Paoli, Ind.; W. H. Lutes, French Lick, Ind.; one-story garage, 50x150, for Charles Brown.

Richmond, Ind.; M. J. Hoffman, Fletcher Trust building, Indianapolis, Ind.; three-story commercial garage and sales room, 94x105, for Webb & Coleman, 19 Seventh street.

Sioux City, Ia.; Pete Ludwig, Leebs, Ia.; one-story garage, 48x125, at 4124 Floyd avenue, for J. A. Wallace Garage Co., 4120 Floyd avenue; $5000.

Atchison, Kan.; T. H. Jones; two-story garage, 50x68, for Don Miller; $30,000.

Kansas City, Kan.; E. Drier & Son, 949 Armstrong avenue; one-story garage, 50x123, at 1002-1004 Minnesota avenue, for O. M. Kelley, 1006 Minnesota avenue; $20,000.

Covington, Ky.; John J. Craig, 20 West Ninth street; two-story garage, 125x190, for Seiler Motor Car Co., 1226 Madison avenue.

Louisville, Ky.; West & Whitlock, 106 East Lee street; one-story garage, 56x90, for Gilmore, Ouerbacht Co., Paul Jones building.

Annapolis, Md.; Lloyd Brothers; one-story garage, 35x87, for Charles H. Martin.

Baltimore, Md.; John C. Clark & Son, 1109 Mosher street; one-story garage, 10x24, for John P. Neu, 1407 Poplar street; $10,000.

Baltimore, Md.; Barrett Co., 36th and Gray's Ferry avenue, Philadelphia, Pa.; one-story corrugated iron garage, 30x36.

Baltimore, Md.; E. C. Hill & Son, 120 Osten street; one-story garage, 40x80, at 10 Light street, for Dr. E. A. Erkenback, 1412 Light street; $7500.

Hagerstown, Md.; Irvin R. Middlekauf; one-story garage, 80x80; $7500.

Boston, Mass.; Joseph Meltzer Co., 101 Tremont street; one-story public garage at 171 Norfolk street, for George E. Kimball, 179 Norfolk street; $50,000.

Brockton, Mass.; A. E. Watkins, 20 Guild road; one-story public garage, 50x100; $8000.

Cambridge, Mass.; Martin W. Ryan, 34 Fayette street; one and two-story garage, 50x90, for Margaret McSorley; $50,000.

Holyoke, Mass.; Leachapelle & Bouger; three-story public garage, 60x150; $125,000.

Adrian, Mich.; C. E. Dibble; one-story public garage, 58x96, for McKinster & Fox, 142 North Main street; $15,000.

Detroit, Mich.; Owen Ames, 42 Pearl street; one-story garage, 16x150, at 30-40 Ransom street, for Universal Car & Service Co.; $40,000.

Pontiac, Mich.; Pyrale Construction Co., Crofoot building; two-story garage, sales room and repair shop, 96x133, for Frank Milward, 32 West Pike street; $180,000.

Minneapolis, Minn.; E. J. Graves, 2430 Chicago avenue; one-story public garage and service station, 50x140, at 1116-1118 Second avenue, for Minneapolis Twenty Associates, Inc.; $20,000.

Clayton, Mo.; George Moeller, 3520 Itaska avenue; one-story garage, 62x140, for A. J. Kerth, 402 Bonhomme avenue; $35,000.

Joplin, Mo.; A. E. Koehler; one-story garage, 50x100, at 614 Wall street, for G. A. Graves; $12,000.

Kansas City, Mo.; James Silbert; one-story garage, 60x104, at 7440 Broadway, for E. C. Sooy; $6000.

St. Louis, Mo.; Theodore Ratz, 917 Pine street; one-story public garage and show room, 45x106, at Easton and Prairie avenues, for J. J. Flaherty, 3655 Finney avenue; $10,000.

St. Louis, Mo.; Samuel Meyer, 1117 North Compton avenue; 1½-story garage, 25x30, at Red Bud and Penrose streets, for E. A. Schneider; $4000.

St. Louis, Mo.; C. A. Welsch Construction Co., Central National Bank building; one-story garage, 25x10, at John and McKissock streets, for Schlueter Manufacturing Co.; $8000.

St. Louis. Mo.; James Godfrey Construction Co., Wainwright building; one-story garage and repair shop, 40x50, at Sarah street and Forest Park boulevard, for Standard Sanitary Manufacturing Co., 810 North Second street; $65,000.

Omaha, Neb.; L. J. Barr, 424 South 15th street; one-story garage, 50x120, at 1810 Cuming street, for Hart Motor Co., 18th and Burt streets; $11,000.

Manchester, N. H.; William F. O'Neil, 272 Walnut stret; one-story public garage, 85x100, at Union and Brooks street: $15,000.

Camden, N. J.; Emile Schulke, 1183 Jackson street; one-story garage, 10x18, at Seventh and Cherry streets, for Joshua Haines, 610 Walnut street.

East Orange, N. J.; Fred Balan, 230 Valley street; one-story public garage, for Grant C. Poth; $10,000.

Newark, N. J.; Knickerbocker Storage Co., 104 Arlington street; one-story commercial garage, at 96 Arlington street; $9500.

Newark, N. J.; Irvington Lumber Co., 738 Broad street; one-story show room and service station, at 336-338 Central avenue, for A. A. Realty Co., 790 Broad street. Lessee, Greene Motor Car Co., 90 Washington street.

Plainfield, N. J.; Charles Bicknell, 986 Pine street; one-story show room and repair shop, 96x96, for King's Painting & Auto Repair Co., 12 Grove street.

Albany, N. Y.; White Service Station Motor Co., 280 Central avenue; one-story sales room, machine shop and service station, at North Broadway and North Third street: $50,000.

Binghamton, N. Y.; Moore & Merrill; two-story garage, 84x127, at 215-219 Water street, for T. W. Whipple, 205 Court street; $30,000.

Brooklyn, N. Y.; Connie Dugliano; one-story garage, west side Osborne street, north Riverside avenue; $25,000.

Buffalo, N. Y.; George W. Butler Co., Inc.; one-story sales room and service station, 100x166, northwest corner Lafayette avenue and Main street, for Monroe Motor Car Co., 1034 Main street; $135,000.

Buffalo, N. Y.; Kam-Kaderbeck, Inc., 967 Main street; one-story brick sales room and service station, at 1120 Main street; one-story brick garage, north side street; $80,000.

New York, N. Y.; Louis Gold, 44 Court West 57th street, west 11th avenue, for Battle Iron Truck Co., 1890 Broadway; $250,000.

New York, N. Y.; George H. Burke, 561 West 175th street; three-story brick public garage, 100x124, at 315-323 West 69th street; $100,000.

Port Richmond, L. I., N. Y.; C. M. Davidson, 26 Broadway, New York; one-story garage, for Standard Oil Co., 26 Broadway, New York; $10,000.

Rochester, N. Y.; William F. Martens, Cutler building; one-story public garage and sales room, 65x200, at 360 East avenue, for A. H. Boyce, 160 East avenue; $40,000.

Rochester, N. Y.; Leo Pike, 60 Glasgow street; one-story garage, 40x40, Frost avenue, near Jefferson, for C. H. Yaky, 249 Jefferson avenue; $5000.

Raleigh, N. C.; Liberty Engineering & Construction Co., 604 Murchison Bank building, Wilmington, N. C.; three-story brick and reinforced concrete garage, 50x100, for James R. Rogers; $100,000.

Bucyrus, O.; W. Knecht; two-story brick garage, 102x135, on Rensalear and Spring streets, for Roberts & Kennedy; $25,000.

Quincy, Ill.; Vahle Brothers; one-story public garage, 59x160, for Gem City Motor Car Co., 432 Jersey street; $30,000.

Cincinnati, O.; Frank G. Helman, Fourth and Walnut streets; two-story private garage, 65x70, at 831 last Third street, for Peter Hughes Express Co., 207 East Eighth street; $30,000.

Cincinnati, O.; Liver Scovanner, Miami Motor Service Co., 435 West Sixth street; one-story public garage, 20x50, at 218 Richmond street; $4000.

Cleveland, O.; A. W. Kilbourne Co., Co., Union building; four-story garage and sales room, 60x150, at East 55th and Prospect avenue, for Guarantee Building Co., 214 Union building; $100,000.

Cleveland, O.; Jay Fritz, 3824 Ridge road; one-story brick garage, 37x85, at 3602 Clinton road, for H. R. Eckenroth, 3601 Detroit avenue; $6000.

Cleveland, O.; A. W. Kilbourne Co., East 66th street and Euclid avenue; four-story sales room and garage and service station, for Van Aken Strock Co., 6525 Euclid avenue; $150,000.

Cleveland, O.; H. G. Slatmyer & Son Co., 203 Lakeside avenue; one-story brick garage, at East 55th street and Morse avenue, for W. J. Hughes; $25,000.

East Liverpool, O.; Finley Brothers, Chester, W. Va.; three-story brick public garage, 60x136, at 114-118 Fifth street, for Liverpool Motor Co.; $65,000.

Massillon, O.; J. S. Reinhart Contracting Co.; two-story garage, 40x54, for C. L. McLain Co.

Springfield, O.; Paul R. Yeazell; two-story sales room and garage, 15x150, at 614 West Main street, for Isaac Lavine; $50,000.

Toledo, O.; Toledo Residence & Construction Co., Nasby building; one-story garage and sales room, 90x120, at Colburn avenue and Broadway, for Triangle Garage & Motor Sales Co.; $30,000.

El Reno, Okla.; Lee Tompkins, Fort Worth, Tex.; two-story brick and concrete repair shop, 50x108; install automobile repair equipment; for Tompkins Motor Co.

Oklahoma Cty, Okla.; J. F. Roehr, 809 West Sixth street; one-story filling station, 20x36 and 20x24, for Oklahoma City Service Co.

Allentown, Pa.; Penn Motor Co., care Roderick Taylor, 1425 Hamilton street: one-story brick public garage, 80x120, at 1313-1319 Linden street; $50,000.

Ardmore, Pa.; Pennsylvania Contracting & Engineering Co., Bulletin building, Philadelpha, Pa.; 1½-story private garage, 35x100, for Lower Merion school district; $20,000.

Carlisle, Pa.; Molcom Gettys, 2126 Green street, Harrisburg, Pa.; one-story garage, 6x6130; $12,000.

Edwardsville, Pa.; Hugh Jones; one-story concrete public garage, 30x40; $6000.

Norristown, Pa.; Frank Shuler, Jeffersonville, Pa.; one-story private garage, 22x24, for E. M. Evans, Fornance building; $4000.

Philadelphia, Pa.; Philadelphia Realty Co.; one-story brick garage, 45x165, at 754 Carpenter street, for James J. McArdle; $20,000.

Philadelphia, Pa.; Frank E. Hahn; one-story brick garage, 25x39, at 1309 North Broad street, for Emanuel Asher; $4000.

Philadelphia, Pa.; Philip Halbach Contracting Co.; one-story garage, 40x132, at northeast corner Lawrence and Pike streets, for John Friedrich; $14,000.

Philadelphia, Pa.; Stewart Brothers Co.; two-story garage, 40x220, north side Ontario street, west C, for Philadelphia Storage Battery Co.; $140,000.

Philadelphia, Pa.; Frank Gartner; one-story brick garage, 34x76, at 1522-1524 North American street, for John Walsh; $3750.

Philadelphia, Pa.; A. Louis Giargetti; one-story stone garage, 18x41, at 5224 Wakefield street; $1500.

Philadelphia, Pa.; E. Bonner; one-story brick garage, southwest corner Jasper and Letterly streets, for W. S. Ferguson; $8000.

Philadelphia, Pa.; A. Bressi; one-story garage at 509-513 Fitzwater street, for Pietro Cianfiani; $6700.

Philadelphia, Pa.; Carl Wolf Miller; one-story garage, 74x90, southeast corner Taney and Lombard streets; $20,000.

Philadelphia, Pa.; Stewart Brothers Co.; one-story garage, 40x172, west side 15th street, north Courtland, for Frederick Wilhelm; $20,000.

Philadelphia, Pa.; Alfonso Verdi; one-story stone garage, at 918 Wynnewood road, for George S. Williams; $2000.

Philadelphia, Pa.; Robert Killongh; one-story garage, rear 308 West Hortler street; $2800.

Philadelphia, Pa.; Samuel D. Milner; two-story garage, 33x48, at 4320 Wingonocking street, for Matthias Suetx; $2000.

Philadelphia, Pa.; Pierce-Henon Co.; two-story service station, 25x160, at 1248 North Broad street, for George H. Earle, Jr.; $25,000.

Philadelphia, Pa.; John N. Gill & Co.; 10-story sales room; southeast corner Broad and Vine streets, for Bigelow-Willey Co.; $425,000.

Philadelphia, Pa.; Boris Tubin; one-story brick garage at 1633-1637 Firtzwater street, for J. W. Stockett; $5000.

Philadelphia, Pa.; Standard Construction Co.; two-story sales room and service station, at 3438 Ludlow street, for W. H. Warren Webb; $150,000.

Philadelphia, Pa.; Levi Cartmell; one-story garage, at 542 Carpenter street, Germantown; $7000.

Philadelphia, Pa.; W. H. Bunn; one-story garage, 16x18, southeast corner 62nd street and Walton avenue, for Bessie Brownstein; $1100.

Philadelphia, Pa.; G. V. Simon; one-story garage, south side Louden street, east Third, for Charles A. Sauers; $3500.

Philadelphia, Pa.; G. D. Fisher, 5424 Thompson street; two-story public garage, at 119 South street, for P. Garrison, 102 South street; $20,0000.

Pittsburgh, Pa.; Davis Smith Co., 516 Federal street; one-story private garage, 18x22, for B. Stevenson, 1530 Denniston avenue; $3000.

Pittsburgh, Pa.; Henry Geschwender, 1244 Juniata street; two-story garage and sales room, 50x180, for Allegheny Motor Co.: $65,000.

Pittsburgh, Pa.; Miller Construction Co., Empire building; six-story sales room and storage station, 50x110, for Dyke Motor Supply Co., 5500 Hubert street; $90.000.

Reading, Pa.; L. H. Focht & Son, Baer building; three-story public garage, 90x119, at Poplar and Court streets, for Merchants' Auto Service, 424 Court street.

Scranton, Pa.; S. Sykes & Sons; one-story garage and shop, 52x100, for Scranton Lace Co., Glenn and Meylert streets; $30.000.

Washington, Pa.; John R. Lewis; two-story brick and reinforced concrete garage and service station, 100x120, for S. M. Bayers, 124 South Main street; $45,000.

West Chester, Pa.; R. Walter Pachalle & Son, Paoli, Pa.; two-story public garage, 71x100, at 5 South Church street, for Howard W. Moses; $40,000.

Williamsport, Pa.; Metzgar & Fisher, Otis building, Philadelphia; one-story garage, 28x51, for Atlantic Refining Co., 1211 Chestnut street, Philadelphia.

Providence, R. I.; Dimond Co., 244 Westminster street; one-story garage, 48x140; $30,000.

Columbia, S. C.; Marion Thomas; two-story brick automobile building, 43x85, for Davis Motor Co., 2000 Main street.

Alexandria, a.; Heerburth & Co.; two-story public garage, 77x125, for Mount Vernon Automobile Co.; $40,000.

Norfolk, Va.; Nichols & Lindeman, Seaboard Bank building; two-story garage and storage battery station, 40x104 and 80x106, at Jamestown boulevard and Monteo streets, for Relance Electric Co., 771 Granby street; $65,000.

Moundsville, W. Va.; W. H. Batson; one-story brick and tile garage, 60x110, reinforced concrete floor, electric lighting; for H. W. Perkins; $30,000.

Parkersburg, W. Va.; T. B. Watterson; two-story garage, 50x105, at Seventh and Green streets, for Motormart Garage.

Allonez, Wis.; Rudolph M. Hansen Co., Green Bay, Wis.; one-story garage, 24x28, for W. P. Brenner; $4500.

Oshkosh, Wis.; T. S. Moptin. 100 Algomia street; one-story gargae, 60x120, for Lawrence Larson, 62 State street ;$15,000.

Racine, Wis.; George Kamm; one-story garage, 32x60, for Kamm Brothers, 525 College avenue; $9000.

Wauwatosa, Wis.; Robert W. Bard; one-story garage, 20x21.

Garage News of the Southwest

Little Rock, Ark.; Holcomb Gunn is to take charge of the new battery department of the 555 Tire & Service Co., which handles Vesta batteries.

Colony, Kan.; Carey Christian and B. T. Barber of Iola have formed a partnership to operate a garage and Ford service station here. Extensive improvements are being made in the concern's headquarters in the implement warehouse.

Marshall, Mo.; W. P. Thomas has moved into his new garage on East North street He specializes on service to Ford owners.

Rosston, Okla.; Fred M. Porter is erecting a garage at Doby Springs.

Skiatook, Okla.; W. J. Schafer has sold his interests in the Skiatook Garage to Roberts & Fitzpatrick. retaining, however, the accessory end of the business, which will be enlarged. The new firm name of the garage will be the Roberts & Fitzpatrick Auto Co.

Thomas, Okla.; A. W. Renshaw & Son is moving its accessory business from the Dr. Omer building on West Broadway to the McClung building on South Main street.

Austin, Tex.; The Bergstrom Auto Co., 127 West Fifth street, has added a large. modern steam vulcanizing plant to its garage and repair business.

Brenham, Tex.; The Magnolia Petroleum Co. will open its new filling station. corner of Main and South West streets, about May 1.

Brownwood, Tex.; Burt Norwood is erecting a large garage on East College street. which will be leased by J. L. Clark of Rising Sun.

Cisco, Tex.; The Auto Electric Co. has leased half of the West & Hook Garage on South Main street, where it will open a machine shop at a cost of $25,000. The Auto Electric Co. has also taken over the Cisco Auto Electric service station, which is located next to the Cisco Morning News office, and will move that business to the new quarters. The owner and manager of the Auto Electric Co. is A. B. Lewis

Corsicana, Tex.; The Fred M. Allison Motor Co. has let the contract for work to the amount of $50,000 on improvements on its place of business. When completed 25,000 feet of floor space will be afforded An automobile repair and paint shop will be maintained.

Cotulla, Tex.; The Charles E. Neal Auto Co. is erecting a brick garage.

Gatesville, Tex.; The Nash & Overland service station, under the management of D. D. McCoy, has been opened in the Johnson building on Main street.

Memphis, Tex.; Gerlach & Franks is to erect a garage just east of City hall.

Palacios, Tex.; The Columbian Refining Co. of Houston is reported to be planning the construction of a filling station at the northwest corner of Commerce and Pavilion streets.

Strawn, Tex.; Caraway & Moyers is a new concern that has opened a garage on North Front street, near the Strawn flour mill.

Temple, Tex.; Jones & Stansell has opened an automobile sales room in the building in the rear of Oppenheimer's.

Trinity, Tex.; The Highway Garage has purchased the Ed Simon Garage and consolidated it with its own business.

Waco, Tex.; The E. M. Brown Motor Co. has opened headquarters for the distribution of the Auburn Beauty Six car in McLennon, Navarro, Falls, Hill, Limestone and Robertson counties.

Waco, Tex.; The building of Nash, Robinson & Co. at 16th and Franklin streets is nearing completion.

Waxahachie, Tex.; Thomas C. Grimland, representative of the New-Tex Oil & Refining Co., is putting in a filling station at his garage. Mr. Grimland will also have charge of the station the New-Tex Co. will erect at the corner of Franklin and Elm streets.

Coming Events

May 15-20—San Francisco, Cal.; Seventh Annual Foreign Trade Convention.

May 15-June 13—Antwerp, Belgium, Car, Tire, Wheel, Parts and Equipment Show.

May 20-30—Atlantic City, N. J., Third American Aeronautic Congress, Aero Club of America.

May 30-June 5—Del Monte, Cal., Mid-Summer Convention, A. E. A.

May 31—Brockport, N. Y., Dirt Track Races. Frank G. Bell, Manager.

May 31—Indianapolis, Ind., Seventh International 500-Mile Race, Indianapolis Motor Speedway.

June 1—Omaha, Neb., Reliability Truck Tour.

June 1-3—Indianapolis, Ind., Convention of Marmon Dealers.

June 5-20—Bordeaux, France, Annual Commercial and Industrial Fair.

June 6-10—Indianapolis, Ind., World Convention of Advertising. Felix M. McWhirter, chairman.

June 12—Uniontown, Pa., Speedway Race, Uniontown Speedway Association.

June 17—Portland, Ore., Dirt Track Events. Robert A. Hiller, Manager.

June 18-19—Bushkill Falls, Pa., Annual Outing, Automobile Accessories Business Association of Philadelphia.

June 19—Ogdensburg, N. Y., Dirt Track Races. Fred G. Bell, Manager.

June 21—Paris, France, Organization of International Chamber of Commerce.

June 21-25—Ottawa Beach, Mich., Summer Meeting, Society Automotive Engineers.

June 21-26—Milwaukee, Wis., Wisconsin Truck Tour, Milwaukee Sentinel.

June 22-25—Asbury Park, N. J., Annual Meeting, American Society for Testing Materials.

June 24-25—Isle of Palms, S. C., Semi-Annual Meeting, South Carolina Automotive Trades Association.

June 26-July 25—Antwerp, Belgium, Commercial Vehicles, Tractor and Truck Show.

June 27-July 6—Helsingfors, Finland, Finnish Fair.

July—Lake Huron Tour.

July 4—Hanford, Cal., Dirt Track Events, Hanford Board of Trade.

July 4—Spokane, Wash., Dirt Track Events.

July 5—Batavia, N. Y., Dirt Track Events. Frank G. Bell, Manager.

July 5—Tacoma, Wash., Tacoma Speedway events.

July 9-20—London, England, International Aircraft Exhibition, Society of British Aircraft Construction, Olympia.

July 14-29—Annual Tour, Michigan Pikes Association in Ontario and Michigan.

July 17—Warren, Pa., Dirt Track Races. Frank G. Bell, Manager.

July 17-25—Prague, Czechoslovakia, 12th Annual Automobile Exposition, Czechoslovak Automobile Club of Prague, Industrial Palace, Prague Exposition Grounds.

July 17-18—Inter-Club Run, Chicago Automobile Club.

July 24—Watertown, N. Y., Dirt Track Races. Frank G. Bell, Manager.

July 31—Fulton, N. Y., Dirt Track Races. Frank G. Bell, Manager.

August—Paris, France, Grand Prix Race, Sporting Commission, Automobile Club of France.

Aug. 7—Erie, Pa., Dirt Track Races. Frank G. Bell, Manager.

Aug. 7-Sept. 15—Antwerp, Belgium, Show of Motorcycles, Side Cars, etc.

Aug. 14—Buffalo, N. Y., Dirt Track Races. Frank G. Bell, Manager.

Aug. 15-22—Danzig, Germany, Second Danzig Fair.

Aug. 20-21—Middletown, N. Y., Dirt Track Races. Horace P. Murphy, Manager.

Aug. 21—Elgin, Ill., Road Race, Chicago Automobile Club.

Aug. 21—Johnstown City, Pa., Dirt Track Races. Frank G. Bell, Manager.

Aug. 27-28—Flemington, N. J., Dirt Track Races. Horace P. Murphy, Manager.

Aug. 28—Canadaigua, N. Y., Dirt Track Races. Frank G. Bell, Manager.

Sept. 1—New York-San Francisco Glidden Tour.

Sept. 3-12—Detroit, Mich., 71st Annual Exposition, Michigan State Fair Association.

Sept. 5—Sicily, Targa Florio Race.

Sept. 6—Hornell, N. Y., Dirt Track Races. Frank G. Bell, Manager.

Sept. 6—Cincinnati, O., Speedway Events, Cincinnati Speedway Co.

Sept. 6—Uniontown, Pa., Speedway Events, Uniontown Speedway Association.

Sept. 17-18—Syracuse, N. Y., Dirt Track Races. Horace P. Murphy, Manager.

Sept. 19-25—Springfield, Mass., Eastern States Exposition.

Sept. 25—Allentown, Pa., Dirt Track Races. Horace P. Murphy, Manager.

October—London, England, Commercial Vehicle Exposition, Olympia.

Oct. 1-2—Trenton, N. J., Dirt Track Races. Horace P. Murphy, Manager.

Oct. 6-8—Northampton, Mass., Annual Automobile Show, H. F. & H. Agricultural Society, Three County Fair Grounds. A. J. Morse, secretary.

Oct. 6-7—Gulfport, Miss., Meeting Louisiana-Missisippi Automotive Trade Association.

Oct. 6-16—New York, N. Y., Electrical Show, Grand Central Palace. George F. Parker, manager.

Oct. 8-9—Danbury, Conn., Dirt Track Races. Horace P. Murphy, Manager.

Oct. 20-22—Atlantic City, N. J., Convention National Implement & Vehicle Association. E. W. McCollough, Secretary, 72 West Adams Street, Chicago, Ill.

November—London, England, Passenger Car Show, Olympia.

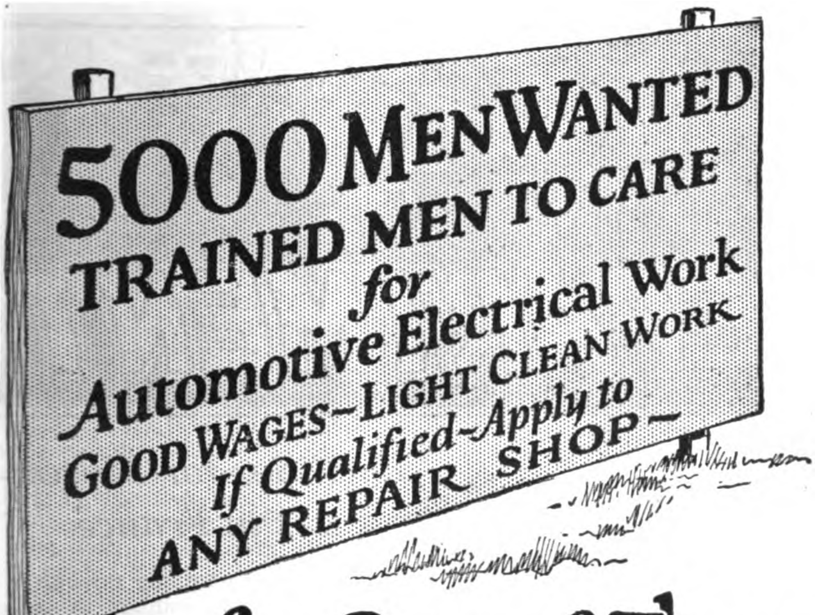
November—New York, N. Y., Annual Meeting American Road Builders' Association. E. L. Powers, Secretary, 150 Nassau Street, New York.

November-December—Buenos Aires, Argentina, National Exposition of American Manufacturers.

Nov. 1-16—Jersey City, N. J., Annual Automobile Show, Hudson County Automobile Dealers' Association, Fourth Regiment Armory.

Dec. 10-18—New York, N. Y., Motor Boat Show, Grand Central Palace.

January, 1921—Little Rock, Ark., Annual Meeting, Arkansas Good Roads & Drainage Association. Robert O. Schaefer, Secretary, Masonic Temple, Little Rock.



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EXPORT DEPARTMENT
W.

International Chamber of Commerce

The new International Chamber of Commerce, which was projected at the International Trade conference at Atlantic City, N. J., last October, will be formally organized at Paris, France, during the week of June 21, 1920. Invitations have been sent out by the American group of the International Organization committee to business and industrial associations, asking them to name delegates to participate. About 100 American delegates are expected to attend.

The International Organization committee is to meet at Paris in advance of the general organization meeting to prepare and report a plan of permanent organization. At the meeting of the International Chamber of Commerce the important questions of international credit, shipping tariff regulations, unfair competition in international trade, among others, will be discussed.

The membership of the committee, so far as announced, is as follows:

United States—A. C. Bedford, chairman of the board of the Standard Oil Co. and member of the National Foreign Trade council, New York, chairman: Thomas W. Lamont of J. P. Morgan & Co., New York; Edward A. Filene, president of William Filene's Sons Co., Boston; Richard S. Hawes, president of the American Bankers' association, St. Louis; John H. Fahey, Boston, formerly president of Chamber of Commerce of the United States; S. C. Mead, secretary of Merchants' association of New York, vice chairman and secretary.

Belgium—Louis Canon-Legrand, president of Chamber of Commerce, consulting engineer, Mons, chairman; Prof. Paul Van den Ven, University of Louvain, delegates of Belgian minister of finance at Paris; Brussels, Alexander De Groote, vice president of the Antwerp Chamber of Commerce.

France—M. Eugene Schneider, head of Creusot Steel Works, president of the British Iron & Steel Institute and former member of Chamber of Deputies, Paris, chairman; M. Tirman, councillor of state, Paris; M. Roche, delegate of General Syndicate of Chemicol Products and administrator delegate of Poulenc Brothers, Paris.

Great Britain—Lord Desborough, president of the British Imperial Council of Commerce and formerly president of the London Chamber of Commerce, London, chairman; Sir Arthur Shirly Benn, K. B. E., M. P., managing director of Hunter, Benn & Co., London; Edward Manville, president of the Association of British Chambers of Commerce and vice president of the Federation of British Industries, Coventry; Stanley Machin, president of the London Chamber of Commerce, London; R. B. Dunwoody, secretary of the Association of British Chambers of Commerce, London, secretary.

Italy—Ferdinando Quartieri, president of the Italian Corporation for Chemical Industries, Milan, chairman; Prof. Vittorio Meneghelli, president of the Chamber of Commerce of Venice; Giorgio Mylius, president of the Italian Master Cotton Spinners' and Weavers' association, Milan; Pietro Giovanni Lazzerini, Lazzerini Brothers, shipping, Carrara; Augusto Jaccarino, Banco di Napoli, Rome.

COLE AERO EIGHTS WINNING RACES IN SOUTH AMERICA.

Among the recent road races held in Argentina, South America, were the 200-mile race held under the auspices of the Argentine Automobile Club of Buenos Aires, and the 120-mile race between Montevidio and Minas, both of which were won by Aero Eight Cole cars, made by the Cole Motor Car Co., Indianapolis, Ind., and entered by R. Borrat Fabini, Cole distributor at Montevideo, and piloted by E. Blanchardi. The time for the 200-mile run was four hours and 30 minutes and for the 120-mile event, two hours and 30 minutes, establishing two new South American records.

OVERLAND EXPORT ACTIVITIES.

Export orders on the books of the Willys Export Corporation, which is a subsidiary of the Willys-Overland Co., Toledo, O., are reported to be more than three times as large as the total foreign shipments of the company during any preceding year.

The Willys-Overland Canadian Co. has been reorganized during the past year with increased capital, and is now turning out more than 50 cars a day. It is also stated that the Willys-Overland Co.'s plant in Manchester, England, will have a capacity for manufacturing 25,000 cars a year by the end of 1920.

Facilities for Motorists in France

France is now affording through new regulations special facilities to American motorists who desire to tour in that country in their own cars. The prospective tourist should carry along his state license, upon the strength of which the French authorities will issue gray cards for cars and pink cards for drivers.

Incidentally, Americans will provide several copies of photographs such as have become familiar to the traveling world for passports and pay a fee of 20 francs. Thereupon the American will be able to "circulate" all over France with his machine.

GOBI DESERT TRAVERSED BY AUTOMOBILE.

George Moszkovski, a former lieutenant in the Polish army, with five companions, recently traversed 3500 miles of the desert of Gobi in Mongolia in a Packard twin-six car, to prove the possibility of substituting motor cars for beasts of burden to bring goods from Mongolia and Turkestan to the markets of the world. It took two months and a half to accomplish this trip in the face of seemingly insurmountable difficulties. Two trailers containing equipment were used, one of which became engulfed in the desert sand and was abandoned. Camels carrying gasoline followed far to the rear, and at times the car was forced to wait three days until the "ships of the desert" could catch up.

After reaching its destination the party rested for a few days, then started on the return trip.

One set of Goodyear cord tires carried the car over the entire tour.

SOUTH AFRICAN MOTOR TRADE.

The total value of imports of motor vehicles and parts from the United States to Cape Town, British South Africa, for the three years 1914, 1917 and 1918, was $1,066,321, $2,986,943 and $1,851,589 respectively. During these same years England's trade totalled $3.059,843, $806,160 and $608,192 respectively. Canada's share of this trade rose from $626,741 in 1914 to $1,242,341 in 1917, but declined to $462,641 in 1918.

Foreign Trade Opportunities

(Reserved addresses may be obtained from the United States Bureau of Foreign and Domestic Commerce, Washington, D. C., or its district and co-operative offices, upon written request by the opportunity number.)

32,439—An agency is desired by a man in South Africa for the sale of automobiles for firms which are not already represented in that country.

32,442—An electrical engineer in Argentina desires to secure an agency for the sale of electrical appliances in general, especially for lighting and heating, electrical machines, motors, cables, electrical measuring instruments and laboratory instruments. Correspondence may be in English. Reference.

32,453—A merchant in France desires to secure an agency with a stock of goods for the sale of automobiles, motorcycles, bicycles and spare parts. Quotations should be given c. i. f. French port. Payment after sale, quarterly remittances effected during quarter. Correspondence should be in French. References.

32,458—General importers and exporters in Syria desire to be placed in touch with manufacturers and exporters of agricultural implements, automobiles, machinery, hardware, pumps, engines and tools, bicycles, motorcycles, cutlery, silverware, chemicals and drugs, jewelry, leather, rubber goods, paints and varnishes, pianos, boots and shoes, haberdashery, textiles, copper and tin, iron and steel, kerosene oil, coffee, cotton thread and yarn, silk goods, aniline and indigo dyes, cotton seed oil and household and toilet soaps.

32,474—The representatives in India of a firm in the United States desire to secure the sole agency for the sale of motor cars. References.

32,475—A commercial agent in France desires to secure the representation of firms for the sale of cheap automobiles. Correspondence should be in French. References.

32,482—A firm of manufacturers' representatives in South Africa desires to secure exclusive agencies from manufacturers for the sale of office equipment and supplies, medium and high grade hosiery, straw hats, carpets, soft goods, leather goods, medium priced automobiles and accessories, underwear, neck wear, shirts, clocks, toys, chewing gum and confectionery, electroplated ware, enamel ware, crockery, kitchen utensils and cutlery. Reference.

32,493—A firm of engineers and merchants in India desires to import and secure agencies for all classes of hardware, such as wood screws, wire nails, galvanized wire bolts and nuts, rivets, files, tool steel and anvils; mill, cotton gin and railway supplies; machinery, electrical goods, provisions, perfumery, glass ware, crockery, bedsteads, enameled ware, metals and metal ware, brass and copper tubes, motor cars, motorcycles and parts, piece goods, woolens, boots and shoes, paints, etc. Reference.

32,540—A merchant firm in Spain wishes to secure an agency for the sale in that country and Portugal of electrical wiring and lighting equipment, motors and dynamos, automobile accessories, cutlery and tools. References.

32,555—A merchant in Palestine desires to purchase and secure an agency on commission for the sale of cotton goods, coal, building materials, such as timber, cement, paints, iron sheets, beams and iron bars; box calf and glazed sole and upper leather; sugar, coffee, flour and other colonial products; writing, wrapping and printing paper, shoe supplies, motor cars and trucks, typewriters, office furniture, drugs and patent medicine, lubricating oils, paraffine, candles, oleo oil, cocoanut oil, margarine, canned goods, wagons and parts, hardware and tools, and iron bedsteads. Quotations should be given c. i. f. Jaffa. Payment, 25 per cent. in advance, balance against documents. References.

NORWAY LEGISLATES FOR PNEUMATIC TIRES.

Norway is the first country in the world to propose national legislation that will specify that motor trucks up to two tons capacity must be equipped with pneumatic tires to prevent excessive wear on highways claimed to be due to the use of solid tires. In fact, some trucks have already been refused admission because they did not conform to the new wheel and tire specifications. The contemplated legislation provides that all automobiles used for commercial purposes must be equipped with tires of at least five-inch tread on all four wheels, which means that up to two tons trucks must be pneumatically equipped; from two to 3½ tons, either pneumatic or solid equipment of more than five-inch tires is permissible; while trucks of over 3½ tons weight may run on solids.

BRITISH MOTOR TAX BASED ON ROAD WEAR.

The new taxes which, it is contemplated, will be levied on motor vehicles in the United Kingdom, will be based on the amount of road wear, according to a statement of the Ministry of Transport. The horsepower will be the unit for the calculation of the tax on private motor vehicles, their weight the unit for commercial vehicles, and their seating capacity for hackney carriages and omnibuses.

Motorcycles will be taxed on their weight, with an added amount for side car or trailer.

MOTOR CARS IN SIAM.

There were imported into Siam from the United States during the fiscal year ending March 31, 1919, motor cars and parts to the value of $185,928; mineral oil, $284,188; lubricating oil, $46,634; electrical goods and apparatus, $129,423; rubber goods, $29,531.

IMPORTS INTO FRANCE FROM GERMANY.

The following figures show the status of import trade from Germany into France in 1919 as compared with 1913, as regards the vehicle industry: Vehicles, including passenger automobiles and other bicycles and motorcycles—From the Rhenish occupied territory, 1919, 24,685 metric quintals (5,443,043 pounds); value, 3,189,000 francs ($637,800). From other German territory, 1919, 22,890 quintals (5,047,245 pounds); value, 2,797,000 francs ($559,400). Total, 47,575 quintals (10,490,289 pounds); value, 5,986,000 francs ($1,197,200). Total from Germany, 1913, 37,144 quintals (8,190,252 pounds); value, 6,940,000 francs ($1,388,000).

AUTOMOBILE SHOWS IN BELGIUM.

Three international exhibitions of automobiles and accessories will be held this year in Antwerp, Belgium, on the occasion of the international Olympic games. The first exhibition will take place from May 15 to June 13, and will include motor cars, tires and wheels, mechanical parts and separate pieces, and all sorts of accessories connected with the automobile industry.

The second show will run from June 26 to July 25, and will make a specialty of commercial vehicles, agricultural tractors, camions and motors.

The third display will occur from Aug. 7 to Sept. 15 and will be devoted to motorcycles, side cars, bicycles, etc., including accessories.

Temporary free entry will be obtained from the Belgian custom house for foreign exhibits. All information and application forms may be obtained from James Gustavus Whiteley, Belgian consul, 223 West Lanvale street, Baltimore, Md., who has been appointed special representative of the Antwerp International exhibition.

CHAUFFEURS NEEDED IN JERUSALEM.

A school for chauffeurs is to be established in Palestine, according to a recent announcement by the American Zionist Medical unit at Jerusalem. The aim is to train men to become capable drivers of motor cars and mechanics in an effort to eliminate the acute shortage of chauffeurs in that country. Owing to the poor railroad facilities automobiles are being extensively used, with a consequent demand for competent drivers.

NORWAY LIMITS PROFITS.

The Norwegian Price Control commissioner has placed in force a regulation limiting the profits for dealers in motor cars to 15 per cent. on the first 10,000 crowns ($3000), 12½ per cent. on the following 5000 crowns ($1500) and 7½ per cent. on larger sums. The amount is calculated on cost, insurance, freight and duty. It is said that this measure is part of a policy to limit importation in order to improve Norwegian exchange.

Proper Attention to Generator Brushes

By O. E. Becker, President of Becker Bros., Chicago, Brush Manufacturer.

APPROXIMATELY 90 per cent. of starting and generator trouble is caused by lack of proper attention to brushes. A number of holders are so constructed that when the brushes wear out they ride on the commutator, causing it to groove. Yet there are many persons using automobiles every day who do not know what a brush is or that they have brushes on their starting motor and lighting generators and magnetos.

Few realize the importance of the brush to automobile efficiency. A brush is the heart of the lighting and starting system. Without proper brush contact or with poor commutation, one would be unable to start the car, to have a lighting system and, where a distributor is used, to run it.

Lighting and starting systems were first installed on pleasure cars in 1912. Now they are placed not only on all pleasure cars, but on some makes and sizes of motor trucks and tractors.

There are about a thousand kinds of brushes manufactured, varying in size from one-eighth of an inch square to 2½ inches square. Their carrying capacity varies from 30 to 300 amperes a square inch.

Brushes are made of copper gauze, or compounds of graphite, carbon and copper, depending upon the contact resistance and current required. The metal types contain from 15 to 90 per cent. copper.

Brushes other than the copper gauze type the graphite compound brushes—go through a complicated process before they are ready for the market. The materials are first transformed into a fine powder, which is placed into mixing machines. This mixture is put into hydraulic presses where it is subjected to a pressure of from 150 to 500 tons, and pressed into blocks varying in thickness from one-quarter to 1¼ inches. The blocks are then placed in furnaces giving a terrific and constant heat. They are left in the ovens for from seven to 14 days, after which they are permitted to cool gradually. When the blocks are cold the ovens are unpacked and the blocks are sent to the cutting department and cut into the numerous sizes and shapes.

Next they are brought to the drilling department where holes are drilled with minute care in order that they may be assembled with the copper wires or "pig tails," which are either spun, riveted, screwed or soldered on to the brushes.

AMERICAN MANUFACTURER ISSUES JAPANESE CATALOGUE.

The General Commercial Co., Ltd., Yokohama, Japan, agent of the Wright Manufacturing Co., Lisbon, O., has issued a catalogue of the hoists made by the Wright Co., printed in the Japanese language. This booklet presents an odd appearance, as is the case with most of the Oriental languages, the title page is at the back and the work is read from back to front and the text is printed in vertical columns.

DISTEEL BULLETIN ISSUED.

The Detroit Pressed Steel Co. in April inaugurated the publication of the "Disteel Bulletin," which will be published monthly from the offices of the company in Detroit, in the interests of scientific wheel designing and better wheel equipment. Particular attention is devoted to keeping those interested in the running equipment of the motor car informed as to the perfection and development of steel disc wheels by the Detroit Pressed Steel Co., and the history and progress of their application to the modern motor car is outlined.

A certificate of incorporation has been taken out by the Hudson Tire & Rubber Co., Yonkers, N. Y. The capital is $1,000,000, and the directors named are William M. Doucette and Arry B. Seymour of New York and Charles J. Wallace of Yonkers.

FIELD MANUFACTURING CO. INCORPORATES.

The Field Manufacturing Co., Owosso, Mich., has been incorporated under the name of the Field Body Corporation, and the following officials have been chosen: President, J. F. Field; vice president and treasurer, E. J. Frederick; secretary, F. H. Basom; assistant treasurer, Gilbert L. Taylor; general sales manager, A. L. Ditter; sales manager, F. J. Bosma; advertising manager, S. Hugh Paine.

The reorganized company is considering plans which will triple the present capacity, which include the erection of additional buildings and enlargements. Among the lines made by the Field Body Corporation are the new four-season cab and the Field All-Service Interchangeable Series platform. It is planned to manufacture 300,000 units of the latter for the year commencing July 1. Exclusive field distributors have been established in many of the leading centers of the United States.

COLUMBIA MOTORS INCREASES CAPITALIZATION.

The Columbia Motors Co., Detroit, has increased its capital from $500,000 to $6,000,000, and a tract of land has been purchased on the east side of that city on which a large factory is to be erected. This tract has an outlet on three railroads, which will give ample shipping facilities. The Columbia Co. already operates two large plants in that section.

The new stock was issued on the basis of eight shares of new for one of old, all of it taken by present stockholders.

VICE PRESIDENT LONG RETIRES.

Following his re-election as a member of the board of directors at the annual meeting of the stockholders of the Joseph Dixon Crucible Co., Jersey City, N. J., George E. Long, the senior vice president, declared his decision to retire from that office. He thereby terminates 43 years of active and valuable service with the Dixon Co., beginning in the capacity of stenographer and advancing to the offices of secretary, treasurer and vice president respectively.

$15,000 net profit last year manufacturing Auto Accessory Machinery; business for sale; cash only, as owner desires to change climate; price $30,000 for machinery, patterns, buildings, patent and stock on hand; can be made into stock company; business eight years old; shipping to all parts of the world. Address Carrier No. 35 B. Springfield, Ohio.

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The ACCESSORY and GARAGE JOURNAL

VOL. X. PAWTUCKET, R. I., JUNE, 1920 No. 2

Drastic Measures Called for to Curb Automobile Thieving

National Motor Vehicle Theft Act Proves Efficient, but Uniform State Legislation Is Urged

THE great need for some drastic means to prevent the alarming increase in automobile thieving throughout the country is defined in the statistics given out by the police of the 15 leading cities of the United States, showing the number of cars stolen and recovered in their respective districts. The total number of cars stolen is given as 19,810, of which 15,249, or approximately 76 per cent., were recovered.

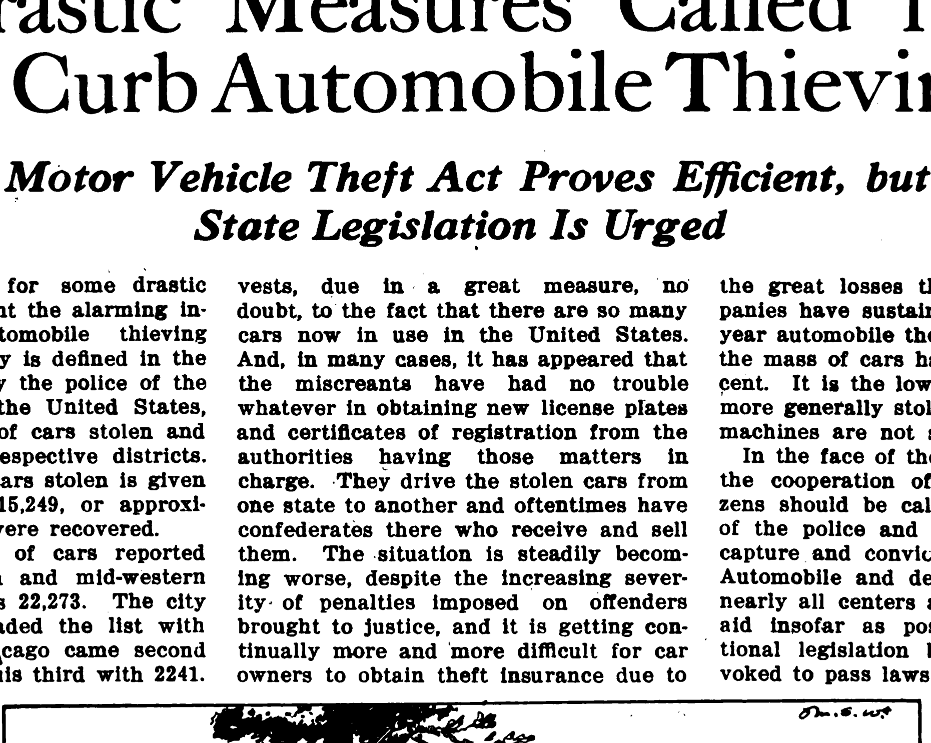
The total number of cars reported stolen in 18 western and mid-western cities during 1918 was 22,273. The city of Detroit, Mich., headed the list with 2637 cars stolen; Chicago came second with 2611, and St. Louis third with 2241. Kansas City, Mo., led in the list of total percentage of cars not recovered, 46 per cent.; St. Louis was second with 40 per cent. of stolen cars absolutely lost.

A report recently made to the members of the Virginia State Automobile Dealers' association stated that more than $28,000,000 worth of motor cars were stolen during the past year throughout the country, representing a total of 27,000 vehicles. But amazing as they are, these statistics fall considerably short, the police report, of the record of the very latest months.

Thieves have found the automobile field one in which they can reap rich harvests, due in a great measure, no doubt, to the fact that there are so many cars now in use in the United States. And, in many cases, it has appeared that the miscreants have had no trouble whatever in obtaining new license plates and certificates of registration from the authorities having those matters in charge. They drive the stolen cars from one state to another and oftentimes have confederates there who receive and sell them. The situation is steadily becoming worse, despite the increasing severity of penalties imposed on offenders brought to justice, and it is getting continually more and more difficult for car owners to obtain theft insurance due to the great losses the underwriting companies have sustained. During the past year automobile theft insurance rates on the mass of cars have increased 100 per cent. It is the low priced cars that are more generally stolen as the high priced machines are not so easily disposed of.

In the face of these serious conditions the cooperation of all law-abiding citizens should be called to the assistance of the police and other officials in the capture and conviction of such outlaws. Automobile and dealers' associations in nearly all centers are now lending their aid insofar as possible, state and national legislation bodies have been invoked to pass laws imposing severe penalties for thefts, and devices claimed to be efficient for the prevention of the driving away of cars by thieves and joy riders have been invented and placed on the market by the hundred, and there has still been but little abatement of the depredations.

While nearly all states have provided for the punishment of these offenders, it is claimed that the so-called Dyer or National Motor Vehicle Theft act, recently enacted by Congress, has proved the severest setback to automobile thieves of any before put in force in any state or community. This, in its third section, provides "that whoever shall transport or cause to be trans-



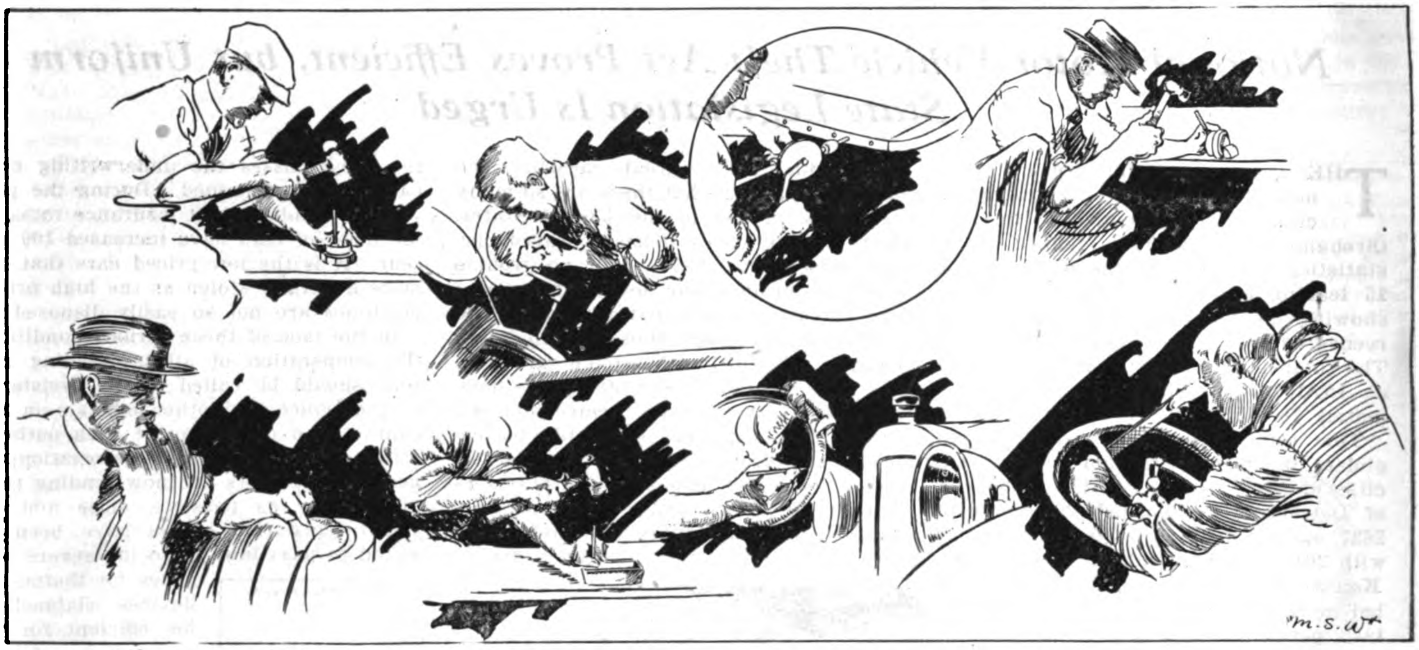
Public Opinion Aroused to Such an Extent in South and West as to Call for Vigilante Methods of the Old Days—Barriers and Armed Guards.

ported in interstate or foreign commerce a motor vehicle, knowing the same to have been stolen, shall be punished by a fine of not more than $5000 or by imprisonment of not more than five years, or both."

The term "motor vehicle" is defined by the act to "include an automobile, automobile truck, automobile wagon, motorcycle, or any other self-propelled vehicle not designed for running on rails." The term "inter-state or foreign commerce" as used in this act shall include "transportation from one state, territory, or the District of Columbia, or to a foreign country, or from a foreign country to any state, territory or the District of Columbia."

Other sections of the act are as follows: "Section 4. That whoever shall receive, conceal, store, barter, sell or dispose of any motor vehicle moving as, or which is a part of, or which constitutes inter-state or foreign commerce, knowing the same to have been stolen, shall be punished by a fine of not more than $5000, or by imprisonment of not more than five years, or both.

"Section 5. That any person violating this act may be punished in any district in or through which such motor vehicle has been transported or removed by such offender."



Some Simple Ways of Placing Private Identification Marks on the Car: Above, Left to Right—Place Punch Marks Inside of Radiator Cap; Bore Very Slightly a Certain Number of Holes in Frame and Cover Marked Spot with Paint or Graphite; Additional Screws in Running Board Would Never Be Noticed; Stamp Initials or Any Other Mark in Hub Cap. Below, Left to Right—Pull Out a Few Upholstery Tacks, Slip in Visiting Card Under Leather and Tack Down Again; Place Secret Mark Inside of Generator Cover; Inscribe Name or Initials Around Inside Rim of Head Light; File Notches on Under Side of Upper Arm of Steering Wheel.

Uniform Auto Theft Law.

The most comprehensive campaign against the auto thief has, however, been carried on by the Motor Vehicle Conference committee composed of representatives from the American Automobile association, the Motor and Accessory Manufacturers' association, the National Rubber Dealers' association, the Rubber Association of America, Inc., the Trailer Manufacturers' Association of America and the National Automobile Chamber of Commerce, Inc. This committee has been giving very careful attention to state laws designed to curb motor vehicle stealing and finds that they are open to serious criticisms on the following grounds:

First: Only a few states have made to date a serious effort to pass comprehensive anti-theft of vehicle laws.

Second: Few of these states have enacted laws which fully cover every detail of procedure which those who have given closest attention to the subject believe necessary.

Third: The procedure of one state differs widely from that of another and the mechanisms for the prevention, detection, arrest, trial, conviction and punishment of motor vehicle thefts bear such slight resemblance to each other that coordination and cooperation between states is impracticable.

Neglect Aids Automobile Thieves.

The stealing of automobiles will continue, in greater or less degree, according to the severity of the punishment, until a change in human nature is effected, not alone in the thief, but also in the owner.

Automobile thieves can be placed in two classes, professionals and amateurs. The professional is generally an expert mechanic usually equipped with tools to render practically every safety device valueless. He will usually steal the car he wants regardless of obstacles. Heavy punishment alone can discourage this type of criminal.

But the amateur is more often an opportunist. He steals automobiles or accessories because unusually good opportunities present themselves. He may be compared to the sneak thief who will only rob a house when a window is open or a door left unlocked. Carelessness is his best ally. A little observation will reveal many instances in which a car driver, after parking the car, threw the ignition switch to "off" position and then left his keys in place. Every automobilist may well inquire how often this has been done by himself and friends, thus giving a direct invitation to any person who may be making it his business to sneak around looking for just such chances. Greater care should be exercised in this regard.

Revival of "Vigilante" Days.

Public opinion has been aroused to such a height in some states by the depredations on automobile owners as to call for the adoption of strenuous measures to curb them in addition to legislation. For instance, according to reports from Los Angeles, Cal., a revival of the old "Vigilante" days is planned by the Automobile Club of Southern California to render the highways more secure and to prevent theft. A vigilance committee of 200 prominent business men has been formed who will always be on the job and act secretly, but not the less promptly and effectively. Each will be pledged not only to seek out automobile thieves, but also to report promptly by mail on post cards furnished for that purpose, all infractions of the motor laws observed by him. Machines will be traced by license number alone.

To make this plan more effective a "telegraphic barrage," designed to trap thieves, has been put into operation at Los Angeles. With the sheriffs, city police, members of the automobile club and insurance companies all cooperating and working at top speed to catch offenders, a system has been organized which, it is thought, will be the most effective of any yet tried. The big game of automobile thieves in Southern California in recent months has been to drive the stolen cars out of the state before offering them for sale. It is the purpose of the telegraphic barrage to break this up.

Under the arrangement, as soon as the theft of a motor car has been reported authorities in the towns nearest the state boundaries on the east and south are notified. It may chance that the closest border town is in Nevada, Arizona or Lower California, but that makes no difference.

The officer of the law is informed by telegram to be on the lookout for a car of the given description. It may be thought that it would be an easy thing for thieves to circumvent such a plan by avoiding the towns, but in a sparsely settled section where there is but one road, even motor car thieves will prefer arrest to taking chances on the unmarked desert.

Still another plan proposed which ought to prove quick and effective is to make all employees at roadside gasoline filling stations deputy sheriffs. Each station would be furnished with a telephone and a road barrier similar to the old fashioned toll gate. As soon as a report of a stolen car is received anywhere along the line, every gasoline station deputy would be notified by telephone. The road barriers would be let down and not a car be permitted to pass until it had undergone inspection. It would be made a serious offense to break through a barrier.

Maryland to Guard Highways.

The Automobile Club of Maryland is stated to be the sponsor of a bill before the state legislature calling for an appropriation to carry on the work of catching automobile thieves. The tentative plan is to have guards stationed on all the principal highways leading out of the state and near the state lines. All the guard houses are to be connected by telephone with a central exchange located in Baltimore. If necessary an exchange could be established that would handle only calls reporting the thefts of motor cars. Upon receipt of notice that a machine has been stolen, the exchange would send out word to every guard on duty and a sharp watch would be kept for the "auto jack." The automobile club is in favor of making the guards special policemen and would have them armed so that they would be in a position to stop them at any cost.

The chief objection to any such elaborate means of defense against automobile thieves is the expense of its installation and operation, but if the depredations continue to increase at the present alarming rate, almost any effective system of protection would be found economical in the long run.

Operation of the State Laws.

Nearly all the state laws make it a misdemeanor for the changing or effacing of trade numbers or any other distinguishing identification marks on cars, and in many commonwealths bills of sale or certificates of ownership are required to be made out when the car is purchased and must accompany the car at all times and be transferred with the car in case it is sold.

In Michigan a new law requires automobile dealers and garage owners to make duplicate records, in ink, of all cars sold, purchased or exchanged, specifying the date, the name of the purchaser or vendor and the make, serial number and a minute description of the vehicle. Copies must be forwarded to the secretary of state the first day of each month, the department furnishing the necessary blanks.

Section 28 of the Massachusetts Motor Vehicle act requires that "every person operating or running a motor vehicle into or out of a garage shall enter or cause to be entered in a book provided for the purpose in the columns under the proper headings, the date and time of entering and leaving, the register number and letter, if any, of the motor vehicle, and the full name of the operator or chauffeur." The section further reads: "In case of motor vehicles operated or run into or out of a garage by others than chauffeurs, the records shall be kept by the owner, proprietor or person in control of the garage, or by some employee or employees specially designated for this duty and the said owner, proprietor or persons in control of said garage shall be responsible for the proper keeping of such record. All entries in said book shall be made legibly in ink or with an indelible pencil."

STOLEN CAR RECORDS OF FIFTEEN CITIES.

City	Stolen	Recovered	Pct.
Salt Lake City	797	790	99%
Seattle	1,451	1,376	94%
Los Angeles...	1,629	1,499	92%
Portland, Ore.	1,088	990	90%
Cleveland	2,076	1,816	87%
Oklahoma City	541	484	84%
Cincinnati	348	291	83%
Columbus, O..	451	351	78%
Chicago	2,611	1,954	74%
Boston	856	607	70%
Detroit	2,637	1,834	69%
Denver	901	627	69%
Omaha	1,039	669	64%
St. Louis......	2,241	1,354	60%
Kansas City...	1,144	606	54%
Total........	19,810	15,249	

Many devices have been placed on the market to prevent the unauthorized use of a car, but the professional thief has usually found ways to surmount the most ingenious of the conventional "thief-proof" attachments. Where the ignition is locked the crook manages to short-circuit the lock by simply connecting around it with a wire leading from the battery to the igniter. Gasoline locks are useful, but somewhat complicated in their installation and introduce the undesirable element of an additional opportunity for gasoline leakage. Probably the favorite method is a purely mechanical lock on the steering gear, starting crank or some other essential part of the mechanism.

Mark Your Car.

As it is easy for a thief to change numbers and obliterate all ordinary points of a car's individuality, as well as to repaint and otherwise so transform it that it would not be recognizable even by an owner thoroughly familiar with it through a long period of service, every car owner should, as soon as it is purchased, take pains to place on it some means of identification in case it should be stolen.

Numerous instances are recorded where a stolen touring car has been built over into a light delivery vehicle and resold. Open cars may be transformed into enclosed models and vice versa, while a common way is to interchange various parts of similar models and repaint and then place again on the market.

It is probably the fact that a majority of cars stolen are stripped of tires and other valuable parts and equipment and abandoned and, while it undoubtedly would not be very difficult for the owner to identify his machine even in its dismantled condition, such private means of recognition would save confusion in the event of a number of cars of the same model being stolen from the same locality.

The system of the location of these private identification marks need not be elaborate, but they should, of course, be placed where they would not likely to be noted and obliterated by thieves. Several marks in various places would seem to be better than a single one for, even if one should be discovered and eradicated, the chance that all such marks would be found is remote.

It is further suggested that the owner make a record or chart showing the character and location on the car of all such means of identification.

The accompanying illustration merely suggests several simple methods of the location and affixing of private identification marks, but an ingenious owner or driver will probably desire to work out a scheme in accordance with his own ideas.

Car Owner Should Cooperate.

In conclusion, the main thing is for the car owner, in the first place to cooperate as far as he possibly can to obviate all chances of theft. Of course it would be ideal if the car were never left alone on the public highways or in the open, but as this is impossible in many cases, care should be exercised in parking so that it may be, as far as possible, under the constant or frequent observation of the owner or his representative. Doors of private garages or the compartments in public service or community garages should be kept locked and windows fastened at all times when car is not in use, and in addition, all the mechanical means of preventing the unauthorized on the car at this time.

Secondly, some form of locking device attached to the car, while perhaps it would not entirely prevent theft, would make it more difficult for the thief to get away with the car without observation.

Finally, some private mark or marks should be placed on the car as a help to the authorities in tracing stolen machines and putting evidence in their hands to prove conclusively that the car was stolen, as well as affording an immediate and positive method of identifi-
use of the machine should be left in force
cation when recovered.

The Successful Business Man Is the One Who Keeps Busy---But Not Too Busy

(By Lester G. Herbert, Auburn, N. Y.)

ACCORDING to Bruce Barton, in a recent issue of the American magazine, John D. Rockefeller used to keep watch for promising recruits in his business, and when he found one would seize the opportunity for a talk with him and would say:

"Now, the thing for you to do is to find someone to do your work as soon as possible. Then you put your feet on the desk and think up ways in which the Standard Oil Company can make more money."

None of us will deny that Mr. Rockefeller was a successful financier, or that he was slow in discovering brains to help him build up his fortune. It has been, in a measure, because he was so keen in discovering promising recruits that he gathered about him a great and powerful organization. We all know, and we have read again and again what a humble beginning John D. Rockefeller had, but he went on from strength to strength, using all that came his way in a constructive manner.

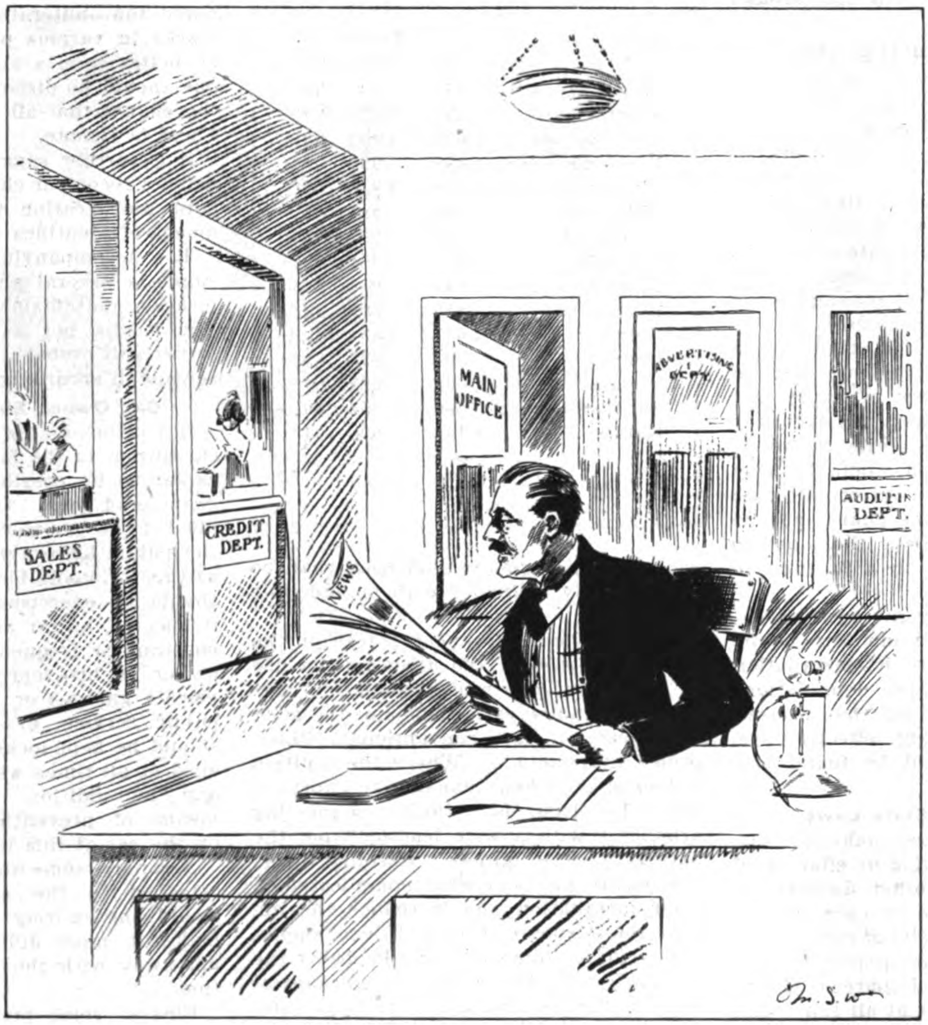
But, do not be deceived and think that he simply set other folks to do things for him, and that he had no further responsibilities in the piling up of the Rockefeller millions.

The truth of the matter is that this man, remarkable in many ways, kept busy himself—but not too busy. That is to say, he was thoroughly in touch with his business as he went along. It was his own thinking apparatus that devised the initial ways and means of making his business beginning. But he was shrewd enough to know that, if he worked industriously long hours throughout his producing years, his output would be, of necessity, limited. He would be a success, naturally, but no greater success than many others.

On the other hand, if he devoted himself to **three separate lines of endeavor,** his prospects would be vastly enlarged, and the fortune he could build up would be colossal.

Perhaps this reasoning was not consciously done; nevertheless, it is the line of mental activity, practically followed by all great financiers, and for this reason is worthy of your earnest consideration and mine.

All too many of us are plodding along, succeeding in a moder-


SALES DEPT.
CREDIT DEPT.
NEWS
MAIN OFFICE
ADVERTISING DEPT.
AUDITIN DEPT.

"You Will Notice That All Our Big Financiers Have Organizations of Clever and Thinking Men, but These Organizations Are Linked Up in a Close Union. Back of All Is the Master Mind; He Must Be the Real Governor Who Holds the Balance of Things Where It Ought to Be. Here Again Is Where the Business Head Or Principal Must Be Busy—But Not Too Busy."

ate way and supinely taking it for granted that we are doing as well as anyone could expect us to do, everything considered. Just the same there is such a thing as not making the most of the opportunity facing us.

The First Factor in Finance.

The first great factor in finance is the same whether you are operating a peanut stand at Pumpkin Junction, a big manufacturing plant turning out huge quantities of implements of all kinds, conducting a retail store, or serving as the president of a great banking institution. **It is to know your line of business from A to Z; to understand all of the conditions affecting it; to organize your management in the most thorough going manner of which you are capable; and to exercise your will power to the end of keeping business at flood tide all the time.**

Most people will gasp at the end of that black faced section and will say,

"Well, if a man does all that, he has done **enough.** He will be a success all right and he doesn't need to go any farther at all. He can do just that and keep busy!"

Yes, that is true—he will keep busy but, if he does not go on to the **second** principle I am about to outline, he will keep **too busy.** And there is such a thing as a man being buried in details. The individual who is buried never lives very long, even if he was not very dead in the beginning. Sooner or later he will smother and that will be the end of it all!

Remember, then, to keep busy doing the things which a wide-awake business man must see are done somehow or other—but do not keep too busy.

The Second Factor in Fortune Building.

The second principle is one all too seldom applied by the average man in business today, for the reason that he hasn't time or thinks he hasn't got it. It is just this: **The man who would succeed in any line in a big way must—absolutely must—summon to his side other men of ability and power. The governor of a state or the President of the United States would be utterly swamped trying to attend to all the departments under his care. It simply couldn't be done. So the business executive must not be too busy with details. He must keep a watchful eye out and, by keenly observing, to discover men and women who can be depended upon to help him make more money. He must make no mistakes in selecting these people and, to prevent mistakes, he must do a lot of observing, and weighing and measuring. He must have time to chat casually with these people, to get their viewpoints, to draw them out and to find what they can do. Having found them he must give them certain latitude under suitable and safe restrictions.**

The Third and Important Consideration.

You will notice that all our big financiers have organizations of clever and thinking men, but these organizations are linked up in a close union. Frequent conferences are held; the business is so arranged that the balance of all sections or departments is carefully maintained, and back of all is the great master mind which does not permit anyone to **ride a hobby horse to the detriment of the business.** Here again is where the business head or principal must be busy—but not too busy.

He must be the real governor which holds the balance of things where it ought to be and does not permit misguided judgment, over-enthusiasm or mistakes of others to swamp him. **He is the captain of the ship, but he has a finely disciplined crew of trained helpers.**

How about it in your business? Are you **too busy?** If you are it is a mistake. Are you trying to be crew and captain too? Or are you summoning to your aid the assistance of promising people and are you virtually encouraging them to make more money for you and giving them the backing and the guidance they should have?

Do you know that the errand boy, the junior clerks or older employees should all be making money for you—other than just by performing routine tasks. Encourage thought and honest effort intelligently used.

Keep busy but not too busy. You are the Captain of the Ship!

TO SUCCEED IN BUSINESS.

First: Know your business from A to Z; understand all the conditions affecting it; organize your management in the most thorough-going manner; and exercise your will power to the end of keeping business at flood tide.

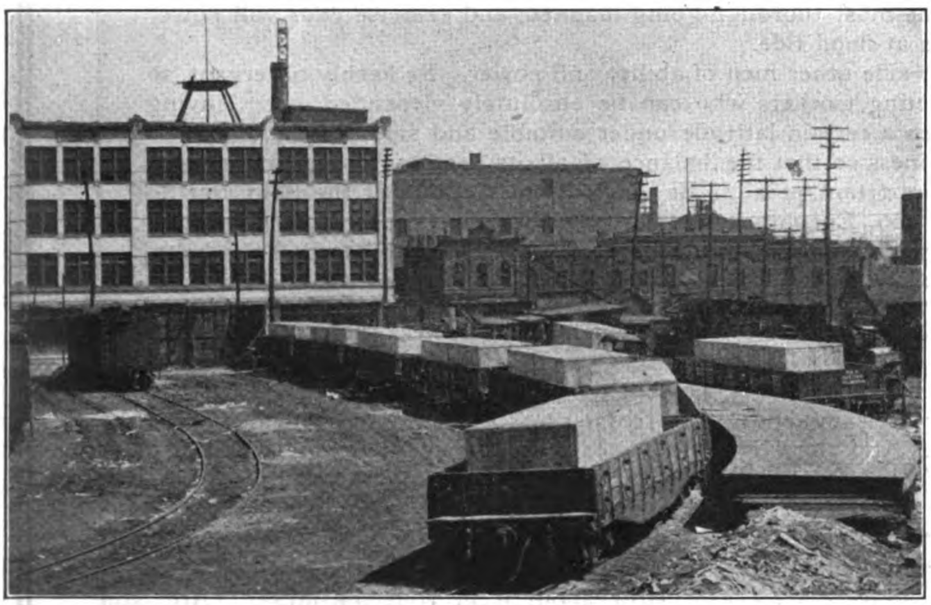
Second: Summon to your side other men of ability and power. Be keenly observant, so as to make no mistake in selecting workers who can be absolutely depended on. Having found them, they must be given a certain latitude under suitable and safe restrictions.

Third: Arrange your business so that the balance of all its sections or departments is carefully maintained. Most important of all: Be yourself the Captain of the Ship, but do not try to be the whole crew, too. Encourage your crew to help you make more money by giving them the backing and guidance they should have. But keep your hand at the helm.

EXPORT DEPARTMENT
W.

Train Load of Coles for England

One of the largest shipment of cars ever made by an Indianapolis manufacturer to any foreign distributor was that which recently left the plant of the Cole Motor Car Co. It comprises 25 car loads of Aero-Eights, and is being sent to the Cole distributor in London, England, William Cole & Sons, Ltd. This firm was a carriage builder of note in early Victorian days, but it has now turned to the more modern field of selling automobiles, numbering among its clients many of England's notables.



Twenty-Five Car Loads Cole Aero Eights for Shipment to London Distributor.

Through a curious coincidence the dealers' name is the same as that of car.

The state of the post-war demand in Great Britain for reliable makes of American cars is shown by the fact that when William Cole & Sons, six months ago, contracted with the Cole Motor Co. for future deliveries, it was on the basis of 100 a month. Due to delays in securing raw material, and adverse shipping conditions, the factory has been considerably behind in deliveries. Despite the unfavorable rate of exchange, high ocean freights, duties, etc., which bring the price of the Aero-Eight car in London up to almost double its domestic price, a recent cablegram from the distributor urged the importance of the delivery of the full quota of cars contracted for, regardless of price.

The packing of the Cole cars for export is done with extreme care, in a full sized box made from ¾-inch tongue and groove pine boards, and the top covered with roofing. This latter precaution is taken as a protection from rain inasmuch as the boxes are shipped two to an ordinary gondola flat car. The cars are packed completely assembled with the exception of the top, wheels and windshield, which are demounted.

LIGHT CARS DEMANDED IN BURMAH.

Two conditions favor the use of American cars in Burma in preference to those made in other countries: (1) Most of the purchasers are persons of moderate means who must buy a low priced car, and the taxi services also employ low priced cars; (2) the rough and hilly roads demand a car that is both light and durable. Burma has 1920 miles of metaled roads and 10,339 miles unsurfaced.

At present there are about 1725 passenger cars, 126 trucks, lorries and busses in Burmah. Most are of American origin.

Canada in Automobile Industry

Canada is now the second nation in the world in the manufacture of automobiles, number of cars owned and per capita distribution, the United States being first. Figures compiled by the farm bureau of the Goodyear Tire & Rubber Co., Akron, O., shows that one person in every 15 in the United States owns an automobile, while one in every 23 is the percentage in Canada. In Great Britain but one person in every 268 owns a car. he percentage in France is one to 102, one to 684 in Germany, one to 1000 in Italy, one to 2700 in Austria and one to 5300 in Russia.

The total number of cars registered in the Dominion of Canada is 350,000, as against 7,100,000 in the United States and 180,000 in England. Canada showed increased registration in 1919 of 13 per cent. Ontario was the banner province, with a registration of 127,860 passenger cars and 11,428 trucks. Saskatchewan, Alberta, Manitoba and Quebec rank in the order named.

Canada employs 15,000 workers in the automobile industry, which represents an investment of $50,000,000. In 1919, 94,000 automobiles were made in the Dominion, with a total sales for the year of approximately $100,000,000. The annual wages of persons in the industry totals $15,000,000.

Rural Canada owns more than half the cars operated in the Dominion and in the prairie provinces the percentage is greater.

It is estimated that the total Canadian production of automobiles in 1920 will be increased 35 per cent. over 1919.

MOTOR CONDITIONS IN CHOSEN.

There are 400 automobiles, 10 trucks and 58 motorcycles in use in Chosen. Most of the automobiles are employed as jitneys. The government is constructing new automobile roads, which will undoubtedly increase the demand. Most of the cars in use are of American make.

On the western front in France the British army authorities were employing in all 46,700 automobiles, of which 30,000 were trucks.

Foreign Trade Opportunities

(Reserved addresses may be obtained from the United States Bureau of Foreign and Domestic Commerce, Washington, D. C., or its district and co-operative offices, upon written request by the opportunity number.)

32,693—A merchant in Italy desires to purchase motorcycle and automobile accessories. Quotations should be given c. i. f. Palermo or Naples. Correspondence may be in English. Reference.

32,696—An automobile garage firm in South Africa desires to purchase engineers' machine tools of a light type, bench and fine tools, motor accessories and sundries, and garage fittings and appliances. All are required immediately. It is also desired to secure agencies for the sale of agricultural implements, pumping plants, light gasoline engines, wind mills, galvanized pipe, cylinders, working heads and pipe fittings. Reference.

32,702—A commercial agent in Ireland desires to represent manufacturers for the sale of cinematograph films, bicycles, motorcycles and automobiles. References.

32,704—A steel goods manufacturer in England desires to purchase steel plates, 1500 to 1550 degrees steel for pressing into automobile side rails, such as are used by American automobile manufacturers, in quantity sufficient to make about 40,000 side rail plates, and about 80,000 cross pieces. Quotations should be given c. i. f. Liverpool or Manchester. Payment will be cash against documents, by confirmed credit opened in New York against guaranteed delivery. Information is wanted as to base prices and delivery.

32,728—Agents and firms in France desire to be placed in communication with manufacturers and exporters for the sale of automobiles, motors, etc., boots and shoes, construction material, coal, cotton and woolen goods, canned goods, food products, carpets and rugs, electrical supplies, furniture, hardware, glassware, hosiery, gas and electrical fixtures, household goods, leather and leather goods, linen, machinery, metals, motorcycles, paper industry and machinery supplies, oil paintings, etc., oils and greases, portable houses, phonographs, railway material, silk goods, soaps, textiles, tools, tramway supplies and typewriters.

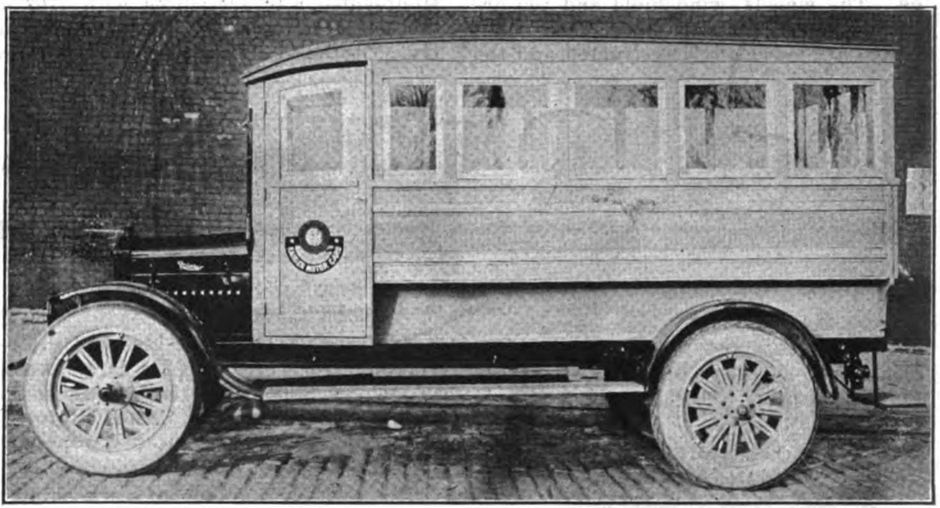
32,737—A merchant firm in Brazil desires to secure an agency on commission for the sale of hosiery, drugs, hardware, silk, underwear, automobiles and accessories, electric supplies, provisions, agate ware, enamel ware, paper and print paper, typewriters, textiles, etc. Quotations should be given c. i. f. Brazilian port or f. o. b. American port. Payment by draft 120 days. Correspondence should be in Portuguese. References.

32,742—An American firm maintaining branches in Amsterdam, Hamburg, Paris and Brussels, desires to purchase and secure agencies for the sale in Europe of toilet preparations, food stuffs, automobiles, motorcycles, tires and motor oils. References.

32,775—A company in Danzig desires to secure the exclusive agency, handling goods for own account and perhaps on consignment, for a cheap motor car, a high-grade car, motorcycles, automobile accessories and tires. It is also desired to purchase goods for own account. quotations should be given c. i. f. Danzig. Payment will be cash against documents, at Danzig. Correspondence should be in German. References.

32,780—An agency is desired by a commercial agent in Belgium for the sale of bicycles and motorcycles, parts and accessories, hand tools and small machine tools, agricultural implements, etc., sewing machines and accessories, and phonographs and supplies. Correspondence should be in French.

32,786—A commercial agent in Algeria desires to secure an agency for the sale of automobiles and accessories, sewing machines, typewriters, chemicals, paints and varnishes, coloring matter, cottonseed oils, agricultural machinery, hardware, etc. Quotations should be given c. i. f. Algerian port. Payment will be made against documents. Correspondence may be in English.



One of a Fleet of Rainier Trucks Equipped wtih Special Bodies That Will Be Used for Passenger Service in Jerusalem.

32,792—A firm in Portugal desires to secure an agency and purchase agricultural implements, automobiles, trucks, dairy equipment, hardware, machinery and tractors. Correspondence may be in English. References.

32,793—An automobile sales company in France desires to purchase and secure an agency for the sale of motor car accessories of every description. Quotations should be given c. i. f. French port. Correspondence may be in English. References.

32,813—A firm having a garage and repair shop near Paris, France, desires to secure the representation of firms for the sale of automobiles. Correspondence should be in French.

32,871—A commercial agent in Switzerland desires to secure the representation of firms for the sale of industrial fats and lubricating oils. Correspondence may be in English. Reference.

FLEET OF RAINIER TRUCKS ON JERUSALEM STREETS.

The advance shipment of a large fleet of Rainier omnibuses soon to be seen on the streets of Jerusalem was recently sent from New York City, where the headquarters of the Rainier Motor Corporation is located. These Rainier motor trucks are fitted with special omnibus bodies to accommodate 25 passengers. The Ramallah Co., which made the contract, will install a service from Jerusalem to Damascus in Syria. This company, which has offices in Jerusalem and also in New York City, states that there is a strong demand for improved transportation facilities in the ancient city. The English are planning to operate a fleet of trucks in that territory.

UP-TO-DATE GARAGE IN ALBANIA.

In Tirana, Albania a country almost without roads or means of transportation, there is a modern, up-to-date garage and repair shop—one which has repaid its owners, if not in coin, certainly in expediency, many times over The shop can accommodate 10 cars at a time, the garage 25, while in the shop itself many of the tools are run by electricity, the current for which comes from the only electric plant in Albania, one installed by Captain O. B. Cohun, an American Red Cross worker, with wires and insulation obtained from salvaged Austrian supplies at Teodo, Dalmatia, and a French motor.

The American Red Cross maintains many of these shops in Albania. The mechanicians are comprised of many nationalities, among them being Russian, Czecho-Slovakian, Austrian and Montegrin, in addition to Americans. Without these little repair shops, the relief work of the Red Cross would never have progressed as speedily as it has in that section.

The finance department of the Argentine Republic has authorized the customs department to classify as of declared value at 25 per cent. all electric motors for automobiles and apparatus for the generation of light and heat.

BIG SHIPMENT OF COMET CARS TO BELGIUM.

The Comet Automobile Co., Decatur, Ill., recently shipped the first installment of a large export order of Comet cars to Antwerp, Belgium, for distribution through various branches throughout Europe. This consisted of a solid train load representing a total value of nearly $90,000, and exports will be continued abroad at the rate of 60 cars a month, reaching a total valuation of $100,000 to $125,000.

Of special interest is the care the Comet company has taken in working out the specifications for the export orders A study of European tastes revealed a decided preference for maroon color in body finish and these cars are accordingly finished in deep maroon. They will, however, have left-hand drive, contrary to the English practise which requires right-hand control as "keep to the left" is the law of the road there. Special attention is also given in preparing for shipment. As a car is finished and tested every part is numbered, tagged and listed. The wheels, windshield and top are then removed for packing. Water tight crates are especially constructed and the packing is so standardized that the consignee will have no difficulty in setting up the car ready to use.

Train Load of Climax Cars on the Over-Land Leg of Their 5000-Mile Trip from Decatur, Ill., to Belgium.

HAYNES CO.'S SALES CAMPAIGN IN LATIN AMERICA.

The Haynes Automobile Co., Kokomo, Ind, has begun an aggressive sales campaign in Mexico, Central America and South America. Two important additions have been made to the export staff, one of them being Jose A. Barros, former attache of the Brazilian consulate in Chicago, and recently associated with the National City bank, New York. He is a graduate of McKenzie college, Sao Paolo, Brazil, and a graduate engineer of Union college. He will start at once on an extended trip through Brazil, Uraguay, Paraguay, Argentina, Chile, Bolivia, Equador and Peru, where he will establish Haynes dealers.

The other export agent is Leland de Villafranca, who is a graduate of St. John's college, Annapolis, and of the University of Maryland. He was at one time secretary to the Costa Rican consulate in Guatamala.

MOTOR VEHICLES EXPORTED.

During 1919 the total number of motor vehicle exports was 82,730, a gain over 1918 of 79 per cent. The valuation was $109,125,964. Passenger cars numbered 67,145, valued at $73,700,527.

Autos in Uruguay and Paraguay

A motor car for every 148 persons was the 1919 record for Uruguay, no other South American country having so many cars in proportion to its inhabitants, though larger numbers of automobiles enter Argentina, Chile and Brazil. Natural circumstances make Uruguay an exceptionally favorable market for motor cars. With a population of 1,500,000 and an area of 72,210 square miles, Uruguay is the most densely populated country of South America. Moreover, the people, the majority of whom are of European descent, are progressive, and sea and river ports have kept them in touch with the outside world. The large areas of rolling plains and increasing mileage of good roads and modern city streets afford opportunity for an extensive use of automobiles and trucks.

Montevideo, the capital and chief city, takes more than half of all the cars imported into Uruguay. In August, 1919, Montevideo was accredited with 5702 of the 10.134 motor cars in the entire country. Of these in the capital, 4222 were for private use, 1273 for hire and the remaining 207 were delivery cars. About 60 per cent. of all the motor cars in the country were from the United States, 25 per cent. from continental Europe and 15 per cent. from England.

The average number of cars shipped annually from the United States to Uruguay in the five fiscal years preceding the war, 1910 to 1914 inclusive, was 138, and the average total value was $173,314. The growth in the trade is indicated by the fact that in the five fiscal years covering the war period. 1915 to 1919 inclusive, the exports of cars averaged 1059 in number and $671,545 in total value each year. The exports for 1919 showed an increase of 76 times in number and 56 times in value over the fiscal year 1910. The total value of motor vehicles, parts and tires shipped to Uruguay from America in the last calendar year was $2,877,727.

The market for automobiles increases with the improvement of highways, and Uruguay already has about 400 miles of macadamized roads. One per cent. of all taxes paid on real estate is devoted to the building of roads and bridges. Uruguay has ambitions to lead as a resort for automobilists and its good roads and drives already attract wealthy Argentinians, Brazilians and Paraguayans with their cars. An active automobile club in Montevideo adds to the interest in motor cars by arranging races.

Paraguay's imports of automobiles averaged 45 cars a year at a total annual value of $30,000, in the six-year period from 1913 to 1918 inclusive. Since 1914 practically all of the automobile imports have originated in America, but Paraguay's lack of a seaport makes it difficult sometimes to trace the source. It is stated also that practically all of the tires and inner tubes imported are of American make. It is encouraging to note that in spite of the handicaps of poor roads, high cost of fuels, heavy freight rates, taxes and duties, the sales of American cars are increasing in Paraguay.

HOLLAND MAY PASS TIRE EQUIPMENT LEGISLATION.

Holland is seriously considering the advisability of following in the footsteps of Norway in proposing national legislation that will specify that trucks of certain capacity must be equipped with pneumatic tires so as to prevent excessive wear on roads and to cut down the cost of highway repairs due to the use of solid tires on heavily loaded trucks. The Dutch Road congress will meet in September for the purpose of discussing details. In Norway legislation goes into effect this summer providing that all trucks used for commercial purposes must be equipped on all four wheels with tires of at least five-inch tread. This means that, up to two tons, trucks must be pneumatically shod; from two to 2½ tons, either pneumatics or solids of more than five-inch tread will be permissible; while all trucks of more than 3½ tons' capacity may run on solids.

It is believed that Holland will require trucks up to one-ton capacity to run on pneumatics.

CHANGES IN TAXATION IN ENGLAND.

Proposed changes in taxation presented in the budget of the chancellor of the British exchequer for the fiscal year 1920-21, provide for the abolishment on Jan. 1, 1921, of the existing tax of 12 cents a gallon on motor spirit and the present license duties on motor cars and cycles, the following system of taxation to be then substituted: Motor cars and cycles, used for trade purposes, to pay a new scale of duty according to weight; vehicles used as hackney carriages to pay by seating capacity; private motor cars to pay £1 a horsepower unit or part of unit, with a minimum of £6 ($29.20.)

The exports from the United States to Japan for 1919 included passenger automobiles to the value of $2,890,034, compared with $2,877,692 in 1918.

Personal News of Industry and Trade

Williams Heads Barco Battery Co.

P. B. Williams heads a corporation composed of automobile and storage battery men of Detroit for the manufacture of automobile storage batteries under the name of Barco Battery Co. The new product is called the Barco "Bearcat" battery. It is made in seven standardized models that fill the requirements of 99 per cent. of the electrically equipped automobiles in use. The plates in the Barco "Bearcat" are made by a special process which is claimed to result in the combination of extraordinary high momentary discharge, exceptionally efficient recharge, and tough, hard plate surface that enables the battery to stand up for an unusual length of time under the abuse to which automobile storage batteries are subjected. The battery is guaranteed for 18 months. The office and factory are located at 83 West Fort street, Detroit.

P. B. Williams, Head of Barco Battery Co., Detroit, Mich.

Charles E. Stuart, Assistant Sales Manager, Selden Truck Corp.

Charles E. Stuart, who has recently been appointed by Vice President Hal T. Boulden as assistant sales manager of the Selden Truck Corporation, Rochester, N. Y., has had a ripe experience in the motor vehicle trade as salesman, dealer and field sales manager.

Clifton Slusser, who has just been transferred to Los Angeles, Cal., as general superintendent of the Goodyear Tire & Rubber Co. of California, the new $15,000,000 subsidiary company on the Pacific coast, went to work for the Goodyear Co. eight years ago as a stenographer. He was born at Massillon, O., and left school at the age of 11 to start work as a glass blower. Since then he has been a machinist's helper, plumber, rubber worker and assistant to Paul W. Litchfield, Goodyear factory manager at Akron. To complete his education he attended night school, donning overalls in the daytime and going through every department of the Goodyear factory. He helped organize the Goodyear "flying squadron," a group of men experienced in every phase of rubber tire manufacture and ready to stabilize production and plug up any hole that might occur in the factory. Successively he took over the efficiency and planning departments, factory expert work, garage and trucking work and the labor and aeronautical departments, all the time studying nights. About a year ago he was made personnel manager and admitted to the executive council, a group of five men who, under Mr. Litchfield, were responsible for the operation of the entire factory employing over 35,000 in Akron alone. As general superintendent at Los Angeles he will be in charge of 5000 men at the start, who will produce 5000 tires daily.

N. S. Reed, Consulting Engineer and Sales Director, Hinkley Motors Corporation.

Beall Accepts Gray Corp. Presidency

F. F. Beall has accepted the presidency of the Gray Motor Corporation, a newly organized concern, to take over the plant, equipment and business of the Gray Motor Co., Detroit, builder of the Victory motor, and associated with him are a number of prominent Detroit automobile men, including William H. Blackburn, formerly production manager of the Cadillac Motor Car Co., who is to be factory manager of the new Gray organization. Mr. Beall has, for the last seven years, been vice president in charge of manufacturing of the Packard Motor Car Co. The Gray Motor Corporation is capitalized at $4,000,000 and a production of 30,000 cars annually is planned.

B. A. Lyman, Director of Sales of Maxwell-Chalmers Interests.

B. A. Lyman, who has been for nine years with Maxwell Motor and Chalmers interests, has been promoted to the position of sales director. Although a young man, Mr. Lyman brings to his new office mature judgment and a thorough understanding of every dealer's problem, obtained by hard experience and schooling under acknowledged expert manufacturing merchandisers.

Ivar Du Rietz of the firm of Sven Du Reitz & Co., Inc., of Stockholm and Norrkoping, Sweden, has returned to Sweden after a visit of several months in this country, during which time he perfected arrangements for the opening of an office of his company, 1702 Consumers' building, Chicago, in charge of Walter E. Devlin.

Lon R. Smith, general sales manager of the Midwest Engine Co., Indianapolis, Ind., is on an extensive trip to the western coast to make a comprehensive investigation of market conditions in reference to the Midwest truck and tractor engines, and will visit many prominent Utilitor distributors and dealers.

Wilcox Becomes Research Engineer

Howard Wilcox, the famous automobile racing expert, has been appointed research engineer of Cole Motor Car Co, Indianapolis, Ind. Mr. Wilcox brings with him to this new position an experience in the automobile industry extending over a long period of years, his first connection being with the National Motor Vehicle Co., from 1904 to 1909, during which time he became associated with almost every branch of work conducted in that plant. He has the distinction of being one of the men directly responsible for the development of the first National racing cars and was a member of the first National racing team whose signal victories will be long remembered. In 1912 he entered the taxicab business but, at the same time, kept up his interest in racing and participated in many events on the speedways of the country. In 1913 he helped design and drove a special racing car which won honors under the name of the "Gray Fox." In 1915 Mr. Wilcox was a member of the famous Stutz racing team and in 1916 and 1919 drove the noted French Peugeots, winning the 500-mile race at the Indianapolis motor speedway with one of these cars last year. Mr. Wilcox was also recently associated with the Allison Experimental Co. at Indianapolis, specializing on tool and jig work. The Allison experimental laboratory was a government research station and it was there that the first Liberty motor was built, as well as the first United States tractor motor and the first successful reduction gear to reduce the ratio of aeroplane propellors from the air-whipping stage to that of maximum efficiency was developed there, and Mr. Wilcox was actively associated in all this work. This year he was retained to represent the Peugeot factory in the 500-mile race at Indianapolis, having as team mates Jules Goux and Andre Boillot, the two leading French drivers.

Howard Wilcox, Well Known Racing Driver, Becomes Cole Research Engineer.

The appointment of Mr. Wilcox will be followed by an expansion in the production of Cole cars.

George H. Layng, manager of manufacturing of the Cadillac Motor Car Co., has been appointed vice president and director of that company, and will continue in charge of the manufacturing departments. Mr. Layng became connected with the Cadillac Co. 15 years ago as foreman in charge of the chassis department.

S. V. Norton has been made service manager of the General Motors Truck Co. to fill the vacancy caused by the resignation of H. L. Beckwith. Mr. Norton has been, for 15 years, associated with the B. F. Goodrich Rubber Co., for the last 10 of which as manager of truck tire sales. He is well known as a writer on motor truck problems, among his works being "The Motor Truck as an Aid to Business Profit." He also originated the annual hand book, "Motor Trucks of America," now in its eighth year. Mr. Norton has been prominently identified with the Good Roads movement, serving as a member of the Ohio Good Roads federation and on the Ohio State Council of National Defense.

S. G. Norton, Service Manager General Motors Truck Co.

H. J. Butler has assumed his duties as general sales manager of the Oneida Motor Truck Co., Green Bay, Wis., manufacturer of gasoline and electric motor trucks and electric industrial tractors. Mr. Butler comes to the Oneida organization from the Edison Storage Battery Co., with which he had been associated as manager of the Chicago district offices for a number of years. Prior to that connection he was with the General Vehicle Co. The Oneida electrics will be built in sizes ranging from three-quarters to seven-ton.

J. W. Allan has been appointed export manager and national buyer representative in New York City of the Service Motor Truck Co., Wabash, Ind. L. H. Boydston has been made general manager of the Chicago branch of the Service Truck Co.

Waldron Sales Mgr. Boston Branch

Lester J. Waldron, sales manager of the Boston branch of the Pennsylvania Rubber Co., Jeannette, Pa., has been promoted to be New England district manager. He has been connected with the tire industry in Boston and Springfield for the past 10 years. He was the first salesman to travel through the New England territory out of Boston for the Pennsylvania Rubber Co., and became very successful and popular with the trade. During the war he enlisted in the aviation service and flew in several of the training fields in the South. He was honorably discharged in December, 1918, and resumed his connection in January, 1919, with the Pennsylvania Co. as sales manager.

L. M. Baker has resigned as supervisor of sales of the motor equipment division of the Hyatt Roller Bearing Co. to take over the exclusive representation in the State of Michigan of the Dittmer Gear & Manufacturing Co., Lockport, N. Y. Mr. Baker was formerly associated with the Bearings Service Co. as well as being sales manager of the United Motors Service, Inc. Previous to that connection he was with the Dittmer Co., to which he now returns. He will also be associated with his brother, E. K. Baker, in the wheel and rim business. His headquarters will be in Detroit.

L. M. Baker Represents Dittmer Gear & Manufacturing Co. in Michigan.

Gordon H. Gannett and L. S. Wiggin are in charge of the eastern sales office just opened by the Timken-Detroit Axle Co. in the Post-Standard building, Syracuse, N. Y. The address of the Chicago sales office of the Timken-Detroit Axle Co. is now 1403-1405 Conway building.

G. E. Schwartz, formerly mechanical superintendent of the Torbensen Axle Co. of Cleveland, has resigned to become manufacturing manager of the Timken-Detroit Axle Co.

NOTES OF TRADE AND INDUSTRY

Haynes to Build Iron Foundry

The Haynes Automobile Co., Kokomo, Ind., has assured itself of a continuous supply of malleable iron for use in the manufacture of Haynes "character" cars through the construction of a malleable iron foundry in Kokomo adjacent to its factory. The concern will be known as the Kokomo Malleable Iron Co. and it has been incorporated for $350,000.

As will be seen from the personnel of the directorate of the new company, it includes the leading officials of the Haynes Automobile Co.; directors, Elwood Haynes, J. W. Johnson, A. L. Thalman. A. G. Seiberling, Conrad Wolf, N. Cook and E. Bridges.

The officers are as follows: President, A. G. Seiberling; vice president, E. Bridges; secretary, N. Cook; treasurer, A. E. Starbuck.

The cost of the building, including equipment, will be about $300,000. The main building will be 360 feet long and 85 wide. The equipment will include two 15-ton furnaces, capable of producing 36 tons of malleable iron a day, making a yearly output of nearly 11,000 tons.

It is stated that Haynes company alone will use one-third of this output, while a prominent Indiana truck manufacturer will require at least 500 tons a year.

WILLYS-OVERLAND STEEL TUBE MILL.

Carrying out its policy of producing practically every part used in the Overland car, the Willys-Overland Co., Toledo, O., is operating its own steel tube mill in which are manufactured exhausts, muffler outlets, heater outlets, steering posts, throttle controls, robe rails and a variety of other parts that require the use of this class of material. This steel tube plant means a great deal in the economical production of the Overland cars. Despite the steel shortage this concern escaped being held up through inability to get steel tubing in the open market.

ANDERSON MOVES INTO NEW FACTORY.

The Anderson Electric & Equipment Co., Chicago, Ill., has moved into its new factory building at 154-160 Whiting steet, recently leased from the Ilg Electric Ventilating Co. It is six and seven stories and basement and affords floor space of 75,000 square feet, equipped with the latest machinery and supplied with every modern appointment and convenience for economical production.

The Anderson Co. is an extensive manufacturer of reel lighting devices, one of which is the "Autoreelite," a combined spot and trouble light. The company also makes electric industrial lighting devices on an extensive scale, as well as a line of dental and laboratory appliances. The new quarters will increase the company's manufacturing capacity about 500 per cent.

The present management comprises the following: President, E. G. K. Anderson; vice president and general manager, B. J. Grigsby; treasurer, J. A. Johnson; secretary, O. E. Grigsby; assistant secretary-treasurer, N. A. Engstrom.

The general manager is now in Europe on business relative to export trade.

WESTINGHOUSE SUPPLY SECTIONS MOVED.

The commercial and order parts of the meter, fan motor and rectifier sections of the supply department of the Westinghouse Electric & Manufacturing Co. have been transferred from the East Pittsburgh, Pa., works to the Newark, N. J., plant of the company in order that the commercial and manufacturing departments may be in closer contact. The Newark office will be designated as the supply sales department.

In charge of these departments are H. M. Wibel, rectifier section; W. J. Jockers, fan motor section; S. A. Berger, meter section.

DUESENBERG AUTOMOBILE CO. INCORPORATED.

According to a recent announcement by the Indianapolis Chamber of Commerce, the Duesenberg Automobile & Motors Co., incorporated under the laws of Delaware with a capitalization of $5,000,000 to manufacture passenger cars and motors, has purchased a site of 16½ acres for a new plant in Indianapolis.

ANDERSON
ANDERSON ELECTRIC & EQUIPMENT CO

New Factory of Anderson Electric & Equipment Co., Chicago, Ill.

New Eliot Street Six-Story Garage

The Eliot Street Garage is Boston's newest and most up-to-date enterprise of this nature, having a capacity for 600 cars on six floors so arranged that the machines are run from floor to floor without elevators. This garage is situated on Eliot street, Boston, between Tremont street and Park square, handy to the theater and hotel districts and shopping centers.

The cars enter the different floors over circular concrete ramps of slight grade, so constructed that the machines are easily driven to their destinations, and all delays and elevator accidents are eliminated. Each car is allotted a certain stall and remains there until removed by chauffeur or owner. Each space is provided with a concrete "Flatiron" located under the car between the wheels and machines can enter this space when lined up correctly; hence there is no danger of dents or scratches to the finish.

The garage is stated to be absolutely fireproof and is equipped throughout with the Automatic Sprinkler system, as well as fire extinguishers conveniently located. Each floor is supplied with a service of gasoline and oils by an air pressure system, and the leading makes of tires and tubes and other accessories are in stock, this department being open day and night.

There are comfortable waiting rooms for the accommodation of patrons and there is an adequate equipment of passenger elevators. A service car is held ready at all times for towing and other emergency calls.

MOTOR AND ACCESSORY MANUFACTURERS' CONVENTION.

The 1920 credit convention of the Motor & Accessory Manufacturers' association has been tentatively scheduled for Thursday and Friday, Sept. 16 and 17, at Cleveland, O. In view of the vital problems affecting the automobile industry in relation to the general financial and credit conditions, it is believed that this year's sessions will be among the most important and interesting in the history of the association. The programme will include not only the discussion of technical subjects, but viewpoints and experiences on special problems will be exchanged.

MITCHELL SPECIALTY CO.

The Mitchell Specialty Co., 18th and Market streets, Philadelphia, manufacturer of automobile hardware, has leased a portion of the building at 3631-3639 North Smedley street, having 7000 square feet.

Grand Central Palace to Be Closed

AUTOMOBILE SHOW
AUTOMOBILE SHOW
AUTOMOBILE SHOW

Grand Central Palace, Well-Known New York Exposition Building, to Be Converted to Business Purposes.

THE announcement that the Grand Central Palace, New York City, is to be closed to all expositions after April 1, 1921, will be of interest in automotive circles all over the country who have associated this structure with the annual automobile and accessory shows for a number of years past.

It is understood that the organization, headed by Alfred I. du Pont, which owns this property, will convert the exposition halls to business purposes.

The Grand Central Palace was built in 1912 and has housed practically all the large expositions and business shows held in New York in recent years. These included the automobile show, the electrical exposition, the motor boat show, the chemical industries exhibition, the flower show and the own your own home show.

The four exposition halls in the building cover in the total number of feet of floor space a larger area than any other auditorium in the city, not excluding Madison Square Garden. It was said in real estate circles that the great demand for space for business purposes would enable the owners of the building to get $5 or $6 a square foot rental.

Exposition men said the decision would mean that many conventions and exhibitions held in New York annually would have to go to other cities. The Grand Central Palace was said to be the only building in New York in which large gatherings of such a nature could be held. The only other large auditorium, Madison Square Garden, it was held, was too greatly in demand for sporting exhibitions and enterprises like the circus to be available for industrial expositions and events of such nature.

New York City, after April 1, 1921, it was said, will be the only city in the United States or Europe with a population more than 200,000 without a representative exposition building. It was learned that the notice, which was sent out by Frederick W. Payne, manager of the Grand Central Palace, had caused managers of expositions to make arrangements to hold their enterprises in other cities, notably Chicago and Atlantic City.

When the organization with which Mr. du Pont is connected purchased the leasehold of the building announcement was made on behalf of Mr. du Pont that the building would be used as a great market place for the exhibition of goods of all sorts from various parts of the world so that they might be viewed by domestic buyers. The International Exposition of Industries was the name given to the market place established in the building.

Exposition men some time ago received a notice from the Grand Central Palace that beginning on Jan. 1, 1921, the building would be closed to further expositions. Protests were made at the time and the matter was apparently dropped. Then followed the notice that the Palace would no longer be available after April 1 of next year.

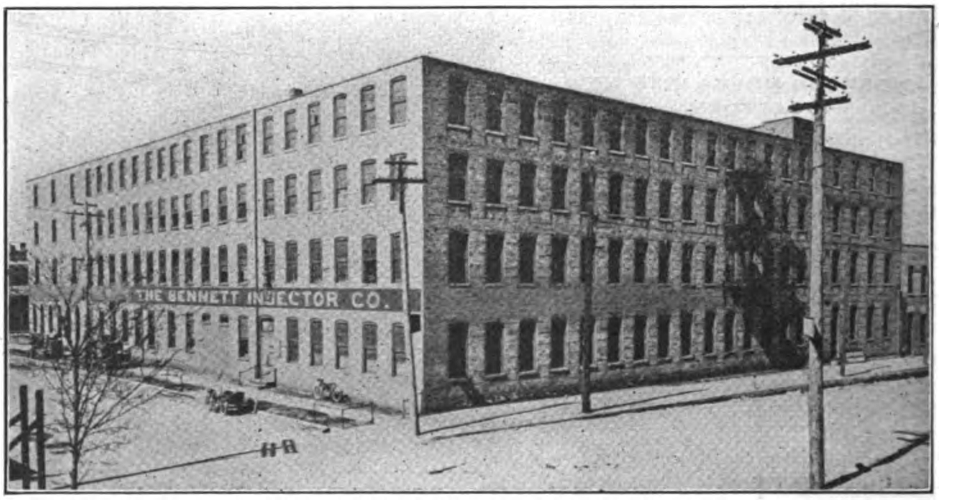
The Grand Central Palace is 12 stories in height. Four floors are used for exhibitions and offices. Permanent exhibits occupy the remainder of the building. During the war it was an army base hospital.

BENNETT INJECTOR CO. BUYS WOOD INTERESTS.

An announcement of interest to garage men and automobile and truck manufacturers is that the Bennett Injector Co., Muskegon, Mich., has purchased the interests of the A. J. Wood Manufacturing Co., Grand Rapids, Mich., which has been manufacturing the Wood no-valve grease injector, which is designed for pumping heavy grease direct from the original barrel container into gear cases and transmissions.

The Wood injector is quickly and simply attached to any grease barrel, which may be carried on a special truck to any part of the garage or factory. The lubricant can be applied quickly, without handling, where needed and with great accuracy as the pump is gauged to throw exactly one-quarter of a pound of grease a stroke. A special non-drip nozzle instantly stops the flow of grease when the pump ceases to operate.

The Bennett Injector Co., with a capitalization of $50,000, is already under production in its new plant, with sufficient orders on hand to keep it in operation at its full capacity. Thomas B. Bennett, formerly of the Koelbel-Bennett Auto Supply Co., Overland distributor for Muskegon county, is president and general manager.



Factory of Bennett Injector Co. at Grand Rapids, Mich.

Wheel Maker to Erect Factory

Phineas Jones & Co., engaged at 305 Market street, Newark, N. J., in the manufacture of vehicles and automobile wheels, has purchased 15½ acres of land in Hillside on which a factory will be built. The tract has a frontage of 235 feet on Hillside avenue and a depth of 657 feet, and the operations will involve an outlay of $300,000.

The largest unit will be a 40 by 300 foot assembly building. It will be of brick construction with steel sash and in it the product of the company will be made ready for market. Another structure, 120 by 124, with an ell extension 35 by 50 feet, will be used as a storage house. It will have terra cotta inclosing walls and a wood roof.

Twenty-four kilns of terra cotta construction, in which spokes and ribs will be prepared, are shown on the plans. Each will be 19 by 27 feet. A band shed, 50 by 120 feet and an engine and boiler room 30 by 60 will complete the structures. Approximately as many more buildings can be placed on the tract and additions will be made as the business grows.

Concrete platforms will extend from the main buildings to the siding on the property, which connects with the Irvington branch of the Lehigh Valley railroad.

The floor space in the buildings will be as follows: Assembly, 12,000 square feet; storage shed, 15,000 square feet, and band shed, 6000 square feet.

MIDWEST ENGINE CO. USES FILMS FOR PUBLICITY.

The Midwest Engine Co., Indianapolis, Ind., maker of Dependable power units, is using motion pictures to advertise its Midwest Utilitor, a general farm utility machine, and other products. A series of films has been prepared and the reels are sent out to the various distributors, dealers and district men, each of whom is provided with a motion picture machine, so that when a prospective buyer comes in, who may be a farmer or truck gardener, desiring to see the Utilitor in operation, the lights are turned down and on the screen can be instantly shown the outfit plowing, cultivating, seeding, mowing and operating belt-driven machinery. Other pictures present other Midwest Dependable units, such as steam turbines, pumps, heavy oil engines, etc., and still others describe a visit to the Midwest plants at Indianapolis and Anderson, Ind., showing the devices in all stages of production from the arrival of the raw material to the inspection and shipment of the finished article.

The McDermott Body Corporation, maker of automobile truck bodies, has purchased the property at the southwest corner of Van Alst avenue and 30th street, New York, containing 20,000 square feet, on which it will erect a two-story plant.

GENERAL MOTORS ACCEPTANCE CORPORATION.

In order to make it possible to increase its business to a size commensurate with the demand upon it, the General Motors Acceptance Corporation, Broadway at 57th street, New York, has been authorized to double its capital and surplus from $2,500,000 to $5,000,000. The stock is now authorized at $4,000,000, while the surplus will be doubled, from $500,000 to $1,000,000. This will give the corporation double facilities for financing the sale of General Motors automobiles and other products on the deferred payment system. The concern is now stated to be doing business at the rate of $150,000,000 a year.

The officials of the company, elected at its recent meeting, are as follows: Directors, William C. Durant, Pierre S. du Pont, Irenee du Pont, Lammont du Pont, Henry F. du Pont, J. Amory Haskell, John J. Raskob, Paul Fitzpatrick, Alfred H. Swayne, Curtis C. Cooper; president, J. Amory Haskell; vice presidents, John J. Raskob, Alfred H. Swayne, Paul Fitzpatrick, Curtis C. Cooper, John J. Schumann, Jr., Albert L. Deane; secretary, George H. Bartholomew; treasurer Reune Martin.

A vice presidency was created for Mr. Cooper, formerly secretary, and his assistant secretary, Mr. Bartholomew, was advanced to the office of secretary. John J. Schumann, Jr., who has been in charge of the sales of the company's collateral gold notes to bankers, and Albert L. Deane, who has been manager of the New York branch, have been created vice presidents.

MULTIBESTOS NEW YORK OFFICE.

The Multibestos Co., Walpole, Mass., maker of Multibestos brake and clutch linings, has opened a New York branch office at 105 West 63rd street. The Multibestos Co. also maintains branches in Chicago, Detroit, San Francisco and Chattanooga, Tenn.

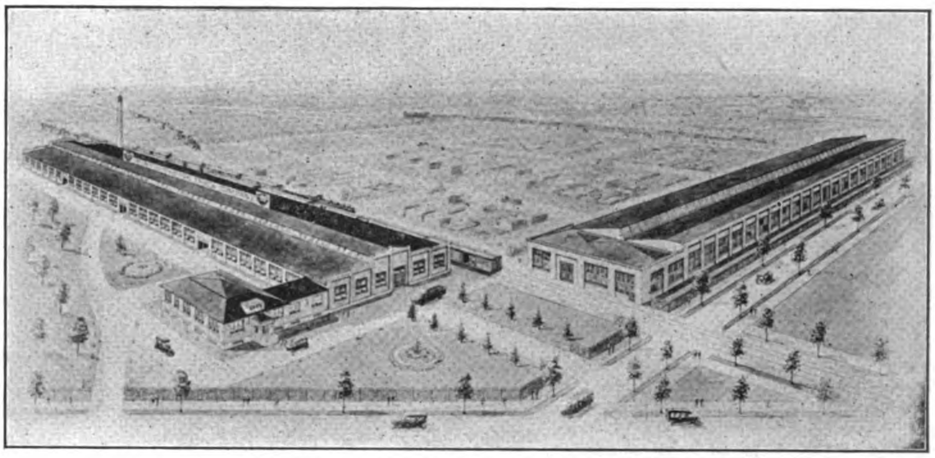
NEW GARAGE FOR FEDERAL.

The Federal Motor Sales Co., Baltimore, Md., has commenced work on a garage on North avenue.

New Building for Winther Co.

The Winther Motor Truck Co., Kenosha, Wis., has broken ground for a large addition to its present plant which, it is anticipated, will be ready for occupancy about Aug. 30. The new structure will be 60 feet wide by 400 long, of modern saw-tooth construction, with concrete floors, brick walls, and a wide sky-line extending the entire length of the building. It is designed with particular attention to high-speed production and will be equipped with every necessary labor-saving and safety appliance.

The shipping facilities will be excellent as spur tracks will pass between the two buildings making up the plant, to the Chicago & Northwestern railroad. Chassis construction will be continued in the present unit and the new building will be used exclusively for the final assembly, painting and inspection of Winther trucks and the Winther Six, the new passenger car. It is stated that this extra manufacturing space will enable the Winther Co. to more than double its present output.



Addition to Kenosha Plant of Winther Motor Truck Co.

ACTIVITIES OF GRAY MOTOR CORPORATION.

The Gray Motor Corporation, Detroit, the $4,000,000 organization which recently took over the plant of the Gray Motor Co. in that city, has secured the exclusive rights to the Briscoe, Storey & Stahl type of knocked-down automobile body. The Gray Motors Corporation now purposes to ship all cars in a knocked-down state to assembly companies, independently organized, and located at the leading centers for the economical distribution in the United States and the main points in all foreign countries. These assembling plants will have a capacity to assemble, paint, trim and distribute at least 3000 cars a year in the territory assigned to them. The Gray car is the product to be thus distributed, designed by the Benjamin Briscoe Stahl Engineering Co., Inc., Detroit.

It is believed that this method of shipment will represent a saving of as high as 70 per cent. in cost of freight, etc.

Parrett Tractor Co.'s New Management

Considerable interest is manifested in the recent taking over of the active management of the Parrett Tractor Co., Chicago, by Vincent Bendix and George A. Gibson, both well known in the industry. Mr. Bendix is the designer of the Eclipse-Bendix drive and head of the Bendix Engineering Works and Automotive Research Laboratories and becomes president of the reorganized Parrett Co. Mr. Gibson, who has become vice president and general manager, was formerly works manager for the Diamond T Motor Truck Co., and previous to that was with the Packard, White and General Motors organizations in various capacities.

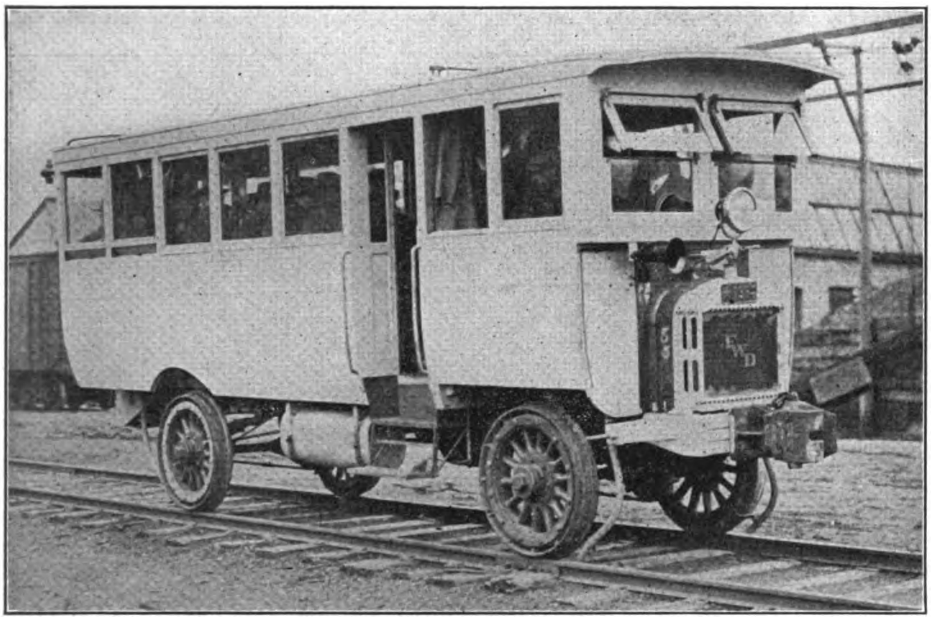
Curtis B. Bruce is the treasurer and together with Messrs. Bendix and Gibson makes up the executive committee. Other officers include: Vice president and chairman of the board, Robert Barbour; vice president and director of export sales, Russell A. Reed; secretary, W. J. Buettner. The board of directors includes Messrs. Bendix, Gibson, Robert and Warren Barbour, Bruce, Henry A. Rudkin and B. A. Tompkins.

Robert Barbour is president of the Barbour Flax Spinning Co., Paterson, N. J., and a director of the United Shoe Machine Co. and Safety Car Heating & Lighting Co.; Warren Barbour is president of the Linen Thread Co. of New York; Mr. Reed was formerly with the Oliver Chilled Plow Works, South Bend, Ind., and is now the head of Russell A. Reed, Inc., New York, exporter of agricultural implements; Mr. Bruce was formerly secretary of the Central Locomotive & Car Works, Chicago Heights, and later became treasurer of the Parrett Tractor Co.; Mr. Rudkin is a member of McClure, Jones & Reed of the New York Stock Exchange; Mr. Tompkins is vice president of the Bankers' Trust Co. of New York.

In addition to the Parrett tractor, the company will produce a motor truck of one-ton capacity designed for both city and country service, and a light tractor cultivator. A new model 15-30 tractor is to be placed on the market, equipped with a four-cylinder, 4½ by six-inch engine with overhead valves and to list at $1950. The motor truck will list at about $1750, and it is planned to produce 2400 of them the first year. The cultivator, which is also to be capable of plowing, will be offered at about $1000 list, and the first year's schedule calls for 1800 of these.

Tractor sales will be placed in charge of E. F. Sanders, who has been with the Parrett Co. for some time as district sales manager for the southwest, and was for seven years equipment sales manager of the Central Locomotive & Car Works.

Herbert L. Scharlach will superintend sales of motor trucks. He was formerly sales manager for the F. A. Ames Co. and later sales manager of the Sterling Motor Truck Co., Milwaukee, and recently with the Republic Motor Truck Co., first in charge of eastern sales and afterwards of the western territory. A. S. Whitney, formerly with the Ford Motor Co., is in charge of the purchasing department.



F-W-D Truck Chassis with Passenger Body and Flanged Wheels Used for Passenger and Freight Traffic on the Palatine, Lake Zurich & Wauconda Railroad.

ANDREWS RUST-PROOFING PROCESS.

The Benjamin Briscoe & Stahl Engineering Co., Inc., 821 Book building, Detroit, has been named as engineers of the Andrews Rust-Proofing process, recently imported from England, where it is stated that it was successfully used during the world war by European governments in rust-proofing munitions, etc. The process has been tested by the Detroit Testing laboratory, Detroit, and reported that the casting tested was rust-proof where not abraded. This statement is of interest because of the general use of rust-proofing in this country in the automotive and other trades.

F-W-D Truck Takes Locomotive's Place

An unusual and yet very practical use is made of an F-W-D truck chassis equipped with a passenger body by the Palatine, Lake Zurich & Wauconda Railroad Co., on its tracks between Palatine and Wauconda, Ill. It is used as a unit to replace a locomotive and car, being far more economically operated, and practically the only change necessary was to change the road wheels for flanged wheels.

The distance between terminals is 16 miles, and on this the truck unit makes regular runs during the day, a part of the time hauling a trailer, loaded with freight and luggage weighing up to five tons. The track at one point ascends a grade of seven per cent. Without the trailer the round trip is made on six gallons of gasoline.

Of the service obtained Vice President and General Manager Thomas J. Lee of the road stated in a recent letter: "I think there is a great field for the truck which will operate successfully on a railroad, as there are about 250 short lines in this country, which would be in need of them if the right machine were built."

The Butler County Railroad is operating a similar equipped railroad between Fargus, Mo., and Tipperary, Ark.

SINCLAIR OIL PROJECT DROPPED.

Due to unsettled labor conditions and high prices of building material, the Sinclair Consolidated Oil Co. has announced that its plan for the erection of an oil station at Trembley Point, Elizabeth, N. J., to cost approximately $10,000,000, has been temporarily abandoned. Two tanks, each with a capacity of 65,000 barrels, now under construction, will be completed, however.

The contemplated oil station was to be one of three for the Sinclair Oil Co. in the East, the others being at Boston and Buffalo.

ALLEN COUNTY ASSOCIATION FORMED.

The Allen County, O., Automobile Trade association has completed its organization by the election of the following officers: President, Joseph C. Hartline of the Hartline Motor Co.; vice president, O. L. DeWeese of the DeWeese Garage; secretary-treasurer, A. M. Heriett of the Heriett Tire Service Co. Measures were taken to affiliate with the Ohio Automobile Trade association. The membership is now more than 50.

DIPPY & AITKEN IN NEW QUARTERS.

Dippy & Aitken, advertising agent, formerly at 12th and Filbert streets, Philadelphia, has moved into more commodious quarters at 1328 Walnut street.

The examining of automobile operators, now going on in New York and Brooklyn, shows that the rejects have been running a full 25 per cent.

National Four-Passenger Phaeton

The National Motor Car & Vehicle Corporation, Indianapolis, Ind., announces a new four-passenger phaeton of distinctive design and unusual body lines. Extreme narrowness is a characteristic of this model, the rear seat being no wider than the front, 40 inches. The cowl is longer than in the regular touring car, and the rear compartment is shorter, giving room for a small after deck.

The interior fitments include a novelty in the way of walnut cabinets in the center cowl with a tilting robe compartment underneath. It is powered with a 70-horse engine and weighs 3600 pounds. The chassis is practically the same as for the other National Sextet models. It has a 130-inch wheelbase and has a speed range up to 70 miles an hour, accelerating from two to 40 miles an hour in high gear within a standard city block.

AN INGENIOUS STEAM CARBURETOR.

Among the ingenious devices to aid carburetion recently put on the market is the Automatic Steam Carburetor, made by the Automatic Steam Carburetor Co., 2190 Milwaukee avenue, Chicago. It is really an auxiliary carburetor, as it is used in conjunction with the conventional gas carburetor. The water for the steam device is taken from the cooling system of the car and is heated and vaporized by the exhaust manifold. The resultant steam is shot into the gas carburetor to be mingled with vaporized air and gasoline, the principle that causes a motor car engine to run more smoothly on damp days being utilized.

On a recent test in Chicago on Marmon 34, Velie and Chevrolet cars, equipped with a Stromberg, Rayfield and Zenith carburetor, respectively, on a quart of gasoline, it was found that the following per cent. of increase in mileage resulted with the use of the combined gas and steam carburetors: Marmon, 33 1/3; Velie, 27, and Chevrolet, 27. The increase in speed under pull noted was as follows: Marmon, 5½ miles; Velie, 5¾ miles, and Chevrolet, six miles.

GENERAL ALUMINUM CO. BUYS McADAMITE PLANT.

G. G. Powers, general sales manager of the General Aluminum & Brass Manufacturing Co., Detroit, has purchased the stock of the McAdamite Aluminum Co. of that city, and J. P. Carritte of the latter company has become associated with the former as a director and member of the executive committee. It is the intention to operate the McAdamite plant as a separate unit.

A. P. Slater, formerly superintendent of the aluminum and brass foundries of the Willys-Overland Co., Toledo, has joined the General Aluminum Co. as assistant general superintendent of foundries.

AUTOMOTIVE ENGINEERING OFFICE IN WASHINGTON.

The first automotive engineering office for Washington. D. C., has recently been opened by A. & D. R. Black, who has leased quarters in the Evening Post building. This firm plans to handle two general classes of work: Consulting engineering on air craft and light motor vehicles, and the technical representation of manufacturers in the automotive field in their dealings with governmental departments. The members of the firm are Archibald Black, who has been with the United States Navy department for the past 20 months, and for two years previous, chief engineer with the L. W. F. Engineering Co., College Point, and Donald R. Black, formerly chief draftsman with the L. W. F. Engineering Co. and for several months in the United States air service. The former is a member of the Society of Automotive Engineers, the Aero Club of America, the American Flying club and the American Society for Testing Materials.

DILSO SPRING LUBRICATION SYSTEM.

Buxton & Owen, former Chicago distributor of the Reo cars, has secured the sole rights, under the Dilley patents, to license manufacturers to use the Dilso system of spring lubrication for automobiles and trucks.

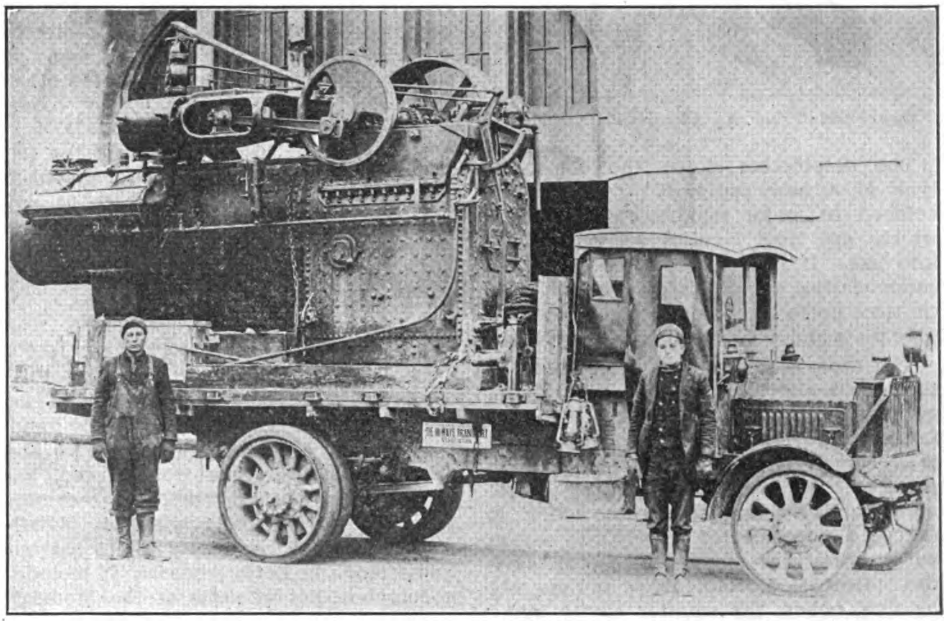
It is stated that the courts have recently sustained the validity of the Dilley patents covering the lubrication of springs by free-flowing oil retained by means of a felt washer in a cup-like recess near the end of each spring leaf, which can be supplied with oil through an oil duct in the end of the leaf. The lubricant is carried by capillary attraction over the entire frictional surface of the spring.

Buxton & Owen has opened general offices at 30 North La Salle street, Chicago.

Federal Moves Eight-Ton Boiler

A Federal truck, which had seen two years service, was recently picked by the Harrison Brothers of Toledo, O., to move a 16,200 pound boiler a distance of 70 miles, although the truck company has but two Federal in its fleet of nine trucks.

The Austin Co. of Toledo wanted the boiler moved from Dunkirk to Toledo, but questioned the advisability of hauling it on a motor truck. Harrison Brothers assured the company that it would come through all right, and proved their contention, the Federal taking to its task as though it were an everyday load.



Federal Five-Ton Truck Owned by Harrison Bros., Toledo, O., with a Steam Boiler Weighing 16,200 Pounds That Was Hauled from Dunkirk, O., a Distance of 70 Miles.

DURATEX CO. IS TO EXPAND.

Ralph S. Allen, vice president and general manager of the Duratex Co., Newark, N. J., manufacturer of Duratex automobile and furniture upholstery, is authority for the statement that his company has purchased a large plot of ground adjoining the factory to provide a site for an addition which will give five acres of manufacturing space under cover, a total of about 250,000 square feet.

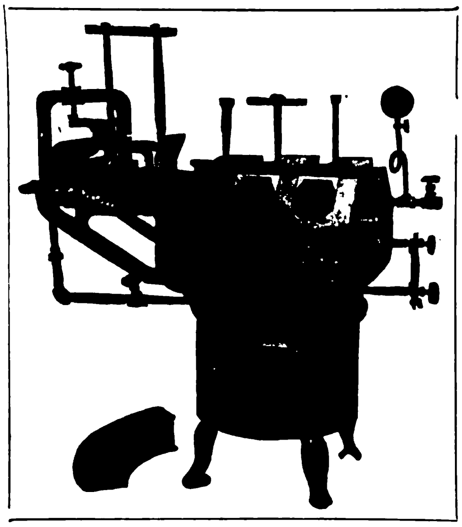
Duratex automobile upholstery is stated to be the evolution by scientific research and experiment of a product that is absolutely sun and water proof and remarkably durable.

NORTHWIND SPARK PLUG.

The Northwind Spark Plug Corporation has been formed to take over the production, on a commercial scale, of the Northwind spark plug. The business offices are at 42 West 39th street, New York City, and a manufacturing plant has been established at Union Hill, N. J.

Improved Type Akron Vulcanizer

Always keeping up to the times, the Akron Rubber Mold & Machine Co., Akron, O., manufacturer of tire repair equipment, has recently made improvements on its vulcanizers and retreaders.



Improved Type A, Akron Vulcanizer.

The illustration shows the improved type A, a new equipment recently developed to make repairs on cord tires which are now coming so extensively into use. It is a three-cavity outfit, accommodating all makes of cord and fabric tires up to five inches; equipped with tube plate and self-contained steam boiler.

The type F is an ideal equipment for the small shop. It is a self-contained outfit handling all makes and sizes of fabric tires from 2½ to five inches. This is a complete unit equipped with tube plate and inside patch vulcanizer attachment, and fitted with steam boiler so that the purchase of a separate steam boiler is not necessary. It has two cavities: One 3½ by four inches and one 4½ by five inches, the smaller cavity being fitted with a reducing shell for taking 2½ by three-inch size tires.

The improved type E is a cavity retreader and has been developed especially to accommodate five-inch cord tires, which are larger in size than five-inch fabric tires. It is a two-cavity outfit on which all makes of tires from three inches up to five-inch cord and fabric tires can be handled. It is equipped with self-contained steam boiler and plain, ribbed and non-skid tires can all be handled on this equipment.

In addition to the equipment described the Akron Rubbermold line includes several other types of vulcanizers as well as tube plates, bead molds, reducing shells, air bags and steam boilers, buffing stands, lasts, brackets, etc., and a full line of tire repair tools.

Literature regarding Akron Rubbermold equipment will be furnished upon application to the Akron Rubber Mold & Machine Co., 945 Sweitzer Avenue, Akron, O.

SAVEUR FORD FRONT SPRING.

The New Era Spring & Specialty Co., 68 Cottage Grove avenue, Grand Rapids, Mich., has added to its line of "Better" springs, tire carriers, spring bumpers, etc., the Saveur Ford front spring, which is especially designed to stop the blows that flatten the ordinary plain springs.

The illustration shows this spring with the open-looped, up-turned ends of the seventh leaf. This simple and effective spring saver is an integral part of this type of New Era "Better" spring. When the spring is deflected three-fourths of its arc, the open loop comes into contact with the "V" angles of the frame. Thus the open loops absorb the extra heavy thrust of the spring itself and, it is claimed, positively prevent spring breakage.

The Saveur Ford front spring is uniformly oil-tempered from end to end by a new process, graphited between the leaves for two years' lubrication; built to fit exactly; is flexible, easy riding and squeak proof. Like all New Era "Better" springs, the Saveur is guaranteed against breakage on the basis of a new one in prompt exchange for a faulty one. It helps absorb the shocks and saves other breakage of radius rods, bent axles, steering knuckles, etc.

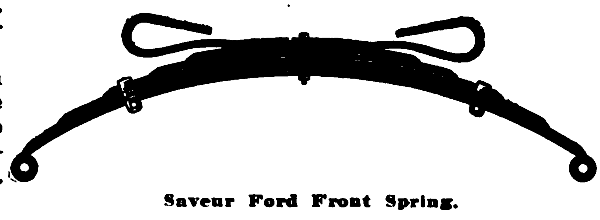
Its weight is 20¼ pounds and the list price is $6.50. The Saveur open-looped leaf is also made separately to fit any Ford front spring by removing and replacing the top leaf with the Saveur leaf. The price of the Saveur open-looped leaf alone is $2.50.

ISSUES SPANISH CATALOGUE.

Charles F. Lyngaas Co., Inc., 135 Wooster street, New York, export factor handling motor car accessories, parts and tools under the Lynx trade brand, has issued a comprehensive illustrated catalogue of the products which it distributes, addressed especially to its patrons and friends in Latin America. It includes a complete list of parts of the Model T Ford car with numbers and cable code symbols for convenience in ordering, and a complete alphabetical index.

DEATH OF MANAGER, TWITCHELL GAUGE CO.

Max D. Bendel, manager of the Twitchell Gauge Co., Chicago, died recently in that city from heart failure while on his way from his home to his place of business. Mr. Bendel succeeded to the management of the Twitchell Gauge Co. in 1912, shortly after that concern was acquired by A. Schrader's Sons, Inc., of Brooklyn, N. Y. In addition to his duties as sales executive of the Twitchell Gauge Co. he also conducted the Chicago branch of the Schrader Co.



Saveur Ford Front Spring.

Jacquet Motors Corporation Formed

The Jacquet Motors Corporation of America has been formed at Belding, Mich., and will manufacture the Jacquet car to retail at about $4500.

The directorate of the new organization is as follows: Alfred J. Jackson, Ray D. DeWolf, L. W. Wilson, Byron F. Brown, Fred L. Warner.

Mr. Jackson was elected president and sales director. He started his automobile career as a boy with the Napier Motor Co. in London, England, and was with the Pierce-Arrow Co., Buffalo, N. Y., from 1905 to 1909, and later associated with Frank W. Ruggles of the Republic Motor Truck Co., being a consulting engineer and a pioneer in the worm-drive movement in America.

The vice president and general manager is Louis W. Wilson, who has been identified with the industry for more than 20 years. He resigned a connection with the Timken-Detroit Axle Co. to join this concern.

Ray D. DeWolf, vice president and production manager, was formerly with the Universal Tractor Co., Moline, Ill., and the Advance-Rumeley Co. Byron F. Brown, secretary and treasurer, was formerly secretary of the Belding Chamber of Commerce. Charles Marquet, who is also a member of the company, is manager of the American Motor Co., Battle Creek, Mich. He was formerly with the H. H. Franklin Manufacturing Co., Syracuse, N. Y. The assistant engineer is Harold Ringold, formerly with the Michigan Aircraft board. B. R. Batchelor, the purchasing agent, has had a wide experience in this field.

The trade name "Jacquet," adopted by the corporation, is a combination of "Jackson" and "Marquet," the names of two prominent members of the organization. The company has a modern plant at Belding, 230 by 100 feet, a part of which is of two-story construction.

CATALOGUE OF BANNER PRODUCTS.

The Banner Accessory Manufacturing Co., 2629-2633 La Salle street, St. Louis, Mo., has just issued its Catalogue No. 6 of Banner products comprising automobile and truck accessories and repair parts. Each article is illustrated and described, and list prices, discounts and shipping points for each are plainly stated for convenience in selection and ordering, etc. The Banner company is also direct factory representative for an extensive line of equipment, and the name of the manufacturer is given with each unit, together with specifications and other information.

NEW DORT DISTRIBUTORS.

The Dort Motor Car Co., Flint, Mich., announces the following new distributors: W. S. Kip Motor Co., 1408-1410 North Broad street, Philadelphia, Pa., and N. D. Shawkey Motor Co., 5925 Baum boulevard, Pittsburgh, Pa.

Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK MARKET.

Week Ended June 12, 1920.

Company	High	Low	Last	Change
Advance Rumely	35½	33½	35	+1
Advance Rumely, pfd	65	64½	65	..
Ajax Rubber	67	66	66	—1
Allis-Chalmers	38⅜	37	38⅜	+⅛
Allis-Chalmers, 2nd pfd	78	78	77	+2
American Bosch Magneto	119½	115½	118	+2
American-La France Fire Engine	10¾	10½	10½	—⅛
Bethlehem Motors	23⅜	20½	22½	+1
Case, J. I., Co., pfd	94¾	94¾	94¾	+1¼
Chandler Motor	134½	101	103	+3
Deere & Co., pfd	93¾	93¾	93¾	+1¾
Fisher Body	115¼	115¼	115¼	—10¾
Fisher Body, pfd	103	103	103	+⅜
Fisk Rubber	34¼	32	33½	+1¼
General Electric	145⅜	141	142½	+3
General Motors	27⅝	24⅞	25⅛	—1½
General Motors, pfd	76½	76½	76½	+1
General Motors, 7 per cent. deb	88	86½	86½	—1¼
General Motors, 6 per cent. deb	74	72½	73⅜	—⅝
Goodrich, B. F	65⅛	63	65	+1½
Goodrich, B. F., pfd	91	91	91	+1⅛
Gray & Davis	22⅝	22	22	—½
Hendee Manufacturing	33½	32	33½	+½
Hupp Motor Car	18½	17	17¾	+¼
International Harvester, New	135¼	126	133⅞	+6⅞
International Motors	59	54¾	59	+2½
International Motors, rects. 25pd	19	19	19	..
International Motors, 1st pfd	79⅞	79⅜	79¾	+1¼
International Motors, 2nd pfd	68¼	68¼	68¼	..
Kelly-Springfield Tire	108½	105	108½	+⅜
Kelly-Springfield Tire, 8 per cent. pfd.	96	96	96	—2
Kelsey Wheel	65	62	65	+2
Keystone Tire & Rubber	31⅜	25½	30⅜	+3⅜
Lee Rubber & Tire	31	28¾	30⅞	+2¼
Martin-Parry	20¾	20	20	—1
Maxwell Motors	23	22½	23	—¾
Maxwell Motors, ctfs. of dep	18	18	18	+¼
Maxwell Motors, 1st pfd	40	40	40	—1
Maxwell Motors, 1st pfd., cts. of dep.	37	37	37	+2⅛
Mullins Body	38	88	38	—1
Pierce-Arrow	52⅞	48¼	52	+1¾
Pierce-Arrow, pfd	94½	94½	94½	+½
Republic Motor Truck	52⅝	42⅞	52⅝	+11⅝
Saxon Motor	10⅞	9¼	10¼	—½
Sinclair Consolidated Oil	32⅝	31	32¼	—½
Standard Oil, N. J	680	651	663	..
Standard Oil, N. J., pfd	101¾	100⅞	101⅞	—⅜
Stewart-Warner	41⅞	41	41	..
Stromberg Carburetor	79⅞	70⅛	78¼	+3¾
Studebaker Corporation	72⅜	66½	71¾	+2
Studebaker Corporation, pfd	93	92	92	—5
U. S. Rubber	97	93⅛	96⅛	+1
U. S. Rubber, 1st pfd	108	108	108	+⅜
U. S. Steel	94¾	92	94½	+⅜
U. S. Steel, pfd	106¼	104½	104¾	—1¾
White Motors	54	51¼	54	+2
Willys-Overland	20¼	18⅛	19½	+1¼
Willys-Overland, pfd	82	79½	82	+2½

CRUDE RUBBER, NEW YORK PRICES.

	Apr. 21 Cts. Per Lb.	May 21 Cts. Per Lb.
Para—Up-river fine	.42 @ —	.39 @ —
Up-river medium	.40½ @ —	.38 @ —
Up-river coarse	.31½ @ —	.30½ @ —
Caucho ball	.33 @ —	.31 @ —
Islands fine	.42 @ —	.42 @ —
Islands coarse	.22 @ —	.22 @ —
Cameta	.21½ @ —	.21½ @ —
Ceylon—Smoked sheets, ribbed	.44½ @ —	.38 @ —
Smoked sheets, plain	.23 @ —	.37½ @ —
Madeira, fine	.44 @ —	.44 @ —
Knapsack	— @ —	— @ —
First latex pale crepe	.45 @ —	.38½ @ —
Amber crepe	Nominal	Nominal
Clean brown crepe	— @ —	— @ —
Rio Nunez string	— @ —	.55 @ —
Palembang	.13 @ —	.13 @ —
African	.33 @ —	.33 @ —
Prime Surinam sheets	— @ —	.84 @ —
Centrals—Corinto prime	.32 @ .32½	.29 @ .30
Esmeralda, prime	.32 @ .32½	.29 @ .30
Balata, sheets	Nominal	Nominal
Guayule, wet	.27 @ —	.27 @ —
Balata, block, Panama	.57 @ —	.57 @

AKRON RUBBER PRICES.

	April 13		May 15	
	Bid	Asked	Bid	Asked
Amer. R. & T. com	88	91	83	88
Amazon Rubber	..	101	..	98
Firestone, com	183	188	158	165
Firestone, 6 per cent. pfd	95½	96½	93	94
*Firestone, 7 per cent. pfd	97	98	93	95
General, com	600	..	800	1000
General, pfd	100	100½	101	162
*B. F. Goodrich, com	69	71	59	62
B. F. Goodrich, pfd	94½	95½	91	93
*Goodyear, com	385	395	350	360
Goodyear, 1st pfd	99½	100	95	96
India Rubber	185	200	180	195
Kelly-Springfield	131	133	104	108
Mason, com	30	..	28	..
Mason, pfd	..	75	..	74
Marathon; com	50	53	..	50
Miller, com	183	188	163	175
Mohawk, com	..	335	..	300
*Portage, com	95	98	..	88
Portage, pfd	..	86	82	84
Republic, com	3½	4	3	3½
Republic, first pfd	..	65	..	65
Republic, second pfd	35	40	30	35
Rubber Products	110	125	..	110
Star Rubber, com	200	300	135	175
Swinehart, com	80	90	..	80
Swinehart, pfd	..	90	..	85
Phoenix Rubber, com	..	23	..	22½
Phoenix Rubber, pfd	..	90	..	90
Standard Tire, com	200	225	175	195
Standard Tire, pfd	..	..	..	95

*Ex-dividend.

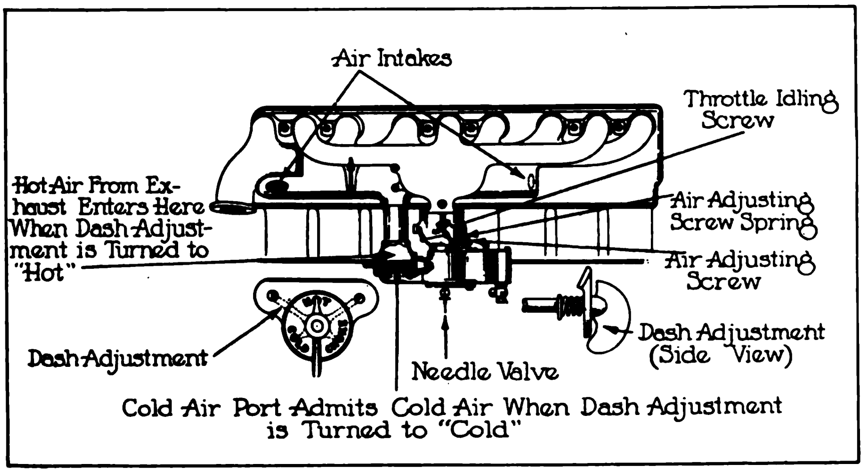
DIVIDENDS DECLARED

Company	Rate	Period	Payable	Stock of Record
Ajax Rubber	$1.50	Quart.	June 15	May 31
Allis-Chalmers	1/3%	......	Aug. 15	July 31
Allis-Chalmers, pfd	1¾%	Quart.	July 15	June 30
Barrett	2%	Quart.	July 15	July 1
Barrett, pfd	1¾%	Quart.	July 15	June 29
Bosch Magneto	$2.50	Quart.	July 1	June 15
Bosch Magneto	20%	Stock	July 15	July 1
Case, J. I. Threshing Machine, pfd	1¾%	Quart.	July 1	June 14
Chandler Motor	2½%	......	July 1	June 15
Chandler Motor	33 1/3%	Ex-stock	June 10	....
Electric Storage Battery	2½%	Quart.	July 1	June 14
Electric Storage Bat. pfd	2½%	Quart.	July 1	June 14
Fisk Rubber	75c	Quart	July 1	June 15
Fisk Rubber 1st pfd	$1.75	Quart.	Aug. 1	July 21
General Motors	25c	Quart.	Aug. 1	July 15
General Motors	1 to 40	Stock	Aug. 1	July 15
General Motors, 6% deb	1½%	Quart.	Aug. 1	July 5
General Motors, 7% deb	1¾%	Quart.	Aug. 1	July 5
Goodyear Tire & Rubber	3%	Quart.	June 1	May 25
Goodyear Tire & Rubber	150	Stock	....	June 14
Haynes Auto	60%	Stock	....	....
International Motors, 1st and 2nd pfd	$2.33	4 mos.	July 1	June 15
Kelly-Springfield, pfd	1½%	Quart.	July 1	June 15
Kelly-Springfield, 6% pfd	$1.50	Quart.	July 1	June 15
Keystone Tire & Rubber	30c	Quart.	July 1	June 15
Locomobile Co. of America, pfd	1¾%	Quart.	July 1	June 15
McGraw Tire & Rub., pfd.	1¾%	Quart.	July 1	June 20
Maibohm Motors	2%	Quart.	July 1	June 15
Packard Motor Car, pfd	1¾%	Quart.	June 15	May 29
Pennsylvania Rubber	1½%	Quart.	June 30	June 15
Pierce-Arrow, pfd	$2	Quart.	July 1	June 15
Rainier Motor, pfd	2%	Quart.	June 1	May 26
Robbins Body, pfd	1½%	Quart.	June 1	May 31
Sinclair Consolidated Oil	2%	Stock	July 15	June 30
Stromberg Carburetor	$1	Quart.	July 1	June 18
Stutz Motor Car	80%	Stock	June 29	June 18
Stutz Motor Car	$1.25	Quart.	July 1	....
Texas Co	75c	Quart.	June 30	June 18
Tidewater Oil	2%	Quart.	June 30	June 18
Tidewater Oil	2%	Extra	June 30	June 18
U. S. Truck, pfd	$2	Quart.	July 1	June 19
Willy Corp., 2nd pfd	$1.75	Quart.	July 1	June 19

Adjusting Marvel Carburetor on Buick Six Cars

THE standard adjustment of the carburetor which will give the maximum mileage with the best all around driving, is as follows, on 1919 and 1920 Buicks:

The gasoline needle valve at the bottom of the carburetor should be open approximately one full turn and at the end of the air adjusting screw just above the float bowl should stand flush with the end of the ratchet spring. To get this result adjust as follows:


Air Intakes
Throttle Idling Screw
Hot Air From Exhaust Enters Here When Dash Adjustment is Turned to "Hot"
Air Adjusting Screw Spring
Air Adjusting Screw
Dash Adjustment
Needle Valve
Dash Adjustment (Side View)
Cold Air Port Admits Cold Air When Dash Adjustment is Turned to "Cold"

Marvel Carburetor, Used on Buick Six, Model K, 1920 Cars.

Turn the gasoline needle valve on bottom of carburetor to the right until it stops and then quickly turn back to the left one complete turn. Make sure the air adjusting screw is flush with the end of the ratchet spring.

With dash adjustment turned to "Hot," start and run the engine until the intake manifold feels warm.

Retard the spark and close the throttle gradually on steering wheel quadrant until the engine idles. If the engine tends to stop when the throttle is closed, either the throttle idling screw is not screwed in far enough, or the air adjusting screw should be screwed in farther.

To get a good idle of the engine, adjust throttle idling screw and also air adjusting screw as loosely as possible without making the engine miss or run irregularly.

To test the above adjustment the engine should accelerate from an idling speed as follows: With the spark advanced it should accelerate without a back fire on both hot and cold air. With retarded spark it should accelerate on hot air without a back fire, but should back fire when accelerated on cold air. These accelerations should be tried several times to make sure of the adjustment.

If the engine does not back fire with retarded spark and cold air, the carburetor is set too rich and this can be remedied by turning the needle valve to the right and at the same time tightening the air adjusting screw to keep the engine running idle until the above conditions are met. On the other hand, if the engine back fires on advanced spark and cold air, the carburetor is too lean and may be made richer to meet the above conditions by turning the needle valve to the left and loosening the air adjusting screw to keep the engine idling properly.

The carburetor should be tested frequently to see if the above conditions are being obtained and the temperature of the air entering the carburetor should be regulated to give the desired results while driving.

In starting the engine, turn the dash adjustment to "Choke" until the engine starts, and then turn it immediately to "Hot."

The adjustment should be left at "Hot" only long enough for the engine to become well warmed up, when the dash adjustment should be turned to "Cold" and left in that position. These directions apply to normal temperatures and weather conditions, and the operator will soon learn to handle the dash adjustment to take care of colder temperatures.

For example, on a very cold winter day it may be necessary to drive with the dash adjustment turned at a point between "Hot" and "Cold" all the time, the exact position being determined by finding out where the most satisfactory performance of the engine is secured. The adjustment should be kept as near "Cold" as good performance of the engine seems to permit.

When the dash adjustment is turned to "Choke," both the hot and cold air inlets are shut off and only enough air enters to make a combustible mixture at a low temperature. This mixture is entirely too rich for driving.

When the dash adjustment is turned to "Hot," the carburetor is fed with hot air from the chamber around the exhaust manifold, entering at air intakes. This gives a satisfactory mixture while the engine is warming up.

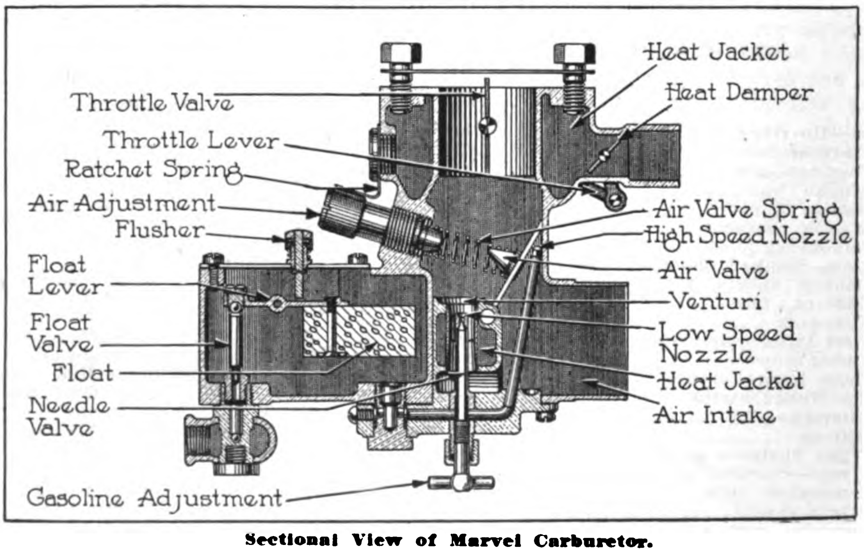
When the dash adjustment is turned to "Cold," the carburetor draws its air from the outside, and if the carburetor is properly adjusted gives the correct mixture for ordinary driving temperatures.

The dash adjustment to a position between "Hot" and "Cold," on cold days may be made in such a manner as to feed the air to the carburetor at about the same temperature as the outside air in warm weather, thus assuring a mixture that affords both performance and economy.

USE THE THIRD BRAKE.

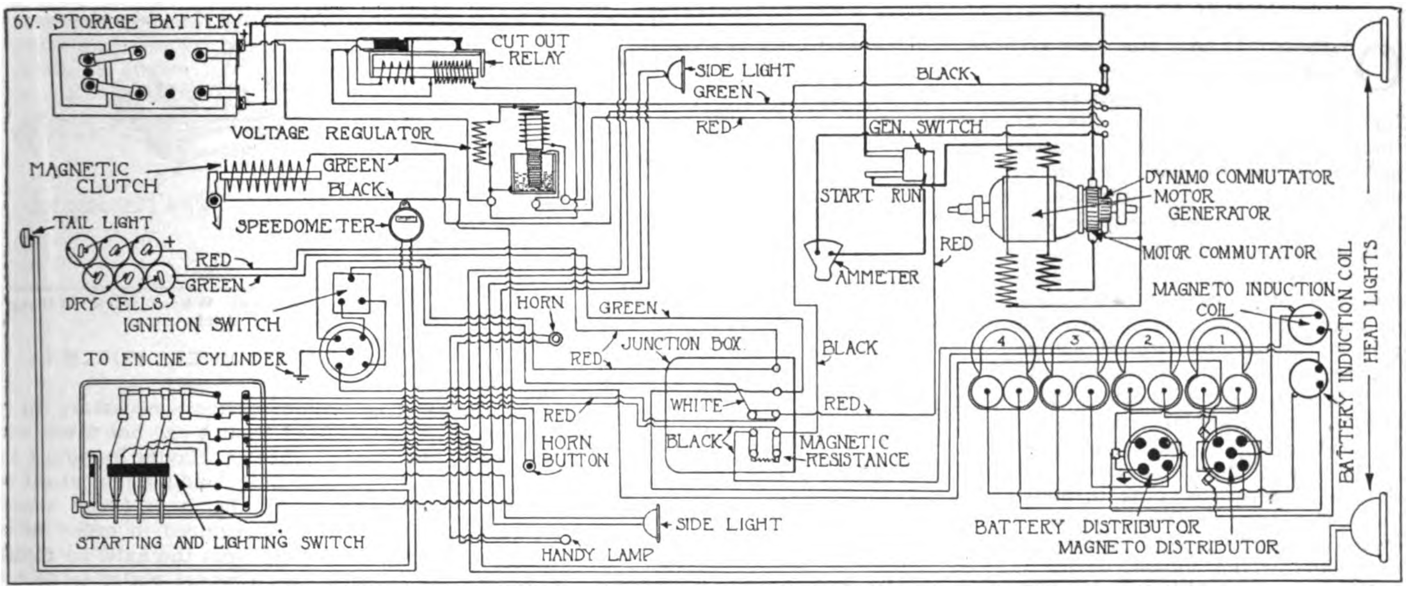
The motor car driver should not forget that his car has three brakes. If he puts the gears in second speed and cuts off the spark, steep grades will have no terror for him. He should shut off the engine and slide into second as he rolls across the ridge, but should not drive in second. The spark can be shut off if the throttle will not close. Then with a six-cylinder car six compression brakes are gained and the engine is cooling in the meantime. If necessary, a gentle touch of the service or emergency brake now and then generally will hold nicely. At times an abrupt or long drop will call for low instead of second in compression. On all but the steepest grades this will hold the car with but very little use of the brakes, and will keep the brakes in reserve for real emergencies.

In removing steering wheel to lubricate planetary gears it will be found advisable to use a wheel puller, to avoid damaging threads.

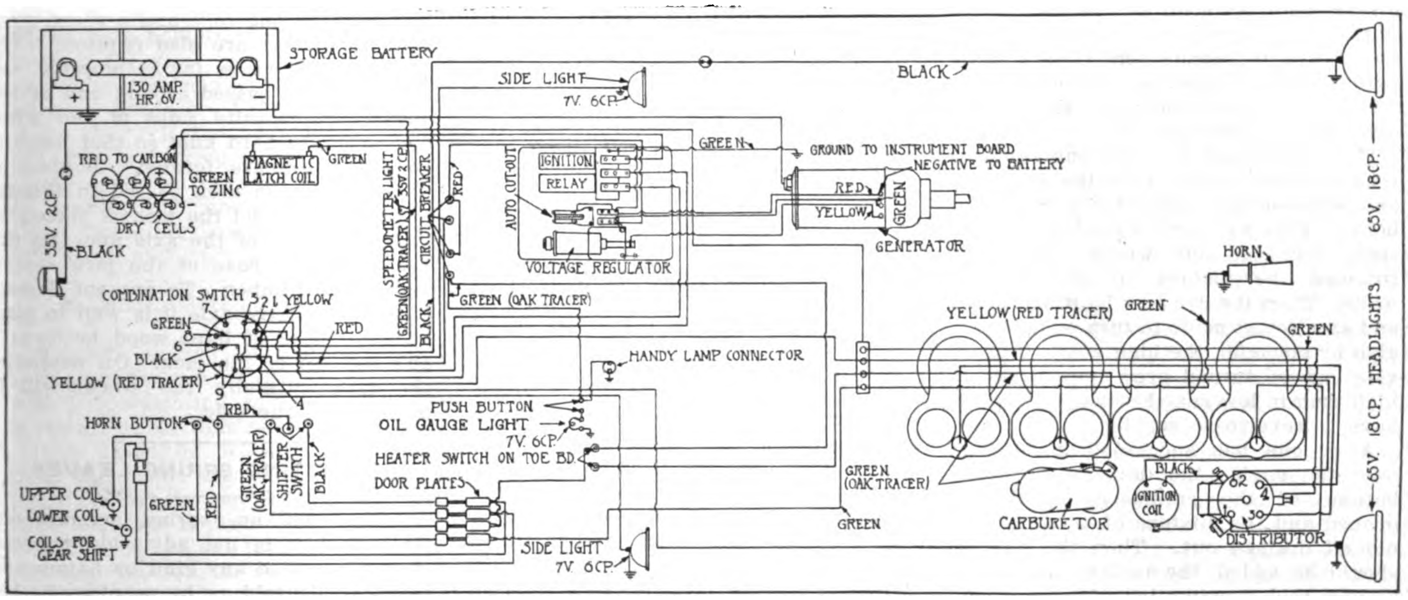


Sectional View of Marvel Carburetor.

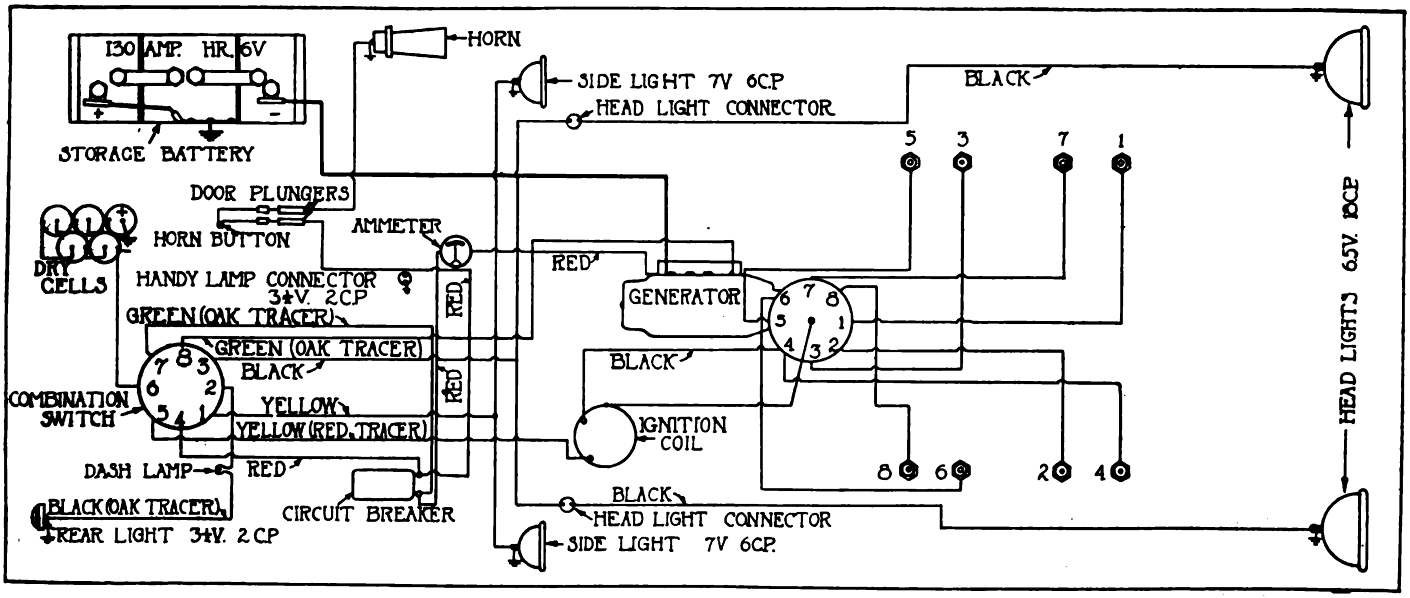
Monthly Wiring Diagram, No. 5


6V. STORAGE BATTERY
CUT OUT RELAY
SIDE LIGHT
GREEN
BLACK
RED
VOLTAGE REGULATOR
GEN. SWITCH
MAGNETIC CLUTCH
GREEN
BLACK
START
RUN
DYNAMO COMMUTATOR
MOTOR GENERATOR
TAIL LIGHT
SPEEDOMETER
RED
GREEN
AMMETER
RED
MOTOR COMMUTATOR
DRY CELLS
IGNITION SWITCH
HORN
GREEN
MAGNETO INDUCTION COIL
JUNCTION BOX
RED
BLACK
TO ENGINE CYLINDER
WHITE
RED
RED
HORN BUTTON
BLACK
MAGNETIC RESISTANCE
BATTERY INDUCTION COIL
HEAD LIGHTS
4
3
2
1
SIDE LIGHT
STARTING AND LIGHTING SWITCH
HANDY LAMP
BATTERY DISTRIBUTOR
MAGNETO DISTRIBUTOR

Cadillac, 1913, Four Cylinders—Delco One-Unit Two-Wire System, Starting, Lighting and Ignition, Equipped with Two Separate Distributors.


STORAGE BATTERY
130 AMP. HR. 6V.
+
−
SIDE LIGHT
7V. 6CP.
BLACK
RED TO CARBON
GREEN TO ZINC
MAGNETIC LATCH COIL
GREEN
DRY CELLS
3.5V. 2CP
BLACK
SPEEDOMETER LIGHT 3.5V. 2CP.
GREEN (OAK TRACER)
CIRCUIT BREAKER
BLACK
RED
AUTO CUT-OUT
IGNITION
RELAY
VOLTAGE REGULATOR
GREEN
GROUND TO INSTRUMENT BOARD
NEGATIVE TO BATTERY
RED
YELLOW
GREEN
GENERATOR
COMBINATION SWITCH
3 2 1 YELLOW
7
GREEN
8
6
BLACK
5
YELLOW (RED TRACER)
9
4
RED
GREEN (OAK TRACER)
HANDY LAMP CONNECTOR
HORN
YELLOW (RED TRACER)
GREEN
GREEN
PUSH BUTTON
OIL GAUGE LIGHT
7V. 6CP.
HEATER SWITCH ON TOE BD.
DOOR PLATES
HORN BUTTON
RED
GREEN (OAK TRACER)
SHIFTER SWITCH
BLACK
UPPER COIL
LOWER COIL
COILS FOR GEAR SHIFT
GREEN
RED
SIDE LIGHT
7V. 6CP.
GREEN (OAK TRACER)
GREEN
CARBURETOR
BLACK
IGNITION COIL
6 2
4
1
3
DISTRIBUTOR
6.5V. 18CP.
HEADLIGHTS
6.5V. 18CP.

Cadillac, 1914, Four Cylinders—Delco One- Unit One-Wire System, Starting, Lighting and Ignition, Electric Gear Shift.


130 AMP. HR. 6V
+
−
STORAGE BATTERY
HORN
SIDE LIGHT 7V 6CP.
HEAD LIGHT CONNECTOR
BLACK
5
3
7
1
DOOR PLUNGERS
HORN BUTTON
AMMETER
DRY CELLS
HANDY LAMP CONNECTOR
3½V. 2CP.
RED
GENERATOR
RED
6 7 8
5
1
4 3 2
GREEN (OAK TRACER)
GREEN (OAK TRACER)
BLACK
BLACK
8 3
7
2
6
5 4 1
COMBINATION SWITCH
YELLOW
YELLOW (RED TRACER)
RED
IGNITION COIL
DASH LAMP
RED
8
6
2
4
BLACK (OAK TRACER)
CIRCUIT BREAKER
BLACK
HEAD LIGHT CONNECTOR
REAR LIGHT 3½V. 2CP.
SIDE LIGHT 7V 6CP.
HEAD LIGHTS 6.5V. 18CP.

Cadillac, 1915, Model 51, Eight Cylinders, Delco One-Unit One-Wire System, Starting, Lighting and Ignition.

Freeing a Seized Engine

OCCASIONALLY the repairer receives a call to start a seized engine that has resisted the best efforts of the owner of the car. At such times the repairer must exercise the utmost ingenuity for the owner has generally tried all the easy and well known methods before the repairer arrives.

In such cases the first thing to do is to make sure that it is the engine and not some other part of the transmission or rear axle that is at fault. The rear wheels should be jacked up and the emergency brake released and the gear shift lever placed in neutral. The wheels should turn freely and there should be no binding in the rear axle system.

The spark plugs should be removed, or the compression taps turned, to relieve the compression. Then if the crank cannot be turned over by hand or by means of the starter, or by the two working together, the car may be towed with the gears in high and the clutch disengaged. As soon as the car has attained some momentum the clutch may be allowed to engage gently, care to be taken not to allow a sudden motion, which might strip the gears in the rear axle or even break a shaft.

If this does not free the engine, kerosene can be poured into the cylinders and allowed to remain for a couple of hours. This will have a tendency to dissolve any old oil which may have gummed the pistons to the cylinder walls. Then the car may be towed again and an attempt made to turn over the engine by engaging the high gear. The engine can be turned over more easily in high than in low gear because it does not have to revolve so rapidly.

After one has succeeded in turning over the engine the drain cock in the bottom of the crankcase should be opened and the mixture of kerosene and old oil drained out. Then the new oil should be added, the radiator should be filled with hot water in order to expand the cylinders, and the spark plugs replaced. After starting the engine it should be run slowly under its own power for some little time, in order that the new oil may work to all parts of the engine and to allow the engine to work out some of its stiffness.

Sometimes water leaks into the cylinders and rusts the pistons fast to the cylinder walls. There is also a possibility of moisture condensing within the cylinders, if the car is allowed to remain standing in a damp place without being used.

If the engine is fitted with a removable head, as is now used on many cars, it is often but the work of half an hour to remove the cylinder head and ascertain if the pistons are stuck in the cylinders. The movement, of course, will be very slight, but if the pistons are not rusted to the cylinder walls, some slight movement should be obtainable.

If only one piston is tight, it may be possible to remove the lower half of the crankcase and take off the cap of the connecting rod of the tight piston. If there is sufficient room in the crankcase, the connecting rod can be tied to one side, and the engine used to drive the car home on three cylinders. Or the tight piston may be driven out of the cylinder with a block of wood. The wire leading to the spark plug of the seized cylinder should be grounded when attempting to run the engine on three cylinders.

It is sometimes possible to rap each piston separately with a block of wood at the same time that the strain is applied to the starting crank, thus releasing the pistons from the cylinders and allowing a film of lubricating oil to penetrate between the parts.

On some cars the rim of the flywheel is exposed, so that it may be gripped with a heavy wrench and the wrench used to assist in turning over the crankshaft.

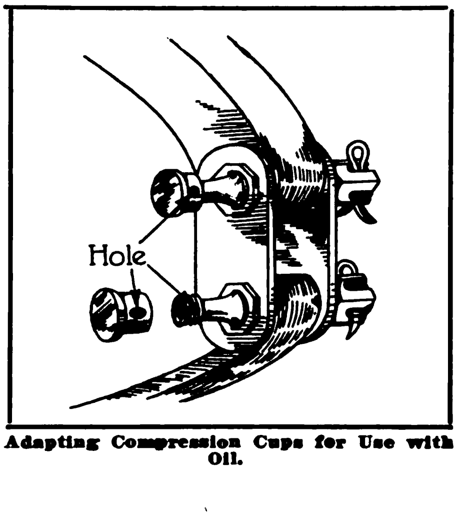
If one man lies on the bonnet over the engine and pulls up on the starting crank, at the same time that the car is being towed, the simultaneous strain at both ends of the crankshaft will often be enough to start the movement of the pistons in the cylinders.

When the car is in the garage and compressed air is available, this may be forced into the cylinders through an air valve made from a discarded tire, a valve and a broken spark plug. If an air pressure of 100 pounds a square inch is exerted over an area on the top of the piston of 15 square inches, this should be sufficient to start it. Of course the poppet valves will have to be closed while the air is being admitted into the cylinder.

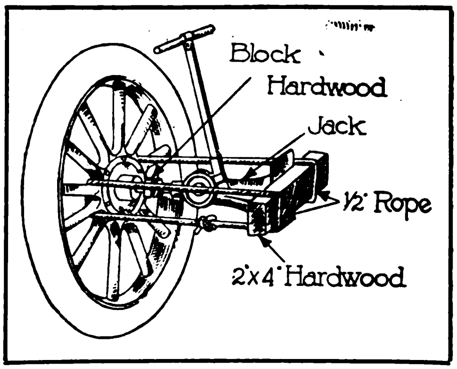
LUBRICATION OF SPRING BOLTS.

Where hard grease is used as a lubricant for automobile spring bolts, it sometimes dries in the small holes and grooves that feed it to the bearing surfaces, thus preventing the parts from being properly lubricated. This causes the bolts and spring eyes to wear out quickly. A way is illustrated whereby this condition may be remedied successfully by installing oil cups for thin oil.

Drill a hole large enough to allow the oil to be poured in through the cap and threaded portion of the bolt as shown. Then turn the cap half-way around, thus completely closing the hole.



Adapting Compression Cups for Use with Oil.



Removing a Rear Wheel with Lifting Jack.

IMPROVED WHEEL PULLER.

It sometimes becomes necessary to remove a wheel from a car not fitted with detachable wheels. Having removed the hub cap and nuts holding the wheel securely on the axle, it is found that a wheel puller is required in order to remove the wheel from the axle, so tightly is it held. As a wheel puller is seldom available and is not often required, the jack may be pressed into service. Two lengths of strong rope and a short, stout piece of timber are also required. The jack is let down as far as possible, and the ropes are passed around one or two spokes on opposite sides of the wheel and tied in a hard knot so that loops of equal lengths are formed. A piece of heavy timber is then passed in through the two loops and the jack is placed between the end of the axle and the timber with the base of the jack resting against the timber. To prevent damage to the end of the axle it is well to place a small piece of hard wood between it and the top of the jack. On extending the jack carefully the wheel will be pulled from the axle.

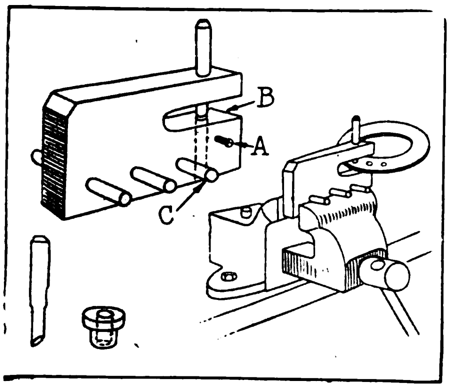
RESETTING SPRING LEAVES.

Authorities on spring manufacture state that it is not advisable to reset spring leaves of any kind by hammering them, hot or cold, or by running the leaf through a tire bender. The method suggested is to heat the steel to about 1900 degrees Fahrenheit, reshaping the leaf to a pre-determined form and immediately dipping the leaf in a bath of oil. It is usual to sprinkle a little water on the hot plate before dipping it into the oil bath. The plate is then very brittle and must be drawn carefully, depending a great deal on the degree of heat before quenching, but at 1900 degrees, quenched in a moderately cool bath, it is usual to draw until there is just the slightest suspicion of a dull red glow, or about 700 degrees.

In most cases there is a little fitting necessary after the plate is drawn and allowed to cool slowly. This is done by hammering on a regular spring fitter's block or anvil, but the amount of such hammering, compared with what is necessary to completely change the set of the spring, is negligible and not particularly harmful to the spring, just enough being done to insure a snug fit between the plates.

HANDY VISE PUNCH.

A novel type of small punch for the bench vise can be made from small pieces of boiler plate or other scrap metal, as shown in the illustration. The piece of plate is used edgewise. A hole is drilled for the largest size punch, which for a ⅞-inch plate is ⅝ inch, then a slot "B" is cut to receive the work to be punched. The steadying or support pins "C" are put through the plate. These help hold the punch solid in the jaws of the vise. A set of dies can be made for the smaller size punches, as shown. These are held in place by the screw "A." If the equipment to make the dies is lacking a set of the punch plates could be made for the sizes needed, making the punch hole to suit each size. These punches can be used on all thin stock and gasket material.

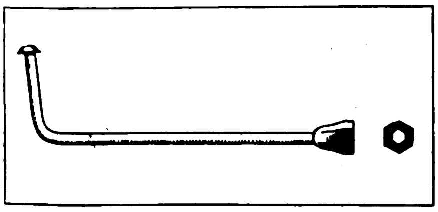


Small Punch for Bench Vise.

HANDY AMMETER WRENCH.

A handy wrench for removing the inside ammeter nut on models similar to 1066 Delco lighting and ignition switch is shown in the illustration.

It is made by pressing a nut taken from the inside ammeter stud into the large end of the outside ammeter stud nut. This nut is made of brass, so care should be taken not to split it. The inside nut can then be removed and a depression is left which acts like a socket wrench. Solder into the opposite end a handle made with a tie rod from an old round type generator or motor. Bend rod over three inches from top for a handle and grind the outside of the brass nut as thin as possible, so that it will not bind against the circuit breaker when turning off the nut. The use of this tool may save considerable time and also prevent damage to the insulation on the circuit breaker winding.



Wrench for Removing Inside Ammeter Nut.

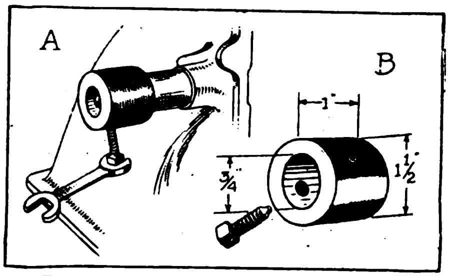
When joints in fuel line or around carburetor develop small leaks a coating of soap will prove effective.

Two Handy Tools for Use with Delco Motor Generator

It is frequently necessary to replace broken taper pins that have become sheared off from No. 78 and No. 98 Delco motor generators used on Cadillac models 53, 55 and 57.

The tool shown in cut will prove very useful for this work, as it is designed to fit over the motor shaft and facilitate the removal of the pin. The taper pin is intended as a safety pin and will shear to prevent damage to the starting clutch and flywheel if the starting pedal is depressed while the engine is running.

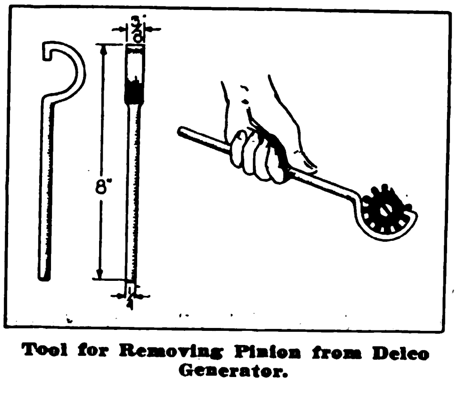
The tool is made from any piece of steel that will easily cut to the dimensions shown in the figure. After making it should be hardened as there is considerable strain put upon the threads. Without the tool the generator driving shaft would have to be taken out and the motor generator loosened and moved back to allow the starting clutch housing to be removed. This ordinarily will take two or three hours, while with the tool it can easily be done in from one-half to three-quarters of an hour without removing any equipment. Illustration shows how tool is used.



Delco Taper Pin Removing Tool.

DELCO PINION TOOL.

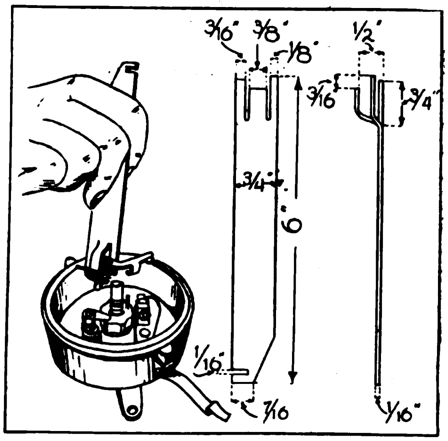
The illustration shows a handy tool to be used when removing the pinion from the Delco motor generator. It is made from a piece of round cold rolled steel about ¼ inch in diameter. The wrench end is heated and flattened and then bent in the shape shown. The tool is eight inches long and the lip on the curved end is turned in for ⅜ of an inch as shown. The device in use is simply slipped over the pinion, with the lip fitting in between the teeth and providing a firm hold when removing the set screw on the end of the shaft. It is not necessary to set the armature in the vise in order to remove the end housing, as it can be easily taken off with this tool while resting on the bench.



Tool for Removing Pinion from Delco Generator.

REMY BREAKER ARM TOOL.

Removing the breaker arm and spring from the Remy breaker box is rather a difficult operation unless some form of a tool is devised that will hold the spring securely while the arm is being removed and replaced. Such a tool is shown in the illustration and should prove practical in use.



Remy Breaker Arm Tool.

The sketch plainly shows the details of the tool and how it is used. The dimensions are as follows: The tool is made from a piece of flat steel or stiff brass about 3/32 inch thick. Cut the metal to a strip ¾-inch wide and six inches long. One end is beveled and a slot 1/16 inch wide is cut near the top. Two cuts are then made with a hack saw on the opposite end of the strip and it is bent to approximately the shape shown.

Note that the three prongs after bending are of different lengths. The longest and narrowest is notched slightly with a file to prevent the spring from springing off. A little experimenting will get the exact shape of these pieces so that when the arm and spring are placed in them tension will be given to the spring and it will be held by the long prong. After the arm and spring are assembled on the tool with the proper tension, it can be placed very quickly in the breaker box and held down with the other hand and the tool removed. This leaves the arm in the box with the spring wound up to the correct tension. The job of replacing these arms is a troublesome one at best, and a little time in making this tool will be well spent.

DETECTING A SHORT CIRCUIT.

When two of the wires of the lighting or starting systems are producing a short circuit an inevitable accompaniment of the condition is heat. By feeling carefully along the wires the repairer can usually detect the presence of a short circuit by the heat that is being generated.

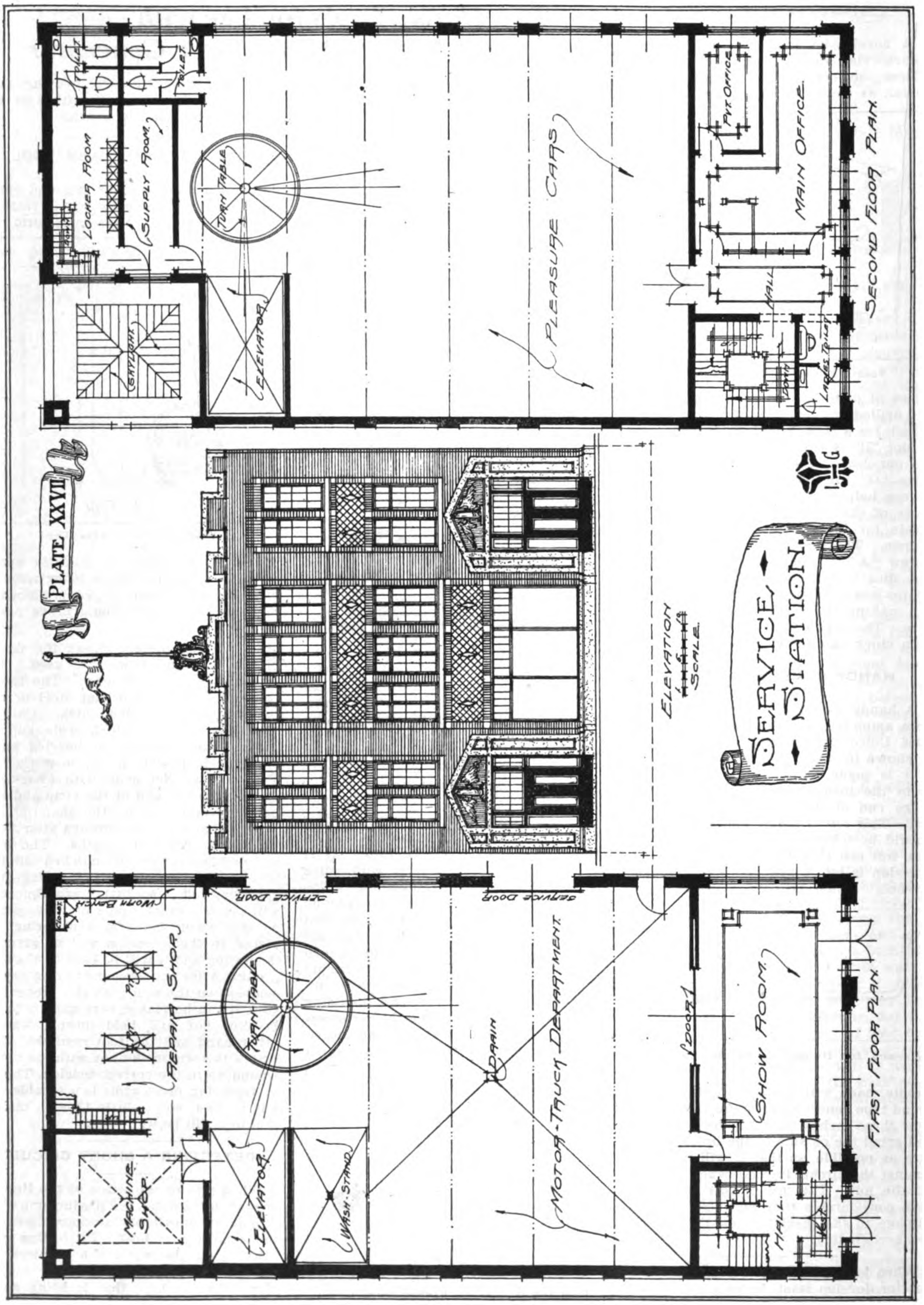


PLATE XXVII
SERVICE STATION.
ELEVATION
1/8 SCALE
SECOND FLOOR PLAN
PLEASURE CARS
TURN TABLE
ELEVATOR
SKYLIGHT
LOCKER ROOM
SUPPLY ROOM
TOILET
TOILET
PVT. OFFICE
MAIN OFFICE
HALL
LADIES TOILET
FIRST FLOOR PLAN
MOTOR-TRUCK DEPARTMENT
SERVICE DOOR
SERVICE DOOR
WORK BENCH
REPAIR SHOP
PIT
TURN TABLE
DRAIN
MACHINE SHOP
ELEVATOR
WASH-STAND
DOOR
SHOW ROOM
HALL

PLATE XXVII

GENERAL SERVICE STATION

A Three-Story Building, 50 by 100 Feet, on Corner Location, Arranged for Freight and Passenger Vehicle Storage, with Every Facility for Repair Work.

WHEN an automobile dealer who is to handle both passenger cars and trucks plans to erect a service station he is bound to be confronted with many problems. It is much simpler to plan a building that will be used for the handling of just passenger cars, or simply trucks, but when the structure has to serve both cars and trucks many unusual provisions have to be made if the building is to be laid out so that high grade service may be given. The architect has given due consideration to these requirements in his presentation of a layout that will combine essential features necessary for both trucks and cars.

The service station and salesroom for motor trucks and pleasure cars which is suggested in the accompanying sketches, would be up-to-date in every respect. A building of this type under present conditions could be built at an approximate cost of $35,000, and the elimination of some of the features would result in an appreciable reduction of this figure.

Very liberal provision is made for the used car department, as the entire third floor could be devoted exclusively to this purpose, if desired. Service stations are finding that they must provide extensive space for the used cars, as these have become such an important factor in business.

Possibly a dealer needing a building of about this size might find that he does not need so much space for his used car department. If so, he can readily find other uses for any part of the floor. Many purposes to which sections of the floor might be utilized will readily suggest themselves.

The architect's aim has been to picture a structure that would entirely meet the needs and desires of a progressive dealer who insists upon a thoroughly modern service station possessing every reasonable convenience and so designed that everything connected with his business may be done in a most practicable and efficient way.

A three-story building, with an area of 50 by 100, is shown. It is represented as being on a corner lot, as such a location for a large building devoted to the handling of trucks and passenger cars has many great advantages in its favor and is really essential.

The sketches show two plans and the front elevation, the third floor plan being omitted. The first floor is for motor trucks, with provision for openings and height. In the forward part is a large show room having a separate entrance from the street and also large show windows on both streets.

A large vestibule and stair hall are shown in the front of the building, and these lead to the second and third floors. Two service doors lead from the side street, as shown, opening into the storage department for trucks. Next is a washstand, followed in order by an elevator, which goes from the first to third floors.

Ample provision has been made for repairs, as can be seen from the large repair department shown. Adjoining the repair shop is a large machine shop, ready to handle anything from repairing parts to making them.

This would necessitate the installation of machine tools, such as lathes, a milling machine, a shaper, a drill press and a radial drill. Also provision may be made for a power saw. In a shop of this size these tools would be an absolute necessity in order that owners of cars may be given prompt and efficient service, obviating such delays as would be due to sending to the factory for parts to replace what could be repaired at the service station that is equipped with facilities to do restoration or even make new units if need be. A well planned machine shop is worthy of the consideration of anyone contemplating the construction and operation of an up-to-date service station.

The second floor has an office and women's room in front, and also a large storage section for the display and storage of passenger cars. At the rear is the elevator, also toilets, supply room and locker room. There are turntables on both the first and second floors.

As to the construction of the building, the foundation is of concrete, with super structure brick and steel. The floors are concrete, with steel floor beams, concrete reinforced. There is steel sash throughout. The service doors are automatic, raising out of the way to the ceiling.

General treatment of the outside bricks is with concrete trimmings, as shown. A rough texture brick with large white joint is suggested. Bricks may vary in color so as to give striking effects.

Heating by steam wall radiation is preferred. The heating plant would be in the basement under the machine shop, with stairway leading from the repair shop. Placing of lights and type is left to the discretion of the owner.

Such a structure would undoubtedly make an unusually good service station and sales room for motor trucks and passenger cars. The fact that the entire third floor could be reserved for the handling of used cars should prove an especially attractive feature.

There are several minor features that could be incorporated to suit the business of any individual dealer. Any further particulars desired will be gladly furnished upon request by the Architectural Department of this publication.

Essential Principles of Successful Soldering

The art of soldering is a very simple one. There are but four essential principles, and when these are followed anyone can after a little practise do as good work as the most experienced workman. These four principles are as follows:

(1) The soldering iron must be kept clean and well tinned.

(2) A good soldering flux must be used.

(3) The metals to be soldered must be thoroughly cleaned before joint is made.

(4) The joint must be heated above the melting point of the solder.

Soldering requires heat. You may use a gas stove, coal stove or a gasoline torch. Any one of these will do the work satisfactorily. Soldering irons cannot be heated properly in the yellow or illuminating flame of the gas because it smokes the iron, and also because it is not hot enough. A blue flame is needed, the same as given by a gas stove, but a good clean coal fire will do. To heat the soldering iron, slip the pointed end down through the hole in the center of the burner of an ordinary gas stove so that the blue flame comes in contact with the large end of the iron. This method of heating does not burn the solder from the iron so quickly and the iron keeps hot longer. To heat the iron in the ordinary cook stove, be sure to have a clean coal fire. Put the iron through the broiling door in such a way that the tin on the iron is protected from the flame by the lining of the stove. This leaves only the large end of the iron exposed to the fire. This method will save burning off the tinning. If no gas stove or other convenient method of heating the iron is available, a gasoline torch would be ideal.

To tell when the iron is hot enough, try it by touching the solder to the point. If the solder melts as soon as it touches the iron it is hot enough and ready to use. If the iron is overheated the tinning will be burned off and it must be retinned or, if the end of the iron becomes black and the black will not wipe off, the iron needs retinning.

To Retin Soldering Iron.

To retin a soldering iron, rub it on a clean brick, sand paper, emery cloth, or file to brighten the surfaces, and if it is badly pitted file it smooth. Then heat it by any of the methods suggested and put on a suitable soldering flux, rubbing on the solder, at the same time going over all four sides of the iron while it is still hot, and wiping them on an old cloth. This makes the soldering point of the iron look bright and shiny, the color of new tin. The soldering iron must be kept in this condition if good work is to be done and the cleaner and better the iron is kept the better the class of work that can be done.

The metals to be soldered must be thoroughly cleaned by scraping with a piece of emery cloth or a file. With the iron properly heated and the metals ready to be joined the next step and the most essential one in the entire operation is the use of the right kind of soldering flux.

Right Kind of Soldering Flux.

For ordinary work this flux should be in the form of a paste, which can be applied with a stick or a brush, or the end of the solder, and to the part to be soldered. In selecting the paste be sure that one is obtained that is non-corrosive, that will solder all metals and that is thoroughly mixed, so that each particle that is picked up on the head of a pin has all the elements of the complete flux. Be sure to buy a reliable flux.

If it can be done the best results will be obtained by holding the hot soldering iron underneath the parts to be joined, and it should be remembered that both sides of the joint to be soldered must be heated alike to make a good joint.

The solder is then held on top and as the heat rises it melts the flux, which should flow to every part of the joint, and later the solder melts and flows as far as the flux, making a perfect joint. For this reason a flux that will flow to a considerable distance is the best to use on most classes of work. Where it is impossible to apply the heat from below good work can be done by keeping the iron on top, provided care is taken to get the parts to be soldered hotter than the melting point of the solder.

When the solder has run freely take the iron away and let the parts get cold. If the joint is given a slight tap while the solder is still hot the surplus will be shaken off and a clean looking joint will be the result, but in doing this care should be taken not to separate the joint.

If Solder Looks Bunchy.

If the solder looks bunchy while it is still warm, take a cloth with a little of the flux on it and rub the joint over quickly. This will make it clean and smooth. Practise makes perfect. If the first job is not satisfactory one should not get discouraged, as he is bound to get good results eventually by persevering.

There are three troubles with a poor joint, namely, the wires should be cleaned by scraping before the joint is made; a good soldering flux should be put on the top of the joint before the heat is applied; and the joint was not hot enough the soldering iron should have been held underneath to let the heat from the iron rise.

TO SOLDER WITHOUT A SOLDERING IRON.

Pieces of brass can be soldered without it being possible to detect the joint by filing the pieces so as to fit exactly, moistening them with a soldering liquid, then placing a piece of smooth tin foil between them, fastening them together with wire and heating over a lamp or fire until the tin foil melts. With good soft solder a good many ordinary jobs can be done over a lamp without the use of an iron. The different degrees of fusibility of solders can also be advantageously used for several solderings and joints on the same piece; that is, first using a fine solder composed of lead two parts, tin one part and bismuth two, there will be no danger of melting when close to the jointed part; another piece may be joined with solder composed of lead four parts, tin four and bismuth one. The best soldering liquid is composed of equal parts of water and hydrochloric acid saturated with zinc.

FATS FOR SOLDERING.

Many workers who use the soldering iron to any extent prefer a soldering paste instead of the fluid. To them the following will be of interest:

1—Soldering fat or grease is commonly a mixture of rosin and tallow with the addition of a small quantity of ammoniac. It is particularly adapted to the soldering of tinned ware, because it is easily wiped off the surface after the joint is made, whereas if rosin were used alone the scraping might remove some of the tin and spoil the job.

2—The following is a well tried recipe for soldering grease: In a pot of sufficient size and over a slow fire melt together 500 parts of olive oil and 400 parts of tallow; then stir in slowly 250 parts of rosin in powdered form and let the whole boil up once. Then let it cool and add 125 parts of saturated solution of sal ammoniac, stirring the while. When cool this preparation will be ready for use.

SOLDERING RADIATORS.

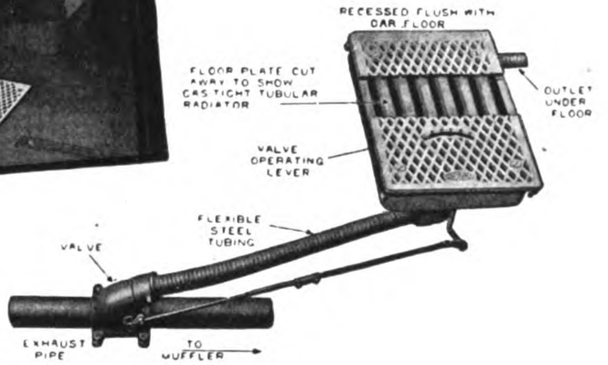
In making repairs on the inside of a cellular radiator with the ordinary type of soldering iron, an inexperienced workman, such as the ordinary car owner, is very likely to start more joints leaking, so that the radiator may be in worse condition after he gets through than it was in the first place. This is a job for the expert in radiator repairing.

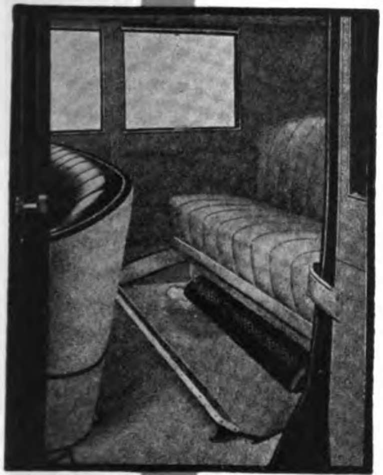
CEMENT FOR FASTENING BRASS TO GLASS.

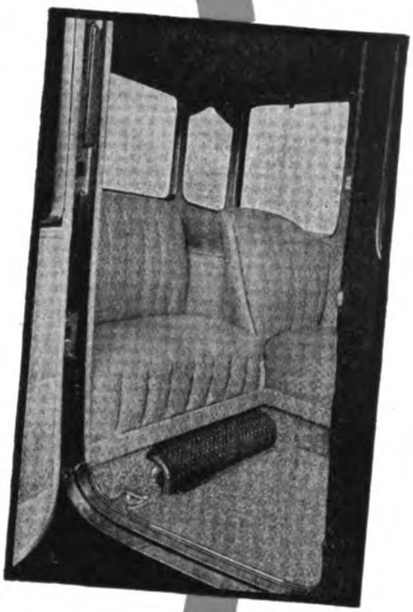
For cementing brass to glass the following recipe will be found to answer very well: Take resin soap, made by boiling one part caustic soda and three parts of resin in five of water, and knead it into half the quantity of plaster of paris. This cement is used largely for fastening the brass tops on glass lamps. It is very strong, is not acted upon by petroleum, bears heat very well and hardens in one-half to three-quarters of an hour. By substituting zinc white, white lead or slacked lime for plaster of paris, it hardens more slowly. Water attacks only the surface of this cement. As it sets shortly after mixing, only as much as may be needed for immediate use should be made at one time.

When two of the wires of the lighting or starting system are producing a short circuit an inevitable accompaniment is the presence of heat. By feeling carefully along the wires the operator can usually detect a short by the heat generated.

PERFECTION MOTOR CAR HEATERS


RECESSED FLUSH WITH CAR FLOOR
FLOOR PLATE CUT AWAY TO SHOW GAS TIGHT TUBULAR RADIATOR
OUTLET UNDER FLOOR
VALVE OPERATING LEVER
FLEXIBLE STEEL TUBING
VALVE
EXHAUST PIPE
TO MUFFLER





Perfection Motor Car Heater Territory Open

The Perfection Heater proposition for this season is an unusually interesting one.

Our Plans embrace an extensive national advertising campaign, liberal factory co-operation and other attractive features.

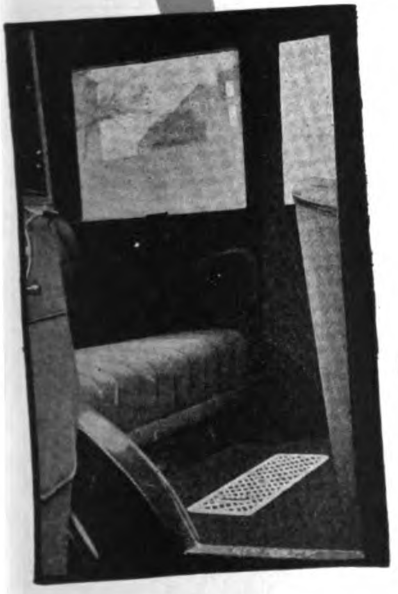
Territory is now being assigned. Distributors and dealers of the better class are invited to write us.

Do not delay. Make application before the territory goes to your competitor.

The Perfection Heater & Manufacturing Co.

6545 Carnegie Ave. Cleveland, Ohio

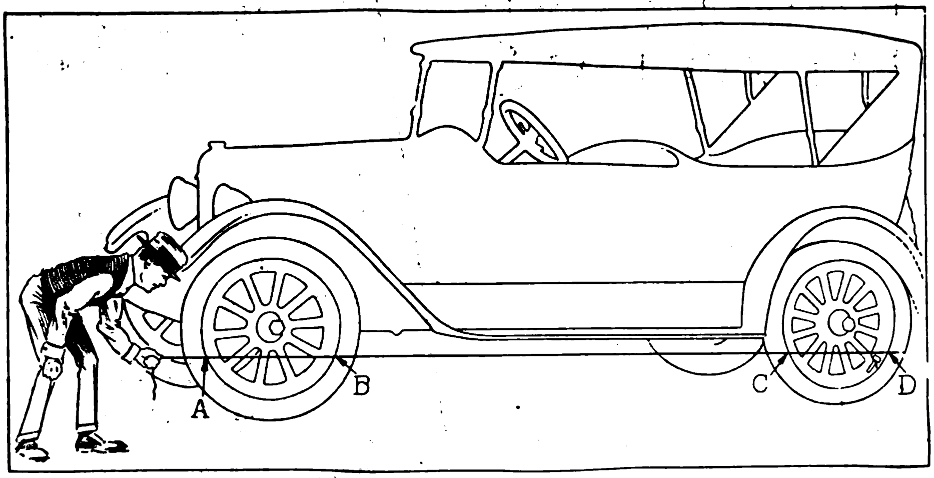
Manufactured and Distributed in Canada by
Richards-Wilcox Canadian Co., *Ltd.*
LONDON, ONTARIO



Cars using Perfection Motor Car Heaters *as Standard Equipment on one or more models:*

Allen Case Cole Columbia
Crow-Elkhart Davis
Dixie Flyer Dorris Du Pont
Gardner Grant Haynes
Holmes Hudson King
Kissel Liberty Maibohm
Marmon Mercer Mitchell Moon
National Northway Motors Corp.
(Truck Cab Bodies)
Oakland Oldsmobile Paige
Pierce Arrow Premier *(all models)*
ReVere Roamer R. & V.
Scripps-Booth Standard 8 Stutz
Stephens Salient Six Templar
Velie Willys-Knight Westcott
Yellow Taxicabs *of* Chicago

How to Align Automobile Wheels Properly



Method of Aligning Motor Car Wheels by the Simple Use of Cord.

A METHOD of aligning the wheels of the motor car that is used in service stations is by the use of a cord. A bolt or piece of iron is fastened at one end of the cord "D," and the cord with the bolt is passed around the tire and felloe of the wheel so that the cord when drawn tight will be below the wheel hub. The cord is carried forward to the front wheel and held in position "A" against the front edge of the front tire, as shown in the illustration. The steering wheel is turned so that the cord will touch the sides of the tire of the front wheel at "A" and "B" equally when the cord is drawn tight.

Change the cord to the opposite side of the car and repeat the operation, fastening the cord around the rear wheel as before. Drawing the cord tightly across both rear and front wheels below the hubs will show how much the front wheel is out of alignment. If the alignment is correct the cord should touch both edges of the tire lightly. If out of alignment, the cord will either bear hard on rear edge of the front tire, or will not touch it at all. In either case the tie rod end will have to be loosened and the rod either lengthened or shortened as the wheels are out or in. Placing car on a level floor will soon enable the motorist, after practising a few times with the cord, to test the alignment of the front wheels of his car with a certain degree of accuracy that will satisfy him as to the advisability of doing this work periodically.

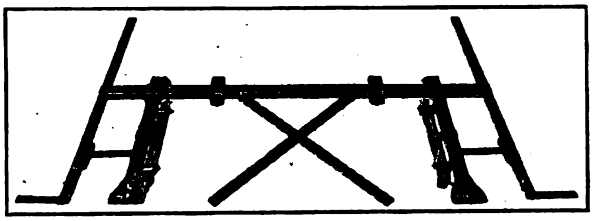
Aligning with a Rod.

The rod aligning gauge consists of a ¼-inch rod of iron, over which is slid a length of pipe, the two members being held by a set screw. The toe-in varies from 5/16 to ⅜ inch and should be measured on a line with the hub. A similar device for determining the parallelism of the axles, front and rear, is shown. The device consists of an iron rod fitting a piece of pipe and held by a set screw. The ends of the pipe and rod are pointed to make centering of the device easy.

Manufactured Wheel Aligner.

Probably the manufactured wheel aligner shown in the illustration and made by J. F. Duby, Mattapan, Mass., will be of interest to many motorists who desire a device that is much more accurate than the majority of home-made devices.

The Duby gauge is mounted on roller casters and is made entirely of metal. The side members are shaped similar to a try square, the shorter end of the square fitting across the front of the tire, while the longer side of the square fits parallel with the side of the tire. The squares are adjustable by means of the two handles at the center, which slide the squares either in or out till the proper adjustment is reached. The degree of alignment is shown by pointers on dials above the roller casters. When the wheels are properly aligned the correct alignment is shown on these dials.



The Duby Wheel Aligner.

Aligning with Pointers.

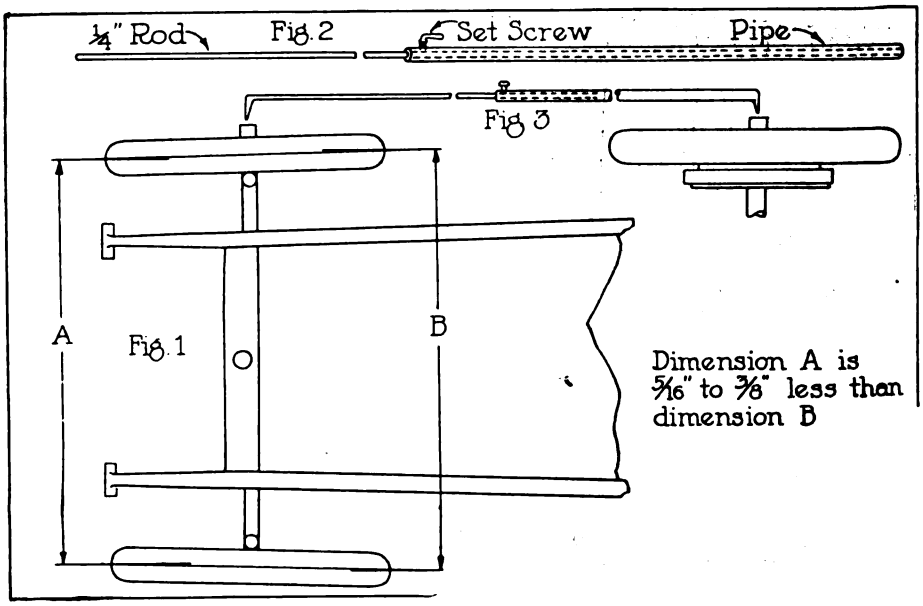
When aligning the front wheels with pointers jack up the front of the car from the center of the axle so that the distance rod is not interfered with. With both wheels free to revolve a center line may be marked on each tire by holding a soft lead pencil against it when spinning. The pencil must be held steady or the result will not be a straight line.

Next measure with a stick or tape the distance between these lines at a point opposite the hub. Turn the wheels half a revolution and measure again. The distance between the two results is the average allowing for a slight wobble, and should be 5/16 inch to ⅜ inch less than the distance measured in the same way at the rear.

The measuring stick is probably the handiest way to measure this distance and can be made by any one handy with tools in a few minutes time. To adjust the distance rod it is necessary to remove one of the bolts so that the clamp screw can be loosened and the clevis adjusted by turning on the threads of the distance rod. Any back lash in the axle knuckles and clevises should be taken up by straining the wheels outward in front before setting the distance rod. The job should always be checked after the wheels have been let down on the ground with the weight of the car on them.

A large try square is a simple tool for aligning front and rear whels. A piece of iron approximately ¼ inch wide by an inch thick by 16 feet long and another 5½ feet long are welded at right angles. With this device it is possible to align the rear and front wheels; also the two front wheels and the two rear wheels.

A new meter device which measures the load placed on motor trucks was recently tested at Akron, O.



Method of Truing Up Wheels by Use of Rod Inserted in a Piece of Piping.

RECORD OF BUILDING OPERATIONS FOR JUNE

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Birmingham, Ala.; Louis V. Clark; one-story garage, site, 100x190; drive-in type filling station. Lessee, P. Y. Whitman.

Selma, Ala.; Ward Motor Co.; two-story brick and concrete garage, 79x180; $50,000.

Little Rock, Ark.; T. H. Sharp, Jr., 411 West Capital avenue; one-story automobile building, 70x200; $100,000.

Bridgeport, Conn.; Bridgeport Coal & Wood Co., 194 North Washington avenue; one-story brick garage, 32x65; $20,000.

Hartford, Conn.; Dragat & Toubman; two-story brick public garage, 95x96, at 295-297 Windsor avenue; $150,000.

Meriden, Conn.; Claude Collington, 81 Crown street; one-story brick public garage, 80x120; $50,000.

New Haven, Conn.; Luigi Pap, 165 Franklin street; one-story brick and terra cotta garage, 48x112.

Washington, D. C.; James H. Keane, Colorado building; one-story garage, 66x72.

Jacksonville, Fla.; O. P. Woodcock; one-story garage; $25,000.

Augusta, Ga.; Jacob Phinizy; one-story garage; $25,000.

Chicago, Ill.; S. Zarzyckis, 2500 Sacramento boulevard; one-story stone private garage, 29x51, southeast corner 25th street and Sacramento boulevard; $7500.

Chicago, Ill.; Anton Baca, Superior and Milwaukee avenues; one-story brick private garage, 42x59, at 2224-2226 Augusta street; $12,000.

Chicago, Ill.; R. A. Pottinger, 4030 Irving Park boulevard; one-story brick and stone garage and repair shop, 112x133, at 4000-4012 Kadvale avenue; $60,000.

Chicago, Ill.; Kurt Rosenthal, 1515 Estes avenue; one-story brick and stone garage, 100x150, at 2432-2440 Lawrence avenue; $52,000.

Chicago, Ill.; H. Seberg, 2844 Foster avenue; one-story frame garage, 22x28.

Chicago, Ill.; E. C. Walker, 105 North Clark street; one-story brick and stone garage, 80x162, North avenue, near Wells street.

Chicago, Ill.; O. L. Freeman, care A. L. Levy, 111 West Washington street; one-story brick and stone garage, 88x115, at 23-29 North May street; $50,000.

Danville, Ill.; Schaefer Oil Co., 76 West Monroe street, Chicago; one-story garage, 32x150; $25,000.

Elgin, Ill.; Herman Bunge; one-story brick and stone garage and service station at National street and Grove avenue; $20,000.

Glencoe, Ill.; C. A. Dunham; two-story brick and stone private garage, 28x71; $25,000.

Golden, Ill.; Caffens Auto Co.; one-story brick and concrete garage, 90x100; $35,000.

Lawrenceville, Ill.; A. L. Maxwell Co.; two and three-story brick and reinforced concrete public garage; $70,000.

Bourbon, Ind.; Rudd Motor Co., Plymouth, Ind.; one-story brick and hollow tile garage, 49x150; $65,000.

Fort Wayne, Ind.; Dr. R. B. Shields, 3939 Harrison street; two-story brick and stone trim garage, 55x150; $75,000

Terra Haute, Ind.; Dr. William H. Hickman; one-story brick service station, 80x142, at Fourth and Walnut streets; $25,000.

Templeton, Ia.; Temple Auto Co.; one-story brick garage, 75x140; $40,000.

Belle Plain, Kan.; Harry Nessley, Mulvan, Kan.; one-story brick and stone trim garage, 50x140; $10,000.

Ellis, Kan.; Charles Kaylv; one-story brick and stone garage, 50x120; $15,000.

Emporia, Kan.; A. G. Bachelor, 807 Commercial street; one-story brick and stone garage, 30x40, at 809 Commercial street; $6000.

Florence, Kan.; Robinson Brothers; two-story brick and hollow tile garage and show room, 50x75; $20,000.

Hays, Kan.; John O'Laughlin; one-story brick and stone garage, 50x120.

Hutchinson, Kan.; C. H. Rush; two-story public garage, 66x132.

Lincoln Center, Kan.; Lincoln Motor Co.; one-story brick and stucco garage, 100x120.

Parsons, Kan.; A. H. Bond; two-story brick and reinforced concrete garage, 120x120, at 18th and Belmont avenue; $60,000.

Tonganoxie, Kan.; J. M. Lanning; one-story brick and stone trim garage and sales room, 60x100 and 50x50; $20,000.

Valley Center, Kan.; A. P. Wright; one-story cement and stucco garage, 50x100; $12,000.

Wichita, Kan.; Chevrolet Motor Co., 115 Lawrence street; one-story reinforced concrete garage, 75x100, at 222 South Topeka avenue; $180,000.

Frankfort, Ky.; Dr. John P. Stewart; one-story reinforced concrete private garage, 42x42; $12,000.

Louisville, Ky.; W. E. Ross, 1123 Cherokee road; five-story brick and concrete public garage, 90x120, at Market and L streets; $100,000.

Louisville, Ky.; Kentucky Motor Sales Co., 628 South Third street; one and two-story garage; $50,000.

Pineville, Ky.; F. Daniels; one-story brick garage, 66x145; $40,000.

Williamstown, Ky.; K. Jewett; two-story brick public garage, 54x85; $15,000.

Winchester, Ky.; Tom Moore; two-story cement block garage, 20x40; $7500.

Dixfield, Me.; D. A. Gates; one-story public garage, 32x120; $20,000.

Lewiston, Me.; Lewiston-Buick Co.; three-story brick garage and service station, 97x102, at Main and Sabatis streets.

Baltimore, Md.; United Automobile Sales Co., 12 East Mount Royal avenue; three-story sales and display room, 10x12.

Baltimore, Md.; Guilford Building Co., 2802 St. Paul street; one-story garage, 50x50.

Baltimore, Md.; R. S. Whiteford, 2638 Pennsylvania avenue; one-story brick garage, 46x100.

Baltimore, Md.; F. S. Dorn Corporation, 35 North Beurolau street; one-story brick public garage, 100x150; $40,000.

Baltimore, Md.; Louis Blaustein, 2312 Callow avenue; one and two-story brick garage, 57x130, at 609-613 Fremont avenue; $30,000.

Baltimore, Md.; Federal Motor & Sales Co., 303 Lou street; three-story brick garage and show room, 100x141, at North avenue and Lord street; $100,000.

Baltimore, Md.; Frederick W. Kohl, 3004 West Prestman street; one-story brick garage, 248x296; $200,000.

Catonsville, Md.; Catonsville Garage Co.; one-story brick garage, 40x150; $15,000.

Hagerstown, Md.; Irvin R. Middlekauf; one-story garage, 80x80.

Hagerstown, Md.; Hagerstown Foundry Co.; two-story reinforced concrete garage and machine shop, 60x80; $10,000.

Pocomoke, Md.; J. M. Clogg; one-story brick garage, 69x140; $20,000.

Boston, Mass.; Kaufman & Greenburg, Old South building; one-story public garage and service station, at Brighton avenue; $300,000.

Boston, Mass.; George Marsh, care of Tuck & Gilman, 34 School street; two-story brick and reinforced concrete public garage, 100x145; $125,000.

Brookline, Mass.; Daniel Cerussi, 1371 Commonwealth avenue; two-story brick and limestone trim sales room, 95x268, at Commonwealth avenue and St. Paul street.

Fall River, Mass.; Robertson Motor Co., 526 South Main street; one-story reinforced concrete garage; $100,000.

Springfield, Mass.; Charles Nash, 120 Oakland street; two-story garage, 50x140.

Caro, Mich.; W. H. Cooper; one-story brick garage, 78x140; $25,000.

Detroit, Mich.; E. Sorock, 122 East Forest avenue; four-story reinforced concrete sales room and service station, 90x100, at Fourth and Canfield streets; $400,000.

Detroit, Mich.; Walker Saxe Motor Co., 1515 Gratiot avenue; one-story brick garage, 120x200.

Detroit, Mich.; A. DeMoght, 578 Mt. Elliot avenue; one-story brick public garage, 31x75; $15,000.

Detroit, Mich.; Charles Clements, 114 East Ferry avenue; one-story brick garage and sales room, 55x130, at 813 West Grand boulevard; $25,000.

Detroit, Mich.; Hannah Real Estate Exchange, 1 McGraw building; three-story garage and service station, 100x190; $175,000.

Detroit, Mich.; Peter Sauer, 389 Mack avenue; one-story brick public garage at Mack and Elmwood streets; $20,000.

Detroit, Mich.; S. L. Bird & Sons, 171 Woodward avenue; one-story brick private garage, 35x60, at Brooklyn and Cherry streets.

Detroit, Mich.; Barmou Transfer Co., 2470 Jefferson street; one-story brick garage, 91x110, at Gray and Kercheval streets; $30,000.

Flint, Mich.; Marshall Auto Co.; two-story brick, stone and reinforced concrete garage, 50x183, at Fourth and Court streets; $75,000

Flint, Mich.; Dort Automobile Co.; three-story brick and reinforced concrete sales room, 75x150.

Hamtramck, Mich.; George T. Haas, 1514 Kresge building, Detroit, Mich.; one-story public garage, 37x100.

Jackson, Mich.; Michigan Buick Sales Co., 104 East Washington street; two-story brick garage and repair shop, 58x120; $25,000.

Kalamazoo, Mich.; R. E. Fair, 218 North Rose avenue; two-story brick and concrete garage, 100x175; $75,000.

Monroe, Mich.; Pinkham & Wright, Hillsdale, Mich.; one-story brick, marble and tile garage; $35,000.

Melrose, Minn.; A. J. Kraker; one-story public garage, 50x140; $50,000.

Moorhead, Minn.; Samuel Christenson; two-story public garage, 25x85.

Joplin, Mo.; C. H. Studhoelter & Co., 715 West Ninth street; one and two-story brick and stone trim garage, 50x134.

Kansas City, Mo.; Killarney Investment Co., care of William Jewell, Jr., 417 Rialto building; one-story brick and stone trim service station, 100x132, at 1608 Locust street; $45,000.

Kansas City, Mo.; Lester & Barrell, 1612 Benton boulevard; one-story brick and stone trim garage, 100x115, at 16th and Montgall avenue; $25,000.

Kansas City, Mo.; C. H. Lampe, 2814 Gillham road; one-story brick and stone trim garage, 100x128, at 2740-2746 Cherry avenue.

Kansas City, Mo.; D. H. Smith, 4513 Triost avenue; two-story brick, stone trim and reinforced concrete sales room, 100x138; steam heating; plate glass front.

Kansas City, Mo.; M. Heedra, care of J. W. Flannagan, 2836 Benton boulevard; one-story garage, 112x195.

Nevada, Mo.; H. R. Brimmer, Buckner building; two-story brick and stone trim garage, 97x160; $75,000.

St. Joseph, Mo.; Horigan Realty Co., care of J. J. Flynn, Fourth and Sylvaine streets; one-story brick and stone trim garage, 80x170, at Ninth and Locust streets; $25,000.

St. Louis, Mo.; Eilderman Transfer Co., 24 North First street; one-story garage, 50x87.

Springfield, Mo.; W. P. Kennedy; one-story brick and stone trim garage, 48x100.

Tarkio, Mo.; J. D. Rankin; one-story brick and stone trim garage, 48x128; $18,000.

Grand Isle, Neb.; Teeter Homan, 112 East Second street; four-story reinforced concrete garage and service station.

Omaha, Neb.; R. F. Harris, 1315 Harney street; one-story brick garage. 66x131, at 1307-1311 Harney street; $18,000

Dover, N. J.; J. N. Brown; one-story brick garage. 50x50; $10,000.

Hoboken, N. J.; Charles Noending, 125 Harrison street; one-story brick public garage at Second and Harrison streets; $16,000.

Laurel Springs, N. J.; Board of Freeholders; one-story brick garage, 27x71.

Newark, N. J.; Charles H. Bennett, 39 Saybrook place; two-story brick and concrete service station, 100x150; $100,000.

Newark, N. J.; Frank Megaro, 24 Seventh avenue; one-story brick public garage, 68x87, northeast corner Crane and Stone streets; $18.000.

Newark, N. J.; McAllister Carton Corporation, 1001 Broad street; two-story brick garage and service station, 70x150; $100,000.

Newark, N. J.; John A. Pfarr, 164 Watson avenue; one-story brick front and cement block public garage, 49x99, at 152-154 Watson avenue; $10,000.

Trenton, N. J.; Trenton Pottery Co.; one-story brick garage, 60x80.

Amsterdam, N. Y.; George Kellogg. 35 West Main street; one-story private garage; $8000.

Binghamton, N. Y.; S. J. Saleeby, 106 Clinton street; one-story concrete garage at 196 Clinton street; $10,000.

Brooklyn, N. Y.; Biltwell Auto Body, Inc.; one-story brick and concrete garage, 100x100, southeast corner Morgan and Lombardi streets; $35,000.

Brooklyn, N. Y.; Morris Auto Co., 2003 Bedford avenue; one-story brick garage, 80x122; $16,000.

Brooklyn, N. Y.; Standard Oil Co. of New York, 26 Broadway, New York; one-story brick garage, 60x89; $30,000.

Brooklyn, N. Y; P. T. J. L. Building Co., 1715 Sterling place; one-story garage, 105x107, at southwest corner Waverly avenue and Fulton street; $60,000.

Brooklyn, N. Y.; James F. Trommer Co., Inc., Bushwick avenue and Conway street; one-story brick garage, 106x116, at northeast corner Bushwick avenue and Gillen place; $40,000.

Brooklyn, N. Y; Chershad Realty Co., 1199 Eastern parkway; one-story brick garage, 72x119, at 1419 Newkirk avenue.

Brooklyn, N. Y.; Reckwitz Brothers, 44 Court street; one-story brick garage, 44x100, south side Malbone street, west Rogers avenue; $100,000.

Brooklyn, N. Y.; Samuel Ageloff, 126 Reid avenue; one-story brick garage, 100x100, at 25-31 Humboldt street; $25,000.

Brooklyn, N. Y.; Morris Goetz, 1581 President street; one-story brick garage, 80x180, at 104-106 Lawrence street; $20,000.

Brooklyn, N. Y.; John Willabook, 168 Schenectady avenue; one-story brick garage, 20x40, at 170 Schenectady avenue; $13,000.

Brooklyn, N. Y.; Mary Ryan, 491 Smith street; one-story repair shop, 20x70, southeast corner Huntington and Smith streets; $10,000.

Brooklyn, N. Y; Simon Freund, 381 Miller avenue; one-story brick garage, 20x100, north side Livonia avenue, east Van Sicklen; $10,000.

Brooklyn, N. Y.; Combe & Wilson, 32 Court street; one-story brick garage, 50x110, at Wyckoff avenue and Stockholm street; $30,000.

Brooklyn, N. Y.; Talbemear Realty Co., 1404 Eastern parkway; one-story brick garage, 100x100; $25,000.

Brooklyn, N. Y.; Benjamin Martin, 22 West 27th street, New York; one-story brick garage, 50x100; $25,000.

Brooklyn, N. Y.; William Schwen, 822 Lexington avenue; one-story brick garage, 87x100; $50,000.

Brooklyn, N. Y.; Liberty Wyona Co., 106 Bristol street; one-story brick garage, 100x100, at 812 Evergreen street; $40,000.

Brooklyn, N. Y.; C. Hershed Realty Co., 1199 Eastern parkway; one-story brick garage, 118x200, at 1419 Empire boulevard; $30,000.

Brooklyn, N. Y.; N. J. & N. Realty Improvement Co., 129 Front street, New York; one-story brick garage, 75x100; $25,000.

Brooklyn, N. Y.; Princess Contracting Co., 52 Webster avenue; one-story brick garage, 100x250; $70,000.

Brooklyn, N. Y.; Brislin Co., 3290 Atlantic avenue; one-story brick garage, 95x100, north side Truxton street, east Stone avenue; $25,000.

Brooklyn, N. Y.; Vleckles, Inc., 189 Montague street; one-story brick garage, 100x160, north side Empire boulevard, east Belford avenue; $50,000.

Brooklyn, N. Y.; Pownick Building Co., 728 Saratoga avenue; one-story brick garage, 40x80, west side Cleveland street, north Pitkin avenue; $20,000.

Buffalo, N. Y.; Samuel Kaderbeck, Inc., 967 Main street; one and two-story brick and tile sales rooms, 50x120 and 50x100, at 1120-1124 Main street; $15,000.

Buffalo, N. Y.; Lafayette Buffalo, Inc.; one-story brick sales room, 56x120, at 1276 Main street; $45,000.

Jamaica, L. I., N. Y.; John Boccodare; one-story brick garage, 18x18, east side Merrick road, north South street; $6000.

Long Island City, L. I., N. Y.; Anna Limbacher, 484 Grand avenue; one-story brick garage, 50x100; $10,000.

Long Island City, L. I., N. Y.; Factory Construction Co., 44 Court street, Brooklyn; one-story brick garage, 50x78, at 13th and Crescent streets; $80,000.

Long Island City, L. I., N. Y.; John J. Daly; one-story brick garage, 105x133, northeast corner Hancock and Nott streets; $25,000.

New York, N. Y.; Wendel Estate, 175 Broadway; one-story garage, 68x120, at 344-354 West Broadway; $15,000.

New York, N. Y.; Ford Oswald, 34 Chestnut street; one-story brick garage, 100x108, southeast corner Jamaica avenue and Chestnut street; $30,000.

New York, N. Y.; Samuel Rubin, 1060 Findlay avenue; one-story brick garage, 50x140; $12,000.

New York, N. Y.; John Brown, 514 West 146th street; two-story brick public garage, 151x153, at 51 Jumel place; $60,000.

New York, N. Y.; Seibert Sales Co., 801 Jennings street; one-story brick garage, north side Jennings street, west Bristow; $5000.

New York, N. Y.; Security Mortgage Co., 165 Broadway; one-story brick public garage, 85x127, at 250 West 153rd street; $35,000.

New York, N. Y.; David Krans, 350 Broadway; one-story brick garage, 100x144, at 510-522 West 130th street; $35,000.

New York, N. Y.; LeBash Garage Corporation, 30 East 42nd street; one-story brick garage, 100x175; $39,000.

New York, N. Y.; Louis C. Rasmussen, 456 Canal street; two-story concrete garage and repair shop, 25x100, at 218 Spring street; $8000.

New York, N. Y.; Julia Fitz, 346 East 51st street; one-story brick garage, 22x24, at 944 First avenue; $36,000.

New York, N. Y.; Harvey Underhill, 438 West 37th stret; two-story brick public garage, 75x98, at 39-43 West 36th street; $60,000.

New York, N. Y.; Max Rothbart, 1411 Grand concourse; one-story brick public garage, 75x131; $85,000.

Oswego, N. Y.; Oswego Motor Car Co.; two-story brick garage, 100x100, at Sixth and East Bridge streets.

Pulaski, N. Y.; Motor Sales Corporation; one-story garage, 60x100.

Ridgewood, L. I., N. Y.; Stephen Norris, 1158 President street; one-story brick garage, 100x100, east side Cypress avenue, north Hancock street; $25,000.

Stapleton, S. I., N. Y.; Staten Island Garage, Inc., 369 Van Duzen street, Tompkinsville, S. I.; one and two-story tile and terra cotta garage, show room and shop, 99x207, at Bay and Congress streets; $45,000.

Syracuse, N. Y.; Mrs. Kate Knickerbocker, Snowden apartments; one-story Concrete garage; $10,000.

Utica, N. Y.; Sherman Sales Co., 516 John street; one-story brick and tile garage; $150,000.

Yonkers, N. Y.; F. E. Doty, 102 Livingstone avenue; one-story concrete garage, 22x46.

Greensboro, N. C.; W. F. Ross; two-story garage, 50x60; $50,000.

Winston-Salem, N. C.; Liberty Motors Corporation, 517 Liberty street; two-story automobile building. 150x280.

Akron, O.; Sinclair Oil & Refining Co., 111 West Washington street, Chicago; two-story brick filling station, 50x165, at Hazel street and B. & O. railroad; $75,000.

Cincinnati, O.; Benjamin E. Fox, 126 Sycamore street; one-story garage, 20x30, at 214 Clifton avenue.

Cincinnati, O.; Goesbeck, Dickson, Kahn Co., Fourth and Walnut streets; two-story brick and concrete garage and sales room, 60x70; $60,000.

Cleveland, O.; N. Davis, 2186 East 71st street; one-story public garage, 42x70, at 65th street and Clark avenue; $10,000.

Germantown, O.; D. A. Stump, Miamisburg, O.; one and two-story garage and sales room, 50x140; $25,000.

Youngstown, O.; C. P. Zinn, 131 Lincoln avenue; two-story brick and reinforced concrete commercial garage, 80x150.

Altus, Okla.; O. L. Phipps, Frederick, Okla.; one-story brick and concrete garage, 75x140.

Frederick, Okla.; Holloman & Griffin; one-story brick garage, 60x140.

Mangum, Okla.; New Rutter Automobile Show and Sales Building; one-story brick fireproof garage, 40x50.

Allentown, Pa.; Bethlehem Motors Corporation, 40 East Walnut street; one and two-story brick garage, 68x93, at Second and Union streets.

Ashbourne, Pa.; William Fox; one-story brick public garage. 60x100; $30,000.

Beaver Falls, Pa.; Perry A. Garrett, care of Garrett Motor Co.; one-story brick commercial garage, 40x100, at Seventh avenue and 14th street; $40,000.

Bethlehem, Pa.; Robert E. Miller; one and two-story brick public garage, 15x53.

Bradford, Pa.; McCourt Label Cabinet Co.; one-story brick garage, 37x75; $7000.

Columbia, Pa.; Frederick Schlotthaner; one-story brick and reinforced concrete public garage, 100x120, at Second and Chestnut streets; $25,000.

Denver, Pa.; F. E. Line, Lancaster, Pa.; one-story brick public garage, 50x103; $20,000.

Donora, Pa.; Woodward Motor Corporation; one-story brick and reinforced concrete garage, 66x100; $20,000.

Glenolden, Pa.; Mrs. K. Mulligan, care of E. G. Bockenkamp, Jr., 28 Ridgeway avenue; two-story hollow tile public garage, 91x137; $60,000.

Johnstown, Pa.; Freedom Oil Works Co., Freedom, Pa.; one-story brick garage and storage station, 30x50; $5000.

Mohnton, Pa.; Werner Supply Co.; one-story brick public garage, 40x60; $8000.

New Castle, Pa.; Percy Walls; two-story brick commercial garage, 80x140, at Park and Highland streets; $50,000.

Philadelphia, Pa.; Dr. H. R. Kanders, 704 East Chelton avenue; one-story tile and stucco garage, 23x26, at Chelten avenue and McMahon street.

Pittsburgh, Pa.; Robert P. McCurdy Co., Farmers' Bank building; two-story garage and sales room, 60x120.

Pittsburgh, Pa.; Ford Sales Co., Forbes field; three-story brick commercial garage, 67x135, at Baum boulevard and Enfield street; $100,000.

Pittsburgh, Pa.; S. Zerelstein, 1422 Collwell street; one-story brick and stone trim garage, 20x50.

Pittsburgh, Pa.; Auto Car Sales & Service Co., 1830 Forbes street; one-story garage, sales room and service station at Baum boulevard and Liberty avenue; $150,000.

Reading, Pa.; L. M. Francis, 112 Franklin street; one-story brick public garage, 25x100; $10,000.

Reading, Pa.; Windsor Motor Co., 20 North Fourth street; two-story brick and concrete public garage, 60x230; $50,000.

Providence, R. I.; Bourn, Cruise & Smiley Construction Co., 12 East avenue, Pawtucket, R. I.; one-story private garage, 21x80; $10,000.

Allendale, S. C.; Allendale Motor & Battery Co.; two-story brick garage; $25,000.

Greer, S. C.; Jamison & Morris; one-story sales room and shop, 60x93, for J. V. Smith; $10,000. Lessee, J. G. Arnold.

Fort Worth, Tex.; Magnolia Petroleum Co.; one-story filling station; $24,000.

Fort Worth, Tex.; J. C. Heitman; one-story cement garage, 73x103; $25,000.

Fort Worth, Tex.; Automobile Service Station; one-story stucco filling station; $8000.

Fort Worth, Tex.; Cad Wilkinson; one-story brick garage and repair shop; $12,000.

Houston, Tex.; Armot Automobile Agency; three-story reinforced concrete with brick facing automobile building, 100x152; $175,000.

Bristol, Va.; Shelby Automobile Co.; four-story reinforced concrete sales room and service station, 60x90; $50,000.

Danville, Va.; Coleman Storage Battery Co.; two-story reinforced concrete and brick public garage, 60x200; $50,000.

Richmond, Va.; Thomas P. Bryan; one-story brick garage; $75,000.

Clarksburg, W. Va.; F. G. Bland; one-story brick and concrete garage, 60x75; $15,000.

Huntington, W. Va.; Robson-Prichard Co.; one-story garage; $15,000.

Antigo, Wis.; Antigo Brick Co.; one-story brick and tile garage and sales room, 76x100; $20,000.

Leona, Wis.; Beaver Motor Co.; one-story brick and concrete garage and sales room, 80x110; $30,000.

Milwaukee, Wis.; Robert P. Hansen, 529 26th avenue; one-story reinforced concrete and brick garage, 100x160, at Ogden and Farwell streets.

Milwaukee, Wis.; John Menge, Jr., 138 Wright street; one-story concrete block garage, 20x26, at Second and North streets.

Milwaukee, Wis.; George H. Schwartz, 4426 North avenue; one-story brick and concrete garage, 20x44.

Milwaukee, Wis.; E. F. Weirich, 1277 Prospect place; one-story brick and reinforced concrete garage, 60x120, at 11th and Muskogee streets; $50,000.

Oshkosh, Wis.; Hollister Auto Co., 33 Algona street; one or two-story reinforced garage and sales room, 80x120; $25,000.

Tomahawk, Wis.; Tomahawk Motor Co.; one-story brick and concrete garage and sales room, 50x142; $15,000.

CONTRACTS AWARDED.

Pine Bluff, Ark.; E. C. Royce; one-story garage for Alexander Rowell and C. K. Carruthers; $18,000.

Springdale, Ark.; Vernon Brooks; one-story garage and sales room; $25,000. Lessee, Maxwell Automobile Co. and Wilson Brothers.

Wilmington, Del.; Lonnie Waller, 526 Lombard street; one-story garage, 50x160, at 33rd and Market streets, for W. W. Lomk; $10,000.

Wilmington, Del.; Eutaw Place Temple, 515 Eutaw place, Baltimore, Md.; three-story brick public garage, 53x118; $85,000.

Washington, D. C.; D. E. Nichol, Continental Trust building; two-story private garage, 36x40, rear 32nd and Elliott streets, for J. C. Letts, 52 O street; $7000.

Washington, D. C.; Hugo Herfuth, Jr.; two-story brick fireproof garage for Mount Vernon Garage; $75,000.

Washington, D. C.; McKay & Morris, 715 14th street, northwest; one-story garage, 240x270, for O. C. McCardell, 132 A street, northeast; $10,000.

Washington, D. C.; D. E. Nichol; one-story garage for George Engel; $8000.

Jacksonville, Fla.; W. D. Gerbrich & Co.; one-story garage, 67x105, for Mitchell Estate; $55,000. Lessee, J. R. Holland Motor Co.

Athens, Ga.; W. J. Miller; three-story automobile building, 40x106; mill construction, composition proof, elevators; for C. A. Trussell Motor Co.; $38,000.

Augusta, Ga.; William F. Bowe, Jr.; one-story brick garage, 74x112; composition roof; for Jacob Phinizy; $24,000.

Chicago, Ill.; Kurth Rosenthal, 1515 Estes avenue; one-story garage, 100x150, at 2432-2440 Lawrence avenue; $52,000.

Chicago, Ill.; Isadore Harween, Division and North Brand streets; one-story private garage, 20x25, at 6225 Kenmore avenue; $10,000.

Chicago, Ill.; George Ecker, care of Albert Anis, 139 North Clark street; two-story machine shop, at 1442 West Van Buren street; $78,000.

Chicago, Ill.; W. C. Waller, Jr., 105 North Clark street; one-story garage, 45x100; $15,000.

Chicago, Ill.; J. E. Foget, 3900 Grand boulevard; one-story garage and service station, 50x129; $20,000.

Chicago, Ill.; Louis Kanlau, 5711 Calumet street; one-story pubic garage, 100x150, at 2633 North Clark street; $75,000.

Chicago, Ill.; George Hess, 130 North Wells street;. one-story garage, 100x125, at 3831-3837 West Madison street; $30,000.

Chicago, Ill.; J. Dexcheimer, 310 Jackson boulevard; one-story garage and repair shop, 110x149, at 3616 North Halsted street; $33,000.

Chicago, Ill.; Frank Sebastian, 3417 North Halsted street; one-story public garage, 30x240, at 3421-3423 North Halsted street; $40,000.

Chicago, Ill.; W. J. Scrown Building Co., 36 West Randolph street; two one-story filling stations at 4352 North Kedzie avenue and 2754 North Western avenue, for Standard Oil Co., 910 South Michigan avenue; $4000 each.

Decatur, Ill.; L. S. Baker & Brothers; one-story garage, 80x152, at Jackson and Prairie streets, for C. H. Pierce, 1492 Macon street; $30,000.

Freeport, Ill.; J. T. Brandt, 157 Union street; one-story garage and repair shop, 63x110, for William Wright, 447 Stephenson avenue; $15,000.

Moline, Ill.; Alex Carlson; one-story garage, 40x150, at Fourth avenue and 15th street, for A. J. Ostlund, 1320 Fourth avenue; $20,000.

Clinton, Ind.; Edward Ruby; one-story commercial garage, 50x100; $10,000.

Indianapolis, Ind.; A. N. Bowen, 941-954 Fort Wayne avenue; two-story brick, reinforced concrete and terra cotta trim garage, sales room and repair shop, 40x75; $40,000.

Indianapolis, Ind.; Bedford Stone & Construction Co., 310-315 Fletcher Trust & Savings building; one-story public garage, 120x192, for Carey Realty Co.; $50,000.

Terra Haute, Ind.; John P. Mayrose; one-story battery supply station, 80x140, at Fourth and Poplar streets, for Dr. W. H. Hickman; $30,000.

Cedar Rapids, Ia.; A. J. Smith, Granby building; one-story garage, 40x140, for Exide Battery Station; $10,000.

Junction City, Kan.; C. C. Stephenson; one-story garage, 80x150, for V. L. Birch.

Lexington, Ky.; Frank Corbin; one-story brick garage, 79x165; plate glass front; for George K. Graves and C. N. Manning. Lessee, Union Motor Co.

Lake Charles, La.; Gayle Hardware Co.; one-story brick garage, 50x100; plate glass windows; for P. Oliver & Sons; $15,000. Lessee, Lester Automobile Co.

Lewiston, Me.; Ovide Chevalier, 150 Lincoln street; two-story public garage, 50x150, for Abraham Shapiro, 398 Lisbon street; $40,000.

Baltimore, Md.; J. L. Miller, 430 South Highland avenue; one-story garage, 65x65, for David Garratt & Sons, 1200 South Bouldin street.

Baltimore, Md.; J. Leonard Miller, 430 South Highland avenue; one-story brick garage, for Sherwood Brothers, Garrett building.

Hagerstown, Md.; W. H. Angle, Arcade building, Baltimore; two-story show room, for H. E. Baker, 20 West Antietam street; $10,000.

Pocomoke City, Md.; Milton Clogg; one-story brick and stone garage, 150x200; concrete floor, steam heat, electric lighting; $6500.

Boston, Mass.; Guy C. Holliday, 56 Wealdeck street; one-story public garage at 1089-1095 Dorchester avenue, for Patrick B. Mutrie, 11 Pearl street; $35,000.

Boston, Mass.; Coblo & Griffin, 25 Maverick street; one-story garage, 60x135, at 165 Chestnut street, for J. Scott McLearn, 160 Allston street, Brookline, Mass.; $29,000.

Lowell, Mass.; Edward & Monahan, 6 Beacon street, Boston; one-story public garage, 175x215, for G. R. Dana, 24 East Merrimac street.

Springfield, Mass.; S. M. Green Co., 293 Bridge street; one-story sales room and service station at 721 State street, for Packard Motor Car Co. of New York, 832 State street; $110,000.

Springfield, Mass.; Felix Smola, 8 Falmouth street, Indian Orchard, Mass.; one-story garage, 50x50, at 143 Parker street, for John Czupryna, 151 Parker street, Indian Orchard, Mass.; $50,000.

Worcester, Mass.; James L. Haywood, 223½ Chandler street; one-story public garage, 24x40, at 16 Germain street, for Ira P. Smith; $16,000.

Adrian, Mich.; C. E. Dibble; one-story public garage, 58x96, for McKinster & Fox, 142 North Main street; $15,000.

Detroit, Mich.; Bemb-Robinson Co., 286 East Jefferson street; three-story garage and sales room, 100x120, at 156 East Congress street.

Detroit, Mich.; Delisle & Cooper 402 Ford building; four-story garage, 98x196, for Charles E. Smith Co.; $50,000.

Minneapolis, Minn.; Automobile Intelligence Association, 410 South Sixth street; two-story garage and service station, 165x200; $30,000.

Spring Grove, Minn.; Larson Brothers, Starbuck, Minn.; one-story public garage, 50x100, for E. J. Foss; $15,000.

Cape Girardeau, Mo; G. W. Gerhard Construction Co.; two-story public garage, 50x144, at Taylor and Masterson streets; for Norman L. Hely; $30,000.

Clayton, Mo.; George Moeller, 3520 Itaska avenue, St. Louis, Mo.; one-story garage, 62x140, for A. J. Kerth, 402 Bonhomme street.

Kansas City, Mo.; James Gilbert; one-story garage, 60x104, for E. C. Soog, care of Kansas City Hay Press Co., Eighth and Mill streets.

Kansas City, Mo.; A. M. Clark, 3500 South Benton boulevard; one-story sales room, 50x110, at 15th and Benton boulevard.

Kansas City, Mo.; James Flanagan, 2836 Benton boulevard; one-story garage, 75x95, for A. Stunda, Sixth and Grand avenue.

St. Louis, Mo.; Eyerman Construction Co., 1216 South Grand avenue; one-story garage at 4430 Olive street for R. L. Brock, 4388 Olive street; $50,000.

St. Louis, Mo.; Theodore Ratz, 917 Pine street; one-story garage, 45x106, for J. J. Flaherty, 3655 Finney avenue.

St. Louis, Mo.; C. A. Welch Construction Co., Central National Bank building; one-story brick and reinforced concrete garage, 60x62, for Schlueter Manufacturing Co.

St. Louis, Mo.; J. Volpel, 2103 Madison street; one-story garage, 50x87, at 12th and Montgomery streets, for Ellerman Transfer Co., 24 North First street; $12,000.

Norfolk, Neb.; Alex Beck, 401 Keeline building; two-story garage and sales room, 100x100, for J. W. Rice; $35,000.

Manchester, N. H.; W. E. O'Neil, 272 Walnut street; one-story brick public garage, 70x150, for E. E. Hubbell, 932 Beech stret; $30,000.

Atlantic City, N. J.; Thompson Starrett Co., 162 West 23rd street, New York; two-story garage, 80x115 and 26x118, at 2715 Monterey avenue, for Ambassador Hotel Corporation; $15,000.

Jersey City, N. J.; William B. Whyte, 34-36 Oakland avenue; one-story public garage, for Max Blumberg and K. Kastleman, 712 Newark avenue; $60,000.

Newark, N. J.; P. Pellecchia, 21 Mount Prospect avenue; one-story public garage, 46x93x100, at 762 South 18th street, for M. Harris, 333 15th avenue; $30,000.

Newark, N. J.; Henry Doremus Co., 36 Orange street; one-story garage and show room, for American Realty Co., 780 Broad street; $200,000. Lessee, Buick Motor Car Co., 45 William street, New York.

Newark, N. J.; Max Knoblock and Meier Winersky, 168 Walnut avenue; one-story public garage at 175 Belmont avenue; $15,000.

Trenton, N. J.; Stephen Dickneir, 440 West Hanover street; one-story community garage, 18x51x78, rear 459 South Broad street, for Michael Keller, 457 South Broad street. $7500.

Trenton, N. J.; E. N. Erthe Motor Co.; one-story public garage, 60x181; $55,000.

Albany, N. Y.; Epasno Forcina, 514 Delaware avenue; one-story public garage and machine shop, at 448-450 Delaware avenue; $20,000.

Binghamton, N. Y.; L. Bricker; one-story garage, 50x125, at 196 Clinton street; $14,000.

Binghamton, N. Y.; Moore & Merrill Construction Co., 124 Oak street; one-story garage at 125 Water street, for T. W. Whipple, 205 Court street; $30,000.

Binghamton, N. Y.; H. B. Van Ness, care of Endicott Box & Lumber Co., Endicott, N. Y.; one-story commercial garage, 34x49, at 31 Exchange street, for George E. Wells; $11,000.

Brooklyn, N. Y.; John Newton, 140 Fenimore street; one-story garage, 60x126, for S. C. Lavine, 215 Montague street; $40,000.

Brooklyn, N. Y.; Eisenberg & Klein, 2002 Douglas street; one-story garage, northwest corner Hancock and Cypress avenues; $20,000.

Brooklyn, N. Y.; Anderson & Sweeney, Inc., 886 Ocean parkway; one-story garage, 80x122, north side Parkside avenue, east Rogers avenue, for Morris Auto Co., 2003 Bedford avenue; $10,000.

Buffalo, N. Y.; Earl A. Newton, 483 West Utica street; one-story garage; $7000.

Buffalo, N. Y.; Buffalo Lafayette Motors, Inc., 1247 Main street; one-story sales room at 1276 Main street; $50,000.

Kingston, N. Y.; Homer Burger; one-story public garage and show room; $25,000.

Little Falls, N. Y.; P. B. McCaghey Contracting Co.; one-story garage, show room and service station at Third and Main streets, for Thomas & Dinneen; $20,000.

New York, N. Y.; Samuel Weil, 194 Franklin street; one-story garage, northwest corner 182nd street and Third avenue; $15,000.

New York, N. Y.; John T. Brady, 103 Park avenue; one-story garage and service station at 537-541 West 33rd street, for Park & Tilford Co., 529 West 42nd street; $60,000.

New York, N. Y.; Philip Berman, Maspeth, L. I.; one-story garage, at 517-519 West 36th street, for James Allegra, 108 First avenue; $10,000.

Charlotte, N. C.; Theis-Smith Realty Co.; two-story brick garage, 50x99, for Anderson Sales Motor Co., North Tryon and Catherine streets; $12,000.

Greensboro, N. C.; J. L. Crouse; one-story garage, for Ford Motor Sales Co., Raleigh, N. C.; $150,000.

Raleigh, N. C.; J. E. Beaman; one-story brick and reinforced concrete garage, 71x80; fireproof; for E. L. Cable and J. L. O'Quinn; $50,000.

Bucyrus, O.; W. W. Knecht; two-story brick garage, 102x135, for Roberts & Kennedy; $25,000.

Cambridge, O.; Homer Forsythe; three-story commercial garage, 66x200; $110,000.

Cincinnati, O.; J. & F. Herig Co., 1240 Queen City avenue; one-story garage, 49x95, at 11 East Canal street, for Charles L. Shannon Co., 17 East Canal street; $20,000.

Cincinnati, O.; Ohio Building & Construction Co., McMillan and Burnett streets; five-story garage and sales room, 75x115, at Eighth and Broadway, for Lloyd Baker, 310 Mercantile Library building; $350,000.

Cleveland, O.; Complete Construction Co., 226 Superior avenue; one-story brick commercial garage, 11x109, at Freeman and Columbus road, for Theodore J. Sunkle, 1315 University road; $45,000.

Dayton, O.; H. L. Miller, 1645 Xenia avenue; one-story private garage, 33x47, for Samuel Schneider, 700 South Jefferson street; $6000.

Dayton, O.; Memorial Garage & Sales Co., First and St. Clair streets; four-story garage and sales room, 55x82; $100,000.

Findlay, O.; R. W. Stattler; one-story garage, 50x200, for C. F. Stattler; $30,000.

Perrysburg, O.; Leon LaFerra; 1½-story private garage, 35x60, for Thomas Tracey; $10,000.

Van Wert, O.; Elmer Stripe; one-story garage, 66x132, at Main and Walnut streets; $20,000.

Youngstown, O.; Charles Shutrump & Son, Home Savings & Loan building; one-story commercial garage, 70x110, for Universal Service Co.; $40,000.

Crescent, Okla.; J. W. Marshall; one-story garage, 75x130, for Edward Stobaugh.

Conshohocken, Pa.; Heavener Gutheridge Co., Boyer arcade, Norristown, Pa.; one-story public garage, 60x102, for Thomas Moore; $35,000.

Harrisburg, Pa.; John Myers, 10 North 16th street; one-story public garage, 137x90x60, at Denberry and Cherry streets, for Samuel Fishman, Chestnut and Sixth streets; $9000.

Harrisburg, Pa.; W. H. Wagnor, 2100 Brookwood street; one-story public garage, 45x106, at 1027-1029 Market street, for Conover & Walk, 1334 Howard street; $15,000.

Hershey, Pa.; D. S. Funk, Palmyra, Pa.; one-story public garage, 70x125, for Jacob Hess; $20,000.

Johnstown, Pa.; Twin Valley Motor Co., Inc., 216 Dibert street; two-story commercial garage, 66x152; $80,000.

Philadelphia, Pa.; Harry S. Barnes, 2080 East Willard street; addition to garage, 2014-2016 East Stella street, for Sylvester F. Baugher, 2973 Frankford avenue; $5000.

Philadelphia, Pa.; Eiles & Fisher, 344 North Fourth street; two-story brick garage, 25x45, B and Alleghany avenue, for Smith Brothers; $4000.

Philadelphai, Pa.; Thomas Reilly, 2400 Bryn Mawr avenue; three garages, Bryn Mawr and Woodbine avenues; $3000.

Philadelphia, Pa.; Max Knoll, 133 South 49th street; garage, 6601 Lawnton avenue, for William P. Siegert; $2500.

Philadelphia, Pa.; Pomeroy Construction Co., 1609 Ranstead street; alterations on sales room and offices, 1309 Walnut street, for H. C. S. Motor Car Co.; $1500.

Philadelphia, Pa.; Dominick Coladonite, 763 South 16th street; garage, 932 North Broad street, for Malifred Motor Co.; $2900.

Philadelphia, Pa.; Lindley Auto Repair Shop; one-story garage, 40x45, at 400 West Lindley avenue; $4500.

Philadelphia, Pa.; William Steele & Sons Co.; 15-story loft building, 58x130, southeast corner Broad and Race streets, for Hurley Motor Co.; $750,000.

Philadelphia, Pa.; H. E. Jackson; one-story garage, 18x40, at 702-704 North 20th street, for F. W. Thompson; $2000.

Philadelphia, Pa.; William Steele & Sons Co.; one-story garage, 33x42, southwest corner J and Tioga streets, for Luithlen Dye Works; $5000.

Philadelphia, Pa.; Thomas Andomoni; one-story garage, 15x50, at 940 Tasker street, for Battesia Pastisiso; $1000.

Philadelphia, Pa.; Parrish & Jackson; one-story garage, 16x40, west side York road, south Luzern street, for A. W. McElroy; $3000.

Philadelphia, Pa.; Jones & Taylor; one-story garage at 3836 Cambridge street, for L. Rayns; $2250.

Philadelphia, Pa.; Frank A. Fitzpatrick; one-story brick garage at 1528 North 59th street; $2500.

Philadelphia, Pa.; Frank Knapton; one-story brick garage, 13x21, at 234 West Hortter street, for T. Zeigler; $1300.

Philadelphia, Pa.; Henry Devery; one-story brick garage at 4355-4357 North Darien street; $3000.

Philadelphia, Pa.; Wolverton & Co.; one-story garage at 222 East Willow Grove avenue, for Sarah McCarthy; $2500.

Philadelphia, Pa.; A. MacTavish; one-story garage at 1211 Vine street, for Quaker City Taxicab Co.; $3500.

Philadelphia, Pa.; Julius Ostroff; one-story brick garage at 419-421 Fitzwater street, for Samuel Knoesky; $16,000.

Philadelphia, Pa.; A. Lichvitz; one-story garage at 1507 North 33rd street; $5000.

Philadelphia, Pa.; Frank Knapton; one-story brick garage at 6045 Magnolia avenue, for Charles B. Slavin; $2800.

Pittsburgh, Pa.; Walter H. Skiles, 157 Bronx avenue, West View, Pa.; one-story brick commercial garage, 120x130, for Manchester Auto & Machine Co., 1216 Liverpool street; $60,000.

Pittsburgh, Pa.; Conley Land Co., 127 North Highland avenue; one-story garage, 22x76 and 20x63, at Hollenden and Wightman streets; $15,000.

Pittsburgh, Pa.; John Ehrlinger & Son, 425 Van Broam street; one-story commercial garage at 5993 Center avenue, for J. S. Dickson; $1,0000.

Reading, Pa.; Reading Contracting Co., 622 Court street; two-story private garage, 60x68, for Fred A. Kaufman, 1716 Perkiomen avenue; $20,000.

Reading, Pa.; Paul D. Kauffman, 917 Washington street; one-story garage, 66x120, rear 4421 Fourth street; $15,000.

Shamokin, Pa.; E. R. Bastress, Owl building; two-story public garage, 70x90, for Black Diamond Auto Co.; $40,000.

Sharon, Pa.; Hinkson Contracting Co., Farrell, Pa.; one-story garage and sales room, 40x60, for East Auto Sales Co.; $5000.

Undercliff, Pa.; R. H. Fisher, 5147 Holmes street, Pittsburgh, Pa.; one-story commercial garage, 22x25, for Stephen Cabalic; $8000.

West Chester, Pa.; Walter Paschall & Son, Pavoli, Pa.; one-story public garage, 71x155, at Market and High streets, for Turk's Head Garage; $6000.

Providence, R. I.; Interstate Construction Co., 29 Weybosset street; one-story public garage for Dimond Co., 24 Westminster street; $30,000.

Norfolk, Va.; Graham Co., Withers building; one-story show room and repair shop, 35x100, for Hecht Estate, Monroe building; $16,000.

Norfolk, Va.; A. C. Houston & Son, 9 South Sixth street; one-story public garage, 60z90, for W. T. Hawks, 918 West Cary street; $15,000.

Norfolk, Va.; Nichols & Lindeman, Seaboard Bank building; two-story garage, 40x104, for Reliance Electric Co., 771 Granby street.

Norfolk, Va.; Twin City Construction Co., Dixon building; one-story brick and concrete service station, 80x106, for Reliance Electric Co., 711 Granby street; $23,000.

Roanoke, Va.; Bass & Brothers, 708 Bainbridge street; 1½-story garage, 40x120, at Lodge and Broad streets, for E. L. Frost and S. T. Beveridge, 1318 East Cary street; $65,000.

Clarksburg, W. Va.; A. K. Hutchinson; one-story concrete block garage, 42x50, for Adamston Garage; $2500.

Martinsburg, W. Va.; Richard R. Fuller Co.; two-story garage and show room, 55x99, for Stephen Bowers; $25,000.

Parsons, W. Va.; Roscoe Daniels; one-story fireproof garage, 60x113, for Parsons Automobile Sales Co.; $8000.

De Pere, Wis.; Bert Beauregard; two-story public garage and sales room, 72x120, for G. T. McGeehan; $25,000.

Green Bay, Wis.; Barkhausen Oil Co. one-story filling station, 20x20, at Main and Monroe streets; $10,000.

Milwaukee, Wis.; M. G. Winter, 5029 North avenue; one-story garage and repair shop, 50x119, for Adam Freiburger, 508 54th street; $15,000.

Milwaukee, Wis.; Charles F. Behnke, 827 34th street; one-story garage, 40x70, for Federal Asbestos Co., 931 30th street.

Milwaukee, Wis.; Fred Arpe, 892 10th street; one-story garage, 20x26, at Second and North streets, for Charles Conzig, 1213 Lee street.

Milwaukee, Wis.; John Fischer, 979 17th street; one-story garage, 18x18, at 602 49th street, for Dr. E. F. Wilde, 602 49th street.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN AUTOMOBILES, TRUCKS, TRACTORS, ETC.

Cotton Plant, Ark.; Cotton Plant Motor Sales Co., to sell automobiles, trucks and tractors and conduct a garage; $50,000; President, T. B. Bradford; vice president, S. M. Bush; treasurer, R. R. James; general manager, E. B. Crider; secretary, L. E. White.

Pueblo, Col.; Reed Motors, to buy, sell and deal in automobiles, motors, airplanes, etc., and to handle equipment and accessories; $75.000; E. J. and V. P. Reed. Pueblo; S. K. Hopper, Denver.

Dover, Del.; Charon Motor Car Corporation; $1,000,000; William F. O'Keefe, George Steigler, E. E. Aberle, Wilmington.

Dover, Del.; Dort Motor Car Co.; $3,000,000 class A preferred; $4,000,000 class B preferred; 400,000 shares common stock no par value; J. Dallas Dort, Fred A. Aldrich, David M. Averill.

Dover, Del.; Fulton National Truck Co ; $250,000; M. L. Horty, M. C. Kelley, S. L. Mackay, Wilmington.

Dover, Del.; Gillette Motor Car Co.; $4,000,000; L. A. Orwin, M. L. Rogers, W. G. Singer, Wilmington.

Dover, Del.; Hurlbert-Krausce Motors; $90,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Masters Motors Corporation; $1,250,000; John A. Massen, N. C. O'Neill, J. H. Wilson, Chicago, Ill.

Dover, Del.; National Chain Motor Service Corporation; $11,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; National Motors Corporation; $100,000; M. L. Horty, M. C. Kelly, S. L. Mackey, Wilmington.

Wilmington, Del.; Duesenburg-Revere Motor Sales Co. of Oklahoma, dealing in automobiles; $200,000.

Wilmington, Del.; Motor Craft Shops, Inc., dealing in automobiles, trucks, etc.; $3,000,000.

Adams, Mass.; Powers, Philip D., Inc., automobiles; $25,000; Philip D. Powers, Edward J. Donovan, Anna E. Powers, Walter J. Donovan, all of Adams.

Boston, Mass.; Bethlehem Motors Corporation of New England, motor vehicles; $300.000; Marvin H. Murrow, Charles E. Ryder, Boston; George T. Colony, Keene, N. H.

Boston, Mass.; Trico Trucking Co., motor trucks; $50,000; E. Louise Clarke, V. Maude Kempton, Winthrop; George C. Cutler, Jr., Brookline.

Gardner, Mass.; Gardner Garage Co., automobiles; $50,000; Ernest E. McComb, Newton T. Balch, Robert H. Caldron, Herbert W. Balke, all of Gardner.

Lynn, Mass.; Beedy, Kelly & Beedy, Inc., automobiles; $25,000; Fred A. Beedy, Harrison E. Kelly, Charles F. Beedy, all of Lynn.

St. Louis, Mo.; Lafayette-St. Louis Motor Co., 3205 Locust street, to distribute automobiles; president, S. W. Ramsey; vice president and manager, W. H. Tyler.

Sarcoxie, Mo.; Wilson, R. W., Motor Co.; $10,000; H. B. Boyd.

Brooklyn, N. Y.; Fisher, Harry D., motor vehicles; $50,000; F. E. Forsbrey, R. G. Knorpp, H. D. Fisher, 1767 Bedford avenue.

Brooklyn, N. Y.; Hall, Frank, Co., automobile business; $25,000; M. B. Cohn, H. A. Cone, A. T. Rook, 14 McDonough street.

Brooklyn, N. Y.; McLeer Motor Car Co., automobile business; $10,000; R. E. Moorehead, J. C. and H. J. McLeer, 1309 Glenwood road.

Brooklyn, N. Y.; State Auto Exchange; $20,000; J. Cirina, W. M. Stanton, C. Lewis, 569 84th street.

Brooklyn, N. Y.; Three-Star Operating Corporation, automobile business; $10,000; G. T. McQuade, C. Curtis, J. W. Van Gordon, 46 Cedar street.

Buffalo, N. Y.; H. J. C. Motors Corporation; $50,000; H. J. Clark, E. F. Senglaup, F. D. Mieth.

New York, N. Y.; Avidans' Garage, Inc., Manhattan borough, automobile business; $100,000; H. G. Avidan.

New York, N. Y.; G. L. T. Motor Sales, Manhattan borough; $100,000; F. J. Coyle, J. J. Glynn, L. Halle, 120 Broadway.

New York, N. Y.; Goble-Jerome Co., Bronx borough, automobile business; $50,000; P. J. Dun, S. Maurice, E. A. B. Spencer, 35 Wall street.

New York, N. Y.; McFarlane Automobile Co. of New York, Manhattan borough; $73,000; M. Stires, W. J. Fallton, W. C. Graham 225 West 69th street.

New York, N. Y.; Oneida Motor Truck Co.; $10,000,000; Lafayette Markle, Chicago, Ill.; Mitchell Joannes, Orton Bay, Wis.; J. H. Taylor, Depere, Wis.

New York, N. Y.; Owen Magnetic Motor Car Corporation; $2,500,000; Raymond M. Owen, F. Y. Forbes, A. W. Evans.

New York, N. Y.; Panhard, Del., automobiles; $100,000; representative, S. B. Howard, 65 Cedar street.

New York, N. Y.; Quixet Garage Sales Co., Manhattan borough; $50,000; A. G. McCourt, H. R. Cloyd, J. J. Strong, 3417 Avenue D, Brooklyn.

New York, N. Y.; Sunset Auto Sales & Manufacturing Corporation, Manhattan borough; $150,000; J. N. Coleman, F. A. Williams, C. C. Taylor, 139 West 135th street.

Niagara Falls, N. Y.; Whipple-Whelan Corporation, automobile sales agency; $5000; G. T. Hackett, J. M. Whelan, S. E. Whipple.

White Plains, N. Y.; Frango, W. & J. Co., automobile business; $5000; W. M. and T. Frango.

Woodside, N. Y.; Migge & Fischer, automobile business; $6000; H. and A. Migge, F. Fischer, Elmhurst.

Yonkers, N. Y.; Conness Brothers, motor car business; $10,000; M. Myers, H. E. and L. E. Conness, 2773 Briggs avenue, Bronx.

Carnegie, Pa.; Grimes Motor Co.; $200,000; W. F. Grimes, J. H. Grimes, F. P. Schneider, Crafton, Pa.

Philadelphia, Pa.; Currier-Raymond, Inc., motor vehicles; Couderport; $25,000; F. A. Raymond.

Pittsburgh, Pa.; McCurdy, Robert P., Co., motor vehicles; $1,000,000; J. C. Trees.

Warren, Pa.; Warren Automobile Sales Co.; $25,000; U. S. Rogers.

Waynesboro, Pa.; Hoffman, J. V., Auto Co.; $50,000; J. V. Hoffman.

Baird, Tex.; Mitchell-Gilliland Motor Co.; $6000; J. D. Mitchell, I. H. Mitchell, P. D. Gilliland.

Dallas, Tex.; Ford Motor Co. of Delaware; $100,000,000; agent, A. J. Langford.

Kaufman, Tex.; Smith Motor Co.; $20,000; G. C. Smith, H. C. Smith, W. A. Warren.

Paris, Tex.; Reed Motor Co.; $15,000; E. R. Smith, A. M. Reed, T. H. Faulkner.

Waco, Tex.; Gibson & Owens Motor Co.; $15,000; L. P. Gibson, J. E. Owens, Zona Gibson.

Wichita Falls, Tex.; Sanderson-Haid Auto Supply Co.; $200,000; W. S. Haid, W. S. Curlee, B. F. Johnson.

MANUFACTURERS OF ACCESSORIES, ETC.

San Francisco, Cal.; General Accessories Corporation of California; $100,000.

Ansonia, Conn.; King Co., to manufacture and deal in automobile and other safety signal devices; $100,000.

Dover, Del.; American Motor Castings Co.; $1,800,000; J. D. Frock, A. C. Kelly, S. L. Mackey, Wilmington.

Dover, Del.; Anheir Rubber Co.; $500,000; Robert K. Thistle, A. Roy Myers, Raymond J. Gorman, New York.

Dover, Del.; Campania Westinghouse Electric International; $50,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Consolidated Rubber Corporation; $5,000,000; R. B. Whitng, E. W. Whiting, J. P. Stang, Pittsburgh, Pa.

Dover, Del.; Harloe Tire Co., manufacture of tires, etc.; $500,000; Morton Harloe, Winchester, Va.; Newton King, Clifton Station, Pa.; N. Butler, Wilmington, Del.

Dover, Del.; Livingston Radiator Corporation; $1,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Motor Kick Corporation; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Perfect Body Corporation, automobile bodies; $150,000; representative, E. T. Shaw, 347 Madison avenue, New York.

Dover, Del.; Pollay-Elles Aeroplane & Motor Corporation; $250,000; Harry R. Pollay, Fred G. Elles, W. J. Meisenheimer, Detroit, Mich.

Dover, Del.; Rambler Tire & Rubber Co.; $100,000; M. M. Lucey, M. B. Butler, L. S. Dorsey, Wilmington.

Dover, Del.; Sure Spark Ignition Corporation; $100,000; John W. Dissette, Van S. Straub, Earl Q. McCoy, Washington, D. C.

Dover, Del.; Union Electric Motor Co.; $200,000; F. R. Hinsell, J. Vernon Pimm, E. M. MacFarland, Philadelphia.

Wilmington, Del.; Auto Luggage Carrier Co., manufacture and sale of luggage carriers on automobiles, etc.; $500,000.

Boston, Mass.; Automobile Appliance Co., automobile appliances; $50,000; Olive Wyman, Newton; Helen G. O'Connor, Boston; Helen E. Harrington, Somerville.

Kansas City, Mo.; India Tire Co.; $100,000; McCune, Caldwell & Downing, Scarritt building.

Hoboken, N. J.; Oliver, R. E., Co., Inc., 77 River street, manufacturing automobile tires, supplies, etc.; $50,000.

Newark, N. J.; Goldfinger, Barney A., Tire Co., 9 Clinton street, to manufacture and deal in automobile tires and accessories; $5000; Abraham Henig, Jacob S. Nelkin, Samuel Henig.

Trenton, N. J.; Champion Products Manufacturing Co., automobile shock absorbers; $125,000; H. V. Jacobson, S. C. Deixel, F. S. Jones, Newark.

Binghamton, N. Y.; Sauzedde Manufacturing Corporation, to manufacture wire, disc and metal wheels for automobiles, etc.; $500,000; C. Sauvedde, Detroit, Mich.; J. A. Curts, E. J. Sweeney, Binghamton.

Brooklyn, N. Y.; American Auto Fender Works; $15,000; L. A. Sarecky, R. and I. Rosenthal, 715 Lafayette avenue.

Brooklyn, N. Y.; Wadsworth Sales Co., to make automobile tires and tubes; $20,000; W. J. McDonald, W .T. Leonard, E. J. Wadsworth, 196 Bridge street.

New York, N. Y.; Carvan Coach Works, Manhattan borough, to make automobile bodies; $50,000; A. H. Seymour, J. G. Hines, F. L. Welliver, 43 Exchange place.

New York, N. Y.; Farr's Sure-Hold Tire Cement Co., Manhattan borough; $20,000; A. E. Cheever, C. Bronson.

New York, N. Y.; Inter-State Auto Coach Works, Manhattan borough; $10,000; G. Spegler, F. E. Schlesinger, E. Levy, 299 Broadway.

New York, N. Y.; Ninth Avenue Auto Body Builders, Queens borough; $6000; D. Margolies, J. Hartman, O. Lustgarten, 133 West 113th street.

New York, N. Y.; Piston Ring Specialties Co., Manhattan borough, to make automobile parts; $25,000; S. Hirshfield, N. Bramson, M. J. Gersoni, 1769 Pitkin avenue, Brooklyn.

New York, N. Y.; Rawhide Products Corporation, to make automobile equipment; $50,000; F. Lillienthal, R. M. Neuburger, L. Loeb, 1475 Broadway.

New York, N. Y.; Simonsen-Denker. Manhattan borough, to make tires. etc.; $10,000; H. A. Vieu, P. H. Simonsen, W. L. Denker, 10 Van Ness place.

New York, N. Y.; Skootamota Co. of America, Manhattan borough, to make motors; $100,000; F. J. Coyle, J. J. Glynn, L. Halle, 120 Broadway.

New York, N. Y.; V. A. S. Specialties, Manhattan borough, to make automobile specialties; $20,000; V. B. Wolff, D. Arnold, A. B. Fishkind, 631 Academy street.

Philadelphia, Pa.; Empire Rubber Products Corporation; $250,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

Seattle, Wash.; Wicks Tire & Ramie Co.; $2,500,000.

GARAGES, REPAIR SHOPS AND SERVICE STATIONS.

Dover, Del.; Liberty Auto Painting Co.; $10,000; E. A. Wayt, L. M. Miller, N. C. Wayt, Pittsburgh, Pa.

East Orange, N. J.; Main Garage, Inc.; 494 Main street; $25,000; Max Gabrowitz, Newark; Alexander Schlenger, Eva Schlenger, East Orange.

Jersey City, N. J.; Haines Garage; $15,000; William Haines, Henry Haines, Newark; A. Zabriskie, Ridgewood.

Newark, N. J.; Lasser Garage, 38 South Orange avenue; $7500; Sarah Lasser, Bradley Beach; Jack and Sydney Lasser, Newark.

Newark, N. J.; Thacher Garage Co., Inc., 184 Badger avenue; $125,000; Allan R. Keyworth, Thomas Keyworth, Clifford W. Allsopp.

Newark, N. J.; Tube Garage Co., 23-25 Center street; Henry C. Herman, Bloomfield; Charles Herman, Raymond Del Tufo, Newark.

Brooklyn, N. Y.; B. R. H. Realty & Construction Co., garage; $50,000; M. Rosen, E. Bernstein, M. Horwitz, 179 Remsen street.

Brooklyn, N. Y.; Montgomery Garage; $5000; S. G. Harnett, L. M. Sacks, I. Feigin, 1095 Dumont avenue.

Brooklyn, N. Y.; Realty Garage; $50,000; H. Goldschmidt, N. Lottman, M. B. Rich, 345 East 26th street.

Brooklyn, N. Y.; 29th Street Garage; $20,000; C. H. Loeb, H. W. and R. Lowenstein, 705 St. Mark's avenue.

Brooklyn, N. Y.; Wagner, L. & G., Vulcanizing Co.; $6000; G. Levert, M. Goldberg, L. A. Wagner, 2925 West 20th street.

Lake Placid, N. Y.; George & Bliss, realty insurance and garage; $30,000; T. H. George, C. H. Bliss, E. B. McLevitt.

New York, N. Y.; Avidan's Garage, Manhattan borough; $100,000; J. L. Fierman, H. G. and M. Avidan, 162 West 54th street.

New York, N. Y.; B. H. K. Garage Corporation, Manhattan borough; $10,000; B. and J. Badner, I. Siegel, 51 Chambers street.

New York, N. Y.; Christopher Street Garage, Manhattan borough; $20,000; S. Berman, R. Bash, W. F. Lally, 309 Broadway.

New York, N. Y.; Dependable Motor Service, Bronx borough; $20,000; H. Friedel, R. J. Holsch, A. Lurrie, 2269 University avenue.

New York, N. Y.; Elk Garage Co., Manhattan borough; $25,000; M. Frieder, O. Kirshon, W. Lee, 54 East 124th street.

New York, N. Y.; J. & L. Garage Corporation, Manhattan borough; $10,000; L. Raisen, J. B. Gold, A. Bogerod, 2115 Mohican avenue, Bronx.

New York, N. Y.; Licht, Charles W. F., Bronx borough; garage; $10,000; A. E. Moody, L. S. and C. W. F. Licht, 2654 Valentine avenue.

New York, N. Y.; Majestic Garage Corporation, Manhattan borough; $50,000; C. Bushel, C. Rudolph, M. Hauser, 1106 Simpson street, Bronx.

New York, N. Y.; New York Central Garage, Manhattan borough; $20,000; H. and S. Davidowitz, L. Weiss, 117 West 115th street.

New York, N. Y.; Sidman Service Station, Manhattan borough, automobile repairing; $5000; G. G. Schwartz, B. Spiegel, S. Mitchell, 63 Park row.

New York, N. Y.; Uneeda Auto Repair Co., Manhattan borough; $5000; L. and M. Davis, L. Werner, 1960 Madison avenue.

New York, N. Y.; Williams Bridge Garage, Manhattan borough; $50,000; A. Brettschneider, M. Fried, M. Grober, 296 Delancey street.

Plattsburg, N. Y.; Mechanical Automobile Painting Co.; $20,000; E. C. Gordon, M. A. Brennan, M. Stay.

Wesbury, N. Y.; Merritt-White Motor Repair Co.; $5000; D. W. and R. I. Merritt, C. J. White.

Philadelphia, Pa.; Progressive Storage Battery Station, repair, recharge, rebuild and deal in storage batteries, automobile accessories and supplies; William A. Roberts, William H. Roberts, Benjamin Hockfield, Delray L. Martin, Jacob N. Samson.

DEALERS IN ACCESSORIES, EQUIPMENT, ETC.

Dover, Del.; Motor Service & Fuel Corporation; $200,000; M. M. Lucey, M. Parker, L. S. Dorsey, Wilmington.

Dover, Del.; Scranton-Savold Tire Corporation; $500,000; M. L. Horty, M. C. Kelly, S. L. Mackey, Wilmington.

Hoboken, N. J.; High-Tension Transformer Equipment Co., to deal in transformers, etc.; $60,000; M. B. Cohen, S. J. Sondheim, H. A. Cone, New York.

Hoboken, N. J.; Oliver, R. E., Co., automobile accessories; $50,000; Reginald Oliver, Beatrice Oliver, Lyndhurst; J. W. P. Moordant, Corona.

Montclair, N. J.; Victor Rite-Lite Co., Inc., deal in automobile supplies; $125,000.

Jamestown, N. Y.; Resco Products Co., automobile accessories; $30,000; F. F. and J. C. Rathbun, G. Scott.

New York, N. Y.; Doughty Manufacturing Co., Manhattan borough, automobile accessories; $5000; F. H. Faulkner, G. E. and J. W. Doughty, 847 Hancock street, Brooklyn.

New York, N. Y.; Ferris Auto Supply Co., Manhattan borough; $10,000; G. A. and F. W. Ferris, G. Sidel, 1253 Franklin avenue, Bronx.

New York, N. Y.; Paramount Specialties, Manhattan borough, automobile specialties; $20,000; A. J. Wilfleur, S. H. and J. Jacobowitz, 519 West 159th street.

New York, N. Y.; Pitts Auto Equipment Co., Manhattan borough; $10,000; L. Friedenberg, J. Mason, J. J. Pitts, 14 West 111th street.

New York, N. Y.; Sunset Auto Sales & Manufacturing Corporation, Manhattan borough; $150,000; J. N. Coleman, F. A. Williams, C. C. Taylor, 139 West 135th street.

New York, N. Y.; Usonia Tire Corporation, Manhattan borough; $75,000; B. Swiryn, B. Levy, S. Jacobs, 540 West 159th street.

New York, N. Y.; Wallace Motor Products Corporation, Manhattan borough; $25,000; W. C. Hammond, A. B. Bielaski, F. L. Sample, 120 Broadway.

Rochester, N. Y.; Corkhill Falk Co., automobile tires; $10,000; S. A. and G. H. Corkhill, P. Falk.

Syracuse, N. Y.; Syracuse Gear Co., foundry and factory supplies; $50,000; J. C. Roth, E. A. Brennan, E. R. Deming.

Ticonderoga, N. Y.; Dolbeck-Leach Accessory Co., automobile accessories; $50,000; E. J. Steiner, D. J. Vetter, C. D. Leach.

Waco, Tex.; Ever-Ready Tire Service; $10,000; S. J. McGlasson, R. C. Scott, C. M. Smith.

Wichita Falls, Tex.; Sanderson-Haig Auto Supply Co.; $200,000; W. S. Haid, W. S. Curlee, B. F. Johnson.

MISCELLANEOUS.

New Haven, Conn.; Shore Line Motor Bus Corporation, to operate motor vehicles; $100,000.

Waterbury, Conn.; Waterbury Aviation Co.,; $50,000.

Dover, Del.; Dealers & Underwriters' Motor Finance Co.; $2,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Delaware Aircraft Corporation; $250,000; George B. Lockhart, Herbert C. Lockhart, Philadelphia; Charles G. Guyer, Wilmington.

Dover, Del.; J. L. Aircraft Corporation; $25,000; Robert K. Thistle, A. Roymyers, Raymond J. Gorman, New York.

Dover, Del.; Parham Auto Patents Corporation, $500,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Winmington.

Wilmington, Del.; Wilmington Automobile Trade Association; no capitol; W. A. Macdonald, E. L. Rice, E. F. Merrick, Wilmington.

Brooklyn, N. Y.; Modern Trucking Co.; $20,000 ;J. B. Kain, H. O. Fagen, S. Hoffman, 366 Broadway.

New York, N. Y.; Airline Florida, air planes; $5000; representative, G. Gans, Jr., Staten Island.

New York, N. Y.; Auto Owners' Maintenance Co., Manhattan borough; $10,000; S. K. Woods, W. Hadek, H. F. Spellman, 1545 Broadway.

New York, N. Y.; Clarke Trucking Corporation, Manhattan borough; $25,000; H. Clarke, A. Bryan, E. Kirkpatrick, 1 West 99th street.

New York, N. Y.; Kane, P. F. and W. A., Inc., fertilizer business, manufacture farm implements, etc., and garages; $250,000; L. T. Albert, 165 South Ninth street, Brooklyn.

New York, N. Y.; Keane, Horace, aeroplanes, Manhattan borough; $125,000; W. M. Sage, S. H. Mapes, H. Keane, 280 Madison avenue.

Philadelphia, Pa.; Acme Motor Transportation Co., to operate and maintain motor trucks for the purpose of hauling, transporting and delivering merchandise; James R. Pierpont, Thomas R. Pierpont, R. W. Pierpont.

Memphis, Tenn.; Interstate Finance Corporation, for financing the purchasing of automobiles and buying automobile paper; $150,000; Erwin Bry, Herbert Merff, Abe Plough, W. G. Sternberger, Leo Goodman, I. Samuelson, H. Morris.

Dallas, Tex.; Motor Transportation Co.; $15,000; Frank J. Behrens, Sam T. Kaufman, Eugene de Bogory.

Wichita Falls, Tex.; Automobile Securities Co.; $25,000; S. W. Sibley, J. C. Wynne, J. M. Finch.

CAPITAL INCREASES.

Hannibal, Mo.; Mid-West Tire & Sales Corporation; from $30,000 to $150,000.

Kansas City, Mo.; Motor Products Securties Co.; $250,000 to $500,000.

Brooklyn, N. Y.; Kunkel Automobile Co., $1500 to $25,000.

New York, N. Y.; Bull Moose Garage Co., Manhattan borough; $5000 to $25,000.

New York, N. Y.; Commodore Motors Corporation; $100,000 to $1,000,000.

New York, N. Y.; General Motors Acceptance Corporation, Manhattan borough; $2,000,000 to $4,000,000.

New York, N. Y.; P. & M. Motor Car Co., Manhattan borough; $2000 to $125,000.

Poughkeepsie, N. Y.; Sinclair Consolidated Oil Corporation; $27,000,000 to $127,000,000.

Rochester, N. Y.; Townley, W. R., Auto Lock Corporation; $25,000 to $50,000.

Syracuse, N. Y.; Franklin, H. H., Manufacturing Co.; $7,000,000 to $23,000,000.

Portland, Ore.; Archer & Wiggins Co.; $100,000 to $250,000; name changed to Wiggins Co., Inc.

Johnstown, Pa.; Industrial Trading Corporation; $100,000 to $150,000; name changed to Auto Service Corporation.

Texarkana, Tex.; Buchanan-Vaughan Auto Co.; $50,000 to $100,000.

NAME CHANGES.

Buffalo, N. Y.; Allan-Welshofer Motor Coropration to E. M. Allan.

New York, N. Y.; Arcadia Body Corporation, Manhattan borough, merged with Arcadia Trailer Corporation, Delaware.

New York, N. Y.; Solid Inner Tube Co. to Tru-Matic Tire & Tube Co.

Making Magnesium Metal Out of Mineral Water

THE Dow Chemical Co., Midland, Mich., has perfected a process, after five years of experimentation, for the production of metallic magnesium, the lightest metal known to man used commercially and, until the war, an exclusively German product. The expert engineers of the Dow company are now taking salt brine from their mineral wells at Midland and Mount Pleasant, and are converting it into a metallic substance one-third lighter than aluminum and only one-fourth the weight of cast iron. This substance, which is to be known commercially as Dow-metal, is being produced in quantity and is being tested in some two-score automobile plants throughout the country under the most exacting conditions. It is being fabricated into piston rings, connecting rods, motor castings, bolts and nuts, bearings, gears and other automotive parts.

The Dow Chemical Co. is now organizing its sales department and will put this product on the market on a large scale. Engineers declare it to be the only commercially successful piston alloy composed chiefly of magnesium. All other light piston alloys are aluminum compounds, containing at best, only a small percentage of magnesium. The company has an unlimited supply of the raw product, which is a natural salt brine from which is extracted by many processes the other chemical products the company also manufactures. Whereas the method of manufacture of metallic magnesium is electrolytic whereby a fused molten salt bath is decomposed by a powerful electric current, forming the metal which is so light that it floats on the surface of the pots, its cost is higher than that of other light metals, but its many desirable qualities more than offset this in its adoption for the construction of automotive parts. These are its lighter weight, greater tensile strength, machining qualities, no cutting compound being necessary, and presenting no hard spots to dull tools, and the fact that with a Brinnell hardness of 70 degrees the metal does not tear when high speed is used in working it when it is desired to speed up production.

Efforts Devoted to Piston Material.

Realizing that the motor manufacturing industry needed a better piston material, the Dow company has thus far devoted most of its efforts to developing a piston alloy that would enable the production of a component more nearly perfect than was hitherto obtainable. Five years of experimentation has resulted in the evolution of a metal one-third lighter than aluminum and one-fourth lighter than cast iron and having a greater tensile strength than either; which in itself is a sufficient bearing metal, does not require the use of a bushing for the piston pin, and which in actual performance has proved to afford many other points of superiority.

In more than 40 motor plants in the United States where tests were made, not a single instance is recorded of a cast iron cylinder being scored from a Dow-metal piston seizing or setting. These tests also established the fact that smoother running motors, with less vibration, resulted from the use of the new metal. Other noticeable advantages were greater acceleration, a saving in oil and gasoline consumption, greater horsepower and higher speed.

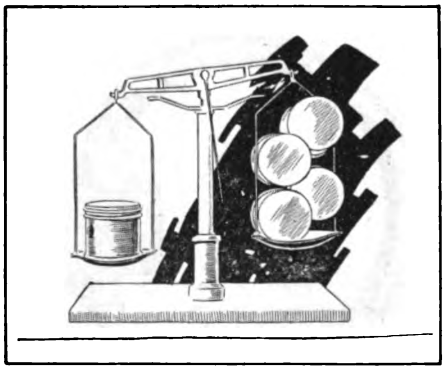
Exhaustive Test on Car.

In practical performance Dow-metal was first tried out by the Dow Chemical Co. in a Ford car. This was a 1918 runabout which had been in use for almost two years with cast iron pistons. Dow-metal pistons were installed, and the first test was to jack the rear wheels up and place pulleys on the rear axle with belt attached to the line shaft above. The entire machine shop, with 10 or 12 machines, was run by the power from the Ford motor for two weeks, and the average mileage, as figured from the speed of the motor, was approximately 200 miles a day. The car was then started on a 5000-mile test run, from Midland to Saginaw, Bay City and Alma, and with four different drivers alternating on the trips. No special speed was made but the time averaged from 15 miles to 45 miles an hour. An accurate account was kept of the gasoline and oil consumed on this test, and the results were as follows: 23¼ miles to the gallon of gasoline, and 101 miles to the quart of oil. The motor was taken down and pistons showed very little wear.

The cylinders were tested with a micrometer and showed no wear. The pistons, being in good shape, were re-assembled in the motor and the car continued as a service car in trips from Midland to Bay City, Alma, Saginaw, Mount Pleasant and Big Rapids. The present estimate for the complete mileage on this set of pistons is now about 18,000 miles. The car was recently taken down, the motor disassembled and no wear and tear on the cylinders was noted. There was very little wear on the pistons, so the Dow engineers consider that the tests have established that Dow-Metal does not have any abrasive action on cast-iron cylinders.

All Pistons Redesigned.

Because Dow-metal is a new piston material, the manufacturer cannot be expected to adopt the same without a severe test. All piston designs submitted for casting are redesigned by the engineering department at the Dow plant, the pattern and core box being constructed to the design for Dow-metal, and not following cast-iron construction, a mistake made by some others in trying out a new piston material. In cast-iron construction, the main point in the construction of a piston is to reduce weight, while with the light metal a sufficiently thick head serves the purpose of a conductor of heat, as well as a factor of safety and strength.



Four Dow-Metal Pistons Balancing One Standard Cast-Iron Piston.

Machining costs, from the statements of manufacturers of motors, are quite interesting also. Dow-metal pistons can be machined at the rate of three to one as against cast-iron. The cost of the finished piston ready for assembly being almost equal, when the cost of the castings in the rough would be greater in the Dow-metal material.

In the past the tensile strength of magnesium has been unknown, but as the experimental stage develops, it is found that each time it is reworked, rolled, drawn or drop forged, there is an increase in its tensile strength, and also that it can be recast for the finest parts of a motor, without decreasing its strength.

Lighter Construction the Ultimate Goal.

Lighter construction is the ultimate goal of the automobile manufacturer. The present day car which averages 3000 pounds in weight, when built of the lighter metals should not weigh more than 1500 pounds. The following parts can be made of the lightest metal: bodies, cast wheels, crank cases, fans, fan pulleys and blades, engine blocks, pistons, connecting rods, oil pans, hoods, fenders, gears throughout car, all housings, radiator shells, propeller shafts, steering wheel spiders, etc. The matter of axles is one that, while not improbable, is hardly possible until an alloy different from any on the market is found which would possess that factor of safety necesary for this part of the car.

MAGAZINE PAPER SHIMMING SOLID TIRES.

It has been suggested that it is possible to make use of magazine paper in shimming solid tires to truck wheels. For some months experiments have been carried out along this line with old newspapers and magazines. It has been found that while newspapers will do the work, magazine paper is better as newspaper tears easily and only a portion of it will work in between the tire and the wheel., while with magazine paper the results were practically as good as with burlap.

The necessity of finding some substitute for burlap or tin, two substances that have previously been used for this purpose, is made imminent by the high prices charged for this material.

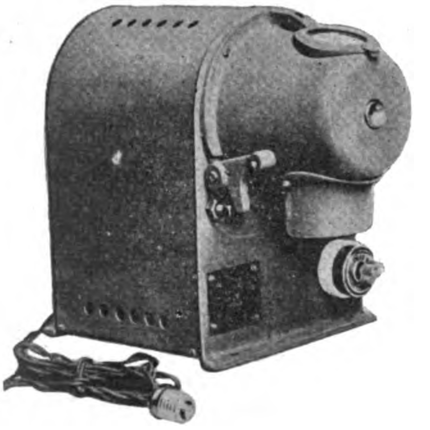
Nevada has two motor cars for every three miles of road.

ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The F-F Insulated Wire Stripper consists of a motor driven machine for use in electric repair stations, service stations, garages, etc. It is designed to simplify and shorten the labor required in stripping the ends of insulated, enameled, stranded and single conductor wire.

Duplex cord, it is stated, can also be stripped in much shorter time than formerly by the use of this machine. In some of the larger plants where it has been in use the capacity has been increased by as much as five times, is the claim of the manufacturer.

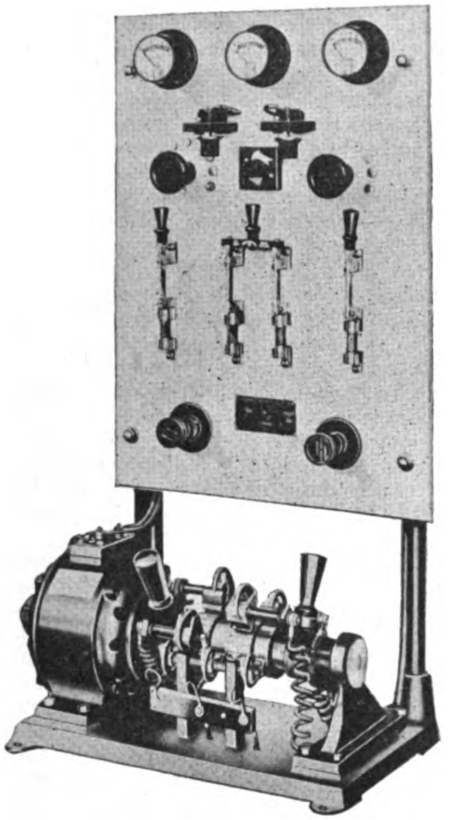
The device is guaranteed as to workmanship and performance. It must prove serviceable to the purchaser. Equipped with either single-phase, 110-volt, 60-cycle, alternating motor, or 110-volt, direct-current motor, as desired.



Manufactured by the France Manufacturing Co., Berea road and West 104th Street, Cleveland, O. Prices and literature on request.

The Advance Motor-Rectifier consists of a one-eighth horsepower motor, "special type," with an extended shaft, upon which are mounted three collector rings and two special commutators (as a unit), which absorb the alternating current from a transformer, as a three-wire circuit, and directly convert the alternating current into a direct current to two separately controlled circuits, in graduated voltages of 22-volt steps to 110 volts and normal capacity of one kilowatt a circuit, or 10 amperes at 110 volts. The total output of the rectifier delivering direct current is two kilowatts.

The special motor is designed for this class of work and is equipped with self-oiling ring bearings of rugged construction. The switchboard included with the outfit is mounted above the motor and is fastened to two uprights fitting into sockets in the motor base, and is constructed of marble, and containing the necessary switches, meters, automatic cut-outs and regulators to control the charging circuits. The transformer is mounted at the back of the switchboard and will handle up to 220 volts.



The device is fully warranted by the manufacturer to be fool-proof, who will make good for a period of one year from date of purchase any part that should contain a flaw, when returned to the factory postpaid.

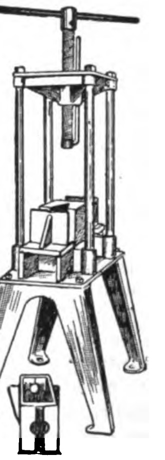
Manufactured by the Advance Electric Co., 131 East Sixth Street, Los Angeles, Cal. Prices and literature on request.

The Johnson Universal Tire Lock is designed to lock and protect tires placed on rear or side tire hangers from being stolen. It is stated that the lock can be opened only with the keys provided by the manufacturer and that the cable is made of a specially constructed metal surrounded by armor steel sleeves, which interlock with each other, allowing free rotation, but will resist all efforts to separate them. It is claimed that they cannot be cut or injured by hammering.

The device bears the approval of the Underwriters' Laboratories, Inc., and is claimed to be thief proof.

Manufactured by the Johnson Automobile Lock Co., 2309 Archer Avenue, Chicago, Ill. Prices and literature on request.

The Whitney Arbor Press is designed for service stations, where many jobs are presented during the course of the year that require straightening, bending, forcing gears from shafts, etc. The press is extremely light in weight for its capacity. Both the head and base are substantially webbed, supplying additional strength to those parts subject to the severest strain. The base is provided with ways similar to those of a lathe, permitting the blocks to slide into various positions, thus offering a firm foundation for the work. A large recess through the base allows the passage of shafts, gears, etc. The screw is made with a square thread, thus reducing wear to a minimum, it is claimed, the head being supplied with recesses, allowing the use of two bars when exceptionally strenuous pressure is necessary.

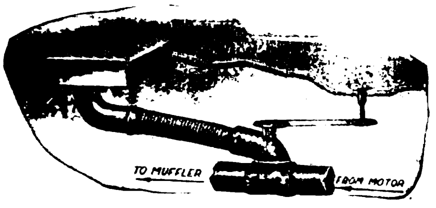


A patented feature is added to this press in the form of a guide rod sliding parallel with the screw and attached to a cap on the pressure end, preventing twisting strains on the surface of the work and relieving the assembly supports from strain. Accompanying every press are two sliding L blocks, one sliding V box block, one round V block and an axle attachment designed especially for Ford axles.

Manufactured by the R. S. Whitney Manufacturing Co., 74 Nichols Street Lewiston, Me. Prices, No. 1 press, $70. east of the Rockies; No. 2 press, $90, east of the Rockies.

The Noble Auto Heater is designed for both open and closed models of passenger cars, is manufactured in nine different types and embodies principles in construction that are unique.

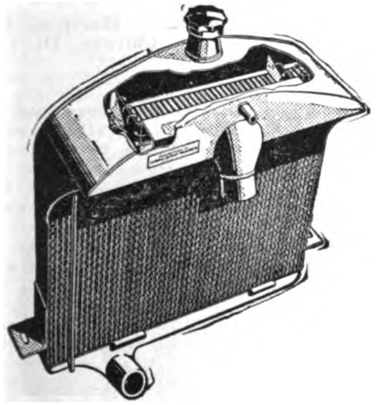
The Noble heater, it is claimed, utilizes the waste exhaust heat from the motor, it being thoroughly protected in its passage to the radiator and on its return to the exhaust pipe, thus conserving the heat for heating purposes only, and not wasting it by radiation. Employing the principle of insulating the heater supply pipe, the hot gases reach the heater at a much higher temperature than if delivered through a single unprotected supply pipe. This principle of heat supply is patented by the manufacturer and insures a steady supply of heat at the heater regardless of atmospheric changes.



It is stated that, with this system of heating, it is impossible for the fumes of the exhaust gases to reach the occupants of the car, and that the disagreeable feature sometimes coincident with the use of exhaust heaters is eliminated in the Noble heater. The heater and its connecting pipe and valve are made of the best of material, the fittings are nicely finished and of a high grade, and the outfit can be easily installed in any passenger car in a few hours' time by a mechanic.

Manufactured by the Noble Heater Co., 347 East Lewis Street, Fort Wayne, Ind. Prices and literature on request.

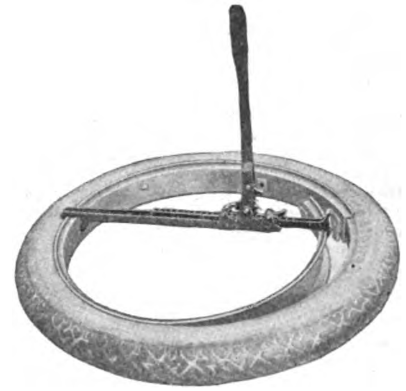
The New Curran Radiator for Ford Cars, equipped with a patented simplified thermostatic control, offers several new features to Ford owners, chief among which is the impossibility of heating, the manufacturer stating that no Curran radiator has ever been known to boil. Over-cooling is also claimed to be prevented by the thermostatic control, through an absolutely self-adjusting device which, it is stated, cannot get out of order, and regulates the flow of water. With this attachment the engine is operated winter or summer at an even temperature of 160 to 180 degrees.



Curran radiators are claimed to be constructed in such a manner that freezing of the water will not damage the radiator, the manufacturer citing cases where radiators have been frozen 18 times without the least injury. The factory will replace any Curran radiator damaged by freezing within one year from date of purchase.

Manufactured by the Curran-Detroit Radiator Co., 558-570 Lafayette Boulevard, West, Detroit, Mich. County distributors are wanted. A very attractive proposition is offered to dealers furnishing A 1 references. Prices and literature on request.

Trex Rim Tool is designed to remove and replace tires fitted to demountable rims of all kinds and sizes. It is strongly made of malleable iron constructed in the form of a jack and using a similar principle of operation. The stationary end of the device is hook shaped to fit over the edge of a rim, while a shoulder is provided which fits inside of the rim, preventing the hook from coming loose on the edge of the rim.



A sliding bar is also provided which has a rack cast through its center. This is also equipped with a hooked end fitting the edge of the rim, while a shoulder is provided in connection with the hook which fits against the inside of the rim when forcing the split of the rim into place.

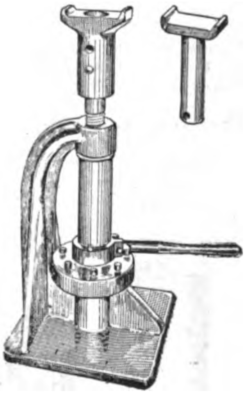
A handle is provided, fitted with a ratchet wheel at the lower end, which meshes with the rack of the sliding bar, while a combination ratchet is pinned to the handle a short distance above. This ratchet allows the lever to either expand the rim or by using a reverse motion to contract it.

It is stated that this device is capable of contracting rims that have become rusted to the tires, allowing easy removal of the tires, and that rims that have become bent or otherwise out of shape can be easily expanded to their correct position, so that they may be locked.

Full directions for operating accompany each tool, so that the operation may be easily understood even by the novice.

Manufactured by the Trexler Co., 1418 Walnut Street, Philadelphia, Pa. Price, $6 net, or, West of the Rockies, $7.

The Whitney Safety Automobile Repair Jack is designed for service stations and repair shops handling automobiles, trucks and tractors. It is perfectly proportioned throughout for this class of work, every part being webbed to warrant the greatest possible strength and safety. The base is made unusually large to insure a firm and rigid support for the lifted car or truck and possibility of the vehicle working off from the jack is claimed to be eliminated by this wide base. The jack occupies but little space in the shop. An extension head is provided with each jack, affording a lifting radius 7¼ inches higher than the regular lifting radius. The jack is capable of lifting an axle 11 inches, plus 7¼ inches when using the extension arm.

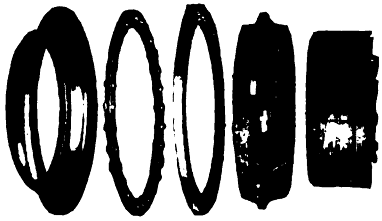


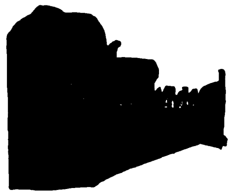
This jack is manufactured in one size only and is stated to be adapted to all classes of work regardless of weight.

Manufactured by the R. S. Whitney Manufacturing Co., 74 Nichols Street, Lewiston, Me. Price, $35, east of the Rockies.

The Anco Triple Duty Ball Thrust Bearing for Ford Cars is designed to take up any end play that may have developed in the crankshaft, magneto and transmission and to prevent further end wear.

The Anco bearing is installed between the universal joint housing and the clutch spring support and is adjustable to take up all end play and to bring the vital parts into perfect alignment. When properly adjusted the bearing locks securely in position with a flat steel key and strong screw. After that all end thrust is taken on the Anco heavy anti-friction balls and no further end play can take place.



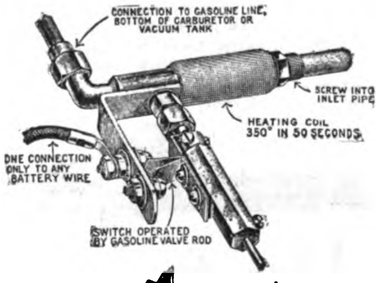


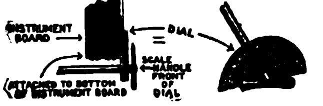
It is claimed that many garages have adopted this bearing as standard for use in all Ford overhauling jobs.

Manufactured by the Anderson Co., South Bend, Ind. Price, $12. Free instructions for installing are included with each bearing.

The Thermo Electric Gas Primer is a device that screws into the inlet manifold and delivers heated gasoline vapor and boiling hot liquid gasoline to all cylinders to facilitate starting action even on the coldest day.

It is formed of a brass chamber, around which is wound a heating unit connected through a switch to the battery wire. When the electric connection is made the chamber becomes heated to a temperature of 300 to 500 degrees in about a minute. When the starter pedal is depressed a needle valve is opened and the vacuum in manifold sucks gasoline into the chamber independent of the carburetor action. This charge being highly heated, it gives off a highly explosive gas. The action is automatic when the switch is turned on and the needle valve rod is turned, and it does not require any hand pumping or filling. The tubing and wire for making the connections are furnished with the primer.

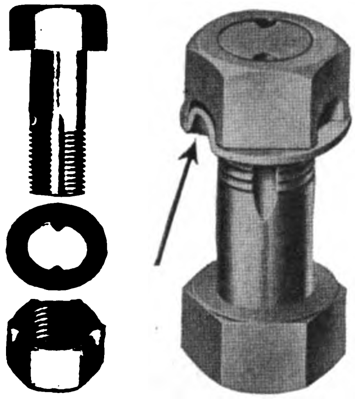

CONNECTION TO GASOLINE LINE, BOTTOM OF CARBURETOR OR VACUUM TANK
SCREW INTO INLET PIPE
HEATING COIL 350° IN 50 SECONDS
ONE CONNECTION ONLY TO ANY BATTERY WIRE
SWITCH OPERATED BY GASOLINE VALVE ROD


INSTRUMENT BOARD
DIAL
SCALE HANDLE FRONT OF DIAL
ATTACHED TO BOTTOM OF INSTRUMENT BOARD

Made by New York Coke Co., 338-340 Pearl St., New York, N. Y. Retail price, $5.

The Stevenson Safety Nut and Bolt consists of a combination bolt, washer and nut. The bolt is constructed with two longitudinal tapered grooves, the washer with two inner extending lugs to fit the grooves on the bolt, while the nut is equipped with chucks on its lower and outer surfaces. This construction permits the easy application of the washer to the bolt before applying the nut, as the inner extending lugs do not begin to bind in the base of the grooves until the washer has passed on to the bolt for two-thirds of the length of the tapered portion of the grooves.

The bolt washer and nut are assembled and the nut washer carried home to contact. The washer binds in the base of the grooves equally on both sides anchoring it against any lateral or horizontal movement without, it is stated, engaging the threads.

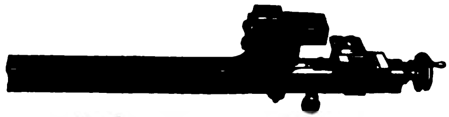


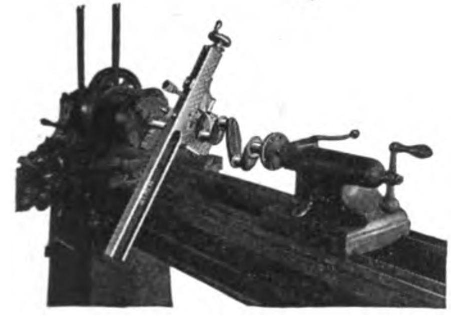
After the nut has been turned down sufficiently, the outer rim of the washer is upset into any one of the chucks of the nut, thus locking the washer and nut. To unlock nut, back down the bent portion of the washer, freeing the nut.

It is especially designed for use in service stations for replacement purposes where it is desired to use a shorter bolt, with the same assurance that it will hold as when a castellated nut and cotter pin is used.

Manufactured by the Safety Nut & Bolt Co., 1836 Euclid avenue, Cleveland, O. Prices on request.

The Weber Crank Pin Returning Tool is the invention of a California master mechanic for expediting work on engine crank shafts. It will be noted in the illustration of this device that it is a crank pin returning tool and works on any ordinary lathe. One view shows the tool in operation on a four-throw tractor crankshaft. The crankshaft is held between centers on a lathe, while all four pins are turned true and finished in one setting of the tool, the manufacturer states, in from 30 minutes to an hour. The shaft is rotated very slowly, the tool riding around with the pin, the handle resting against the side of the lathe.

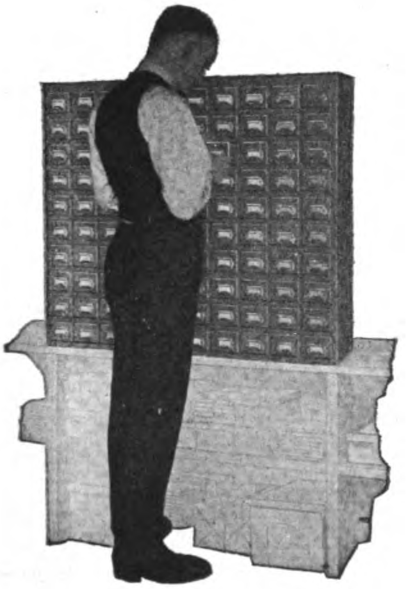




At the top of the tool is located a hand wheel which feeds the cutters into the pin. This wheel is fitted with a dial below which is graduated into thousandths. The dial can be locked by means of set screws, in any position, thus making it easy to turn all pins to exactly the same size. The pin is held firmly in place, independent of the cutter, by three supports, one being a bronze shoe that can be adjusted while the tool is cutting. The tool starts cutting on the surface worn the least and gives an absolutely round pin the least amount of metal. Filing of pins, it is claimed, at the same time removing off-setting or the use of jigs to complete the job are not required as the tool finishes the pin accurately for use. The manufacturer guarantees that the tool will work within as close limits of accuracy as can be done by any other known method.

Manufactured by the Sawyer-Weber Tool Manufacturing Co., Los Angeles, Cal. Prices and literature on request.

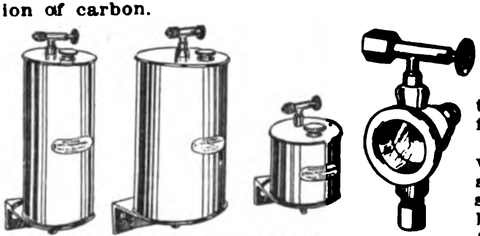
The HB Universal Screw Cabinet is designed especially for service station stock rooms and has proved a great convenience in keeping track of the screw stock. The cabinet is constructed with well made, strong drawers to hold the dozens of small accessories, screws, nuts, bolts, brads, nails and many other small articles that so often become scattered about and wasted. It is stated that such a cabinet will save its cost many times over in year by providing a place where every small part can be stored and yet where they can be found instantly when wanted



The finish of the cabinet is light golden oak, fitted with polished brass drawer pulls and card holders. The drawers are eight by three by 2½ inches, inside measurement. These cabinets can be purchased in either 100 or 50 drawer sizes.

Manufactured by the Hobart Brothers Co., Troy, N. Y. Illustrated literature and prices on request.

The Whitney Gas Humidifier is designed to supply the combustible mixture with water vapor, producing pronounced flexibility, which means increased mileage accompanied, it is claimed, by the elimination of carbon.



The Whitney Gas Humidifier consists of an upright cylindrical tank acting as a reservoir for water, connected by means of copper tubing to a nipple in the intake manifold, allowing the water vapor to be drawn into the engine cylinders by the vacuum caused by the motion of the pistons in the cylinders. Within the humidifier is a patented automatic shut off valve, located at the lowest possible water level, which checks the rush of air into the engine when the humidifier becomes empty, preventing it from acting as an auxiliary air valve if neglected.

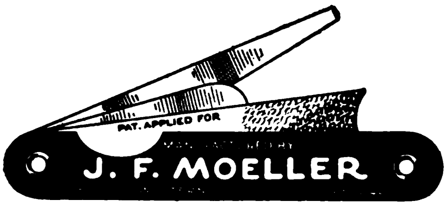
A sight feed gauge is provided with the device, which is connected between the humidifier and the engine intake manifold and acts as a constant tell-tale as to the amount of water being taken into the engine cylinders. An adjustable valve is provided on the gauge, which allows the operator to increase or decrease the amount of water taken in.

The Whitney humidifier is made in three models, each including a gauge.

Manufactured by the R. S. Whitney Manufacturing Co., 74 Nichols Street, Lewiston, Me. Price, east of the Rockies. No. 1, $14; No. 2, $16; No. 3, $11.

The Momaco Spark Plug Tester is designed as a pocket tool, combining four tools in one for the benefit of the service station and garage repairer and all motorists. It consists of four blades folding neatly into a handle similar to a pocket knife, each blade having a special use.

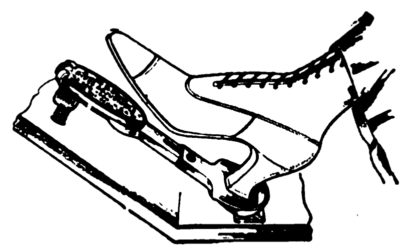
Opening the two long blades, resting one on spark plug terminal wire and the other against the engine cylinder will short-circuit the plug and show if trouble is present in the cylinder. A third blade is fitted with a file for cleaning points, while the thickness of either of the long blades will give the correct gap between spark plug points. The short, thin blade is a gauge which gives the correct clearance between the valve and tappet.



Manufactured by J. F. Moeller, 10822 South Western Avenue, Chicago, Ill. Price, 25 cents postpaid.

Rives Extension Accelerator Pad and Heel Rest No. 6 provides a flexible foot rest for the car operator when using the accelerator in driving the car. The foot rest is fastened to the floor boards by a hinged joint, the forward end resting lightly on the top of the accelerator button. The front of the rest is cushioned with a rubber pad, which makes the operation of the accelerator very smooth.

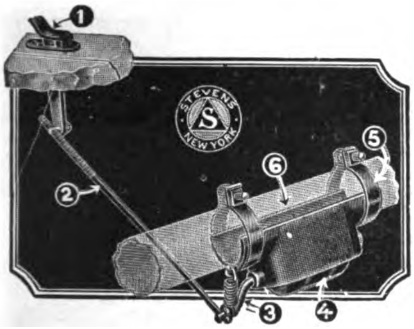
For lady drivers such a device is particularly valuable as much of the fatigue and strain is eliminated from the arch of the foot when using the Rives extension foot rest.



An extension adjustment is provided which allows the pedal to be extended or shortened when fitting the pedal into position. The Rives extension pedal and heel rest is made from steel with a japanned finish.

Manufactured by the George H. Rives Manufacturing Co., Inc., 2187 Woolworth Building, New York, N. Y. Price, complete, $1.50.

The Snap Exhaust Relief Valve for Ford Cars and Trucks is designed to give instant control of the exhaust gases, doing away with the sharp staccato sound so common to devices of this nature. The relief valve is fitted to the exhaust pipe by cutting a V shaped slot on the under side which, it is stated, does not weaken the exhaust pipe in the least. The Snap Exhaust Valve consists of a casting which is fastened to the exhaust pipe by two steel bands, which are drawn tight by a bolt in each band and supports the exhaust pipe at the point where the V shaped slot is cut in the pipe. A damper is fitted at the opening of the valve, which is controlled from a foot operated pedal on the floor board of the car. To operate the pedal is pressed at the right to open the damper and at the left to close it. The damper is controlled by a short coiled spring, which facilitates opening and closing.

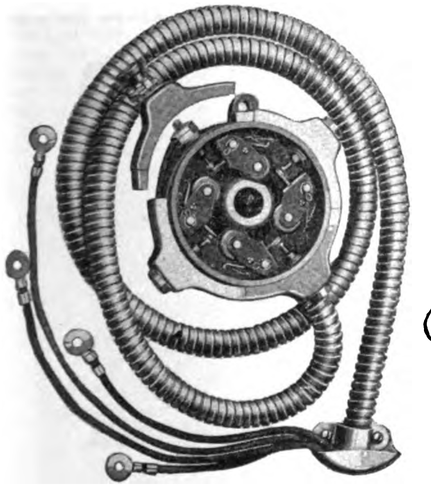


It is claimed that as the damper runs lengthwise of the exhaust opening the large opening is not obstructed, so that the Snap gives Ford engines the quickest and most complete relief without a shrill report.

Sold by Stevens & Co., 375 Broadway, New York City. Price, complete, $1.70.

The Duntley Wire and Terminal Guard is designed to protect the primary wires of the Ford engine as they pass from the coil box to the commutator, and to keep them from getting oil soaked. The guard consists of an armored flexible conduit, in which the wires are run, and can be either fastened to the frame of the car or allowed to hang loose as desired.

In connection with the Duntley magneto break timer the wire guard makes a complete outfit for the Ford car and it is stated the use of the two devices affords protection to the most vital parts of the ignition system.



The Duntley wire and terminal guard is claimed to readily fit the regular standard pattern Ford or Fordson timer. It is made throughout of the best of material and is readily attached by anyone familiar with the ignition system of the Ford or Fordson engine.

Manufactured by J. W. Duntley, 1008 Michigan Avenue, Chicago, Ill. Prices and literature on application.

The Auto Spark Lite is, as its name implies, a small gasoline filled torch cigar lighter which is ignited by a spark from the ignition system of the engine. The igniter is fastened to the dash board of the cowl, while the torch is held rigidly in brackets at each side of the igniter. To use the torch is removed from the brackets and placed in the opening of the igniter, the wick, saturated with gasoline, being ignited by a spark jumping across a gap or small air space in the interior of the igniter.

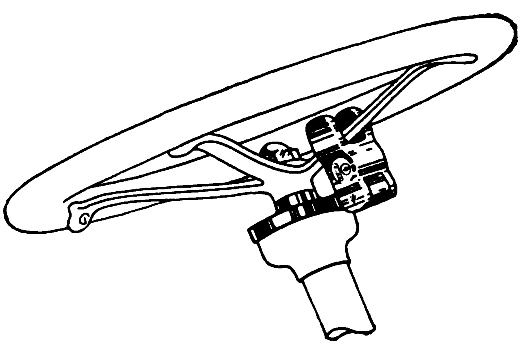
In wiring for the igniter one of the terminals leading to a spark plug is lengthened and fastened to a terminal post of the igniter, while a second wire is run from the other post to the spark plug. When the engine is operating the torch is easily ignited by the spark jumping across the air gap.

PAT'D AUTO LITE PAT'D
QUEENS... LONG IS... CO. INC. N.Y. U.S.A.

The Auto Spark Lite is easily attached in a few minutes time, adding to the appearance of the dash, it is claimed. It is stated that the device is exceptionally well made, sure in operation and cannot get out of order.

Manufactured exclusively for the J. C. Adams Sales Co., 51 East 42nd Street, Vanderbilt Avenue Building, New York City. Price, $5 complete.

The Wayne Auto Lock for Ford Cars consists of a special cover and fastening nut, fitted with a special fork which is locked by a Yale lock and key. The cover takes the place of the regular Ford internal gear case cover which encloses the planetary gears of the steering mechanism, and is held in place by two screws, fastened to the edge of the internal gear case.



It is stated that the Wayne Auto Lock meets the requirements of the Underwriters' Laboratories, when installed according to the directions which accompany each lock.

A larger size Auto Lock is also manufactured, known as the Standard model, which is adapted to cars of other makes than the Ford. This lock also meets the requirements of the Underwriters' Laboratories when fitted according to instructions.

Manufactured by the Fort Wayne Auto Specialty Co., Fort Wayne, Ind. Prices and literature on application.

"Syde-Gripper" Mud and Snow Hooks are designed to be used either with or without the regular tire chains. They occupy but little space in the tool kit and when wanted can be applied in a few moments time by anyone who can turn a thumb screw.

The device consists of two cross chains fastened at ends to two specially formed plates that fit snugly the walls of the tire, the plates being fastened to the rim by two bolts passing through a cross plate and fastened to the plate by means of thumb screws.

The manufacturer states that Syde-Gripper mud and snow hooks will prevent spinning of the drive wheels in deep mud, snow or sand and that the fact that a drive wheel naturally sinks into mud, snow or sand as the driver tries to get the car out, is a help instead of a hindrance to the action of the Syde-Gripper, as the projection at the center of the side plates has a tendency to get a firmer hold on the walls of the rut and assists to get the car out of the mud, snow or sand under its own power.

The Syde-Gripper mud and snow hook is made throughout of the best of material by workmen of long experience in the manufacture of tire chains.

Manufactured by the Bersted Manufacturing Co., 765-771 Mather Street, Chicago, Ill. Sold by all dealers, or may be purchased direct from factory. Price, $4.50 per pair, complete.

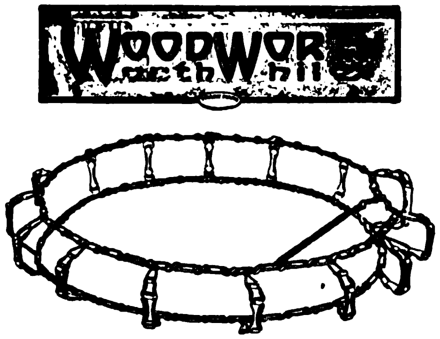
The Kent Starter Steel Ring Gears are designed as a replacement proposition for cars equipped with fly wheels having cast iron teeth. Engines on which the starter ring gear teeth have become broken can now be replaced with a new steel ring tooth gear by sending the balance wheel and starter ring gear to the factory. The new steel tooth gear can be fitted at slight cost to the owner.

Many cars are equipped with cast iron gears cast as part of the balance wheel, and often these gears have teeth that have been broken by the operators carrying the spark too far advanced when starting the engine with the electric starter. The steel bands, or ring gears, make it possible to replace these cast iron gears and give one that is much stronger than the original.

Manufactured by the Kent Auto Parts Co., 1743 Logan Street, Denver, Col. Prices and literature on request.

Woodworth Kant-Skid Tire Chains are of the side chain type but have the cross members designed especially for the purpose. They are made of steel stampings in such a manner as to present a smooth rounded surface to the tire and the sharp edges to the road thus causing, it is claimed, practically no wear on the rubber and taking the best possible hold on the road surface.

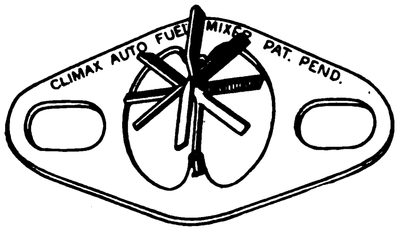
These cross members are so designed that they are small in the middle to avoid bumping on pavements but they take a stronger hold in mud or snow than chains of ordinary construction. On account of the Woodworth Kant-Skid chains causing practically no wear on the tire, it is stated, as well as on account of their great durability, it is claimed for them that they are much more economical to use, besides being dependable to take an excellent grip on any sort of road surface.



The same type of chains are made for solid tires, being called "Woodworth Truck Chains." These have the cross members made of half-oval steel so that they wear unusually long, cause no bumping, it is stated, and do not injure the tire.

Manufactured by the Woodworth Manufacturing Corporation, Niagara Falls, N.Y. Prices on request.

The Climax Automatic Fuel Mixer consists of a thin metal plate which is inserted between the flanges of the carburetor and the intake manifold, having cardboard gaskets placed above and below the metal disc to insure a tight joint when the flange bolts are tightened. The center of the metal disc is cut open the same size as the bore of the intake manifold and carburetor mixture flue, allowing the inrushing gas to the engine to pass. Above the opening and suspended from the sides is fitted the fuel mixer, which consists of metal arms fastened at the center to a cross member rigidly attached to the sides of the opening in the disc. The vanes of the fuel mixer are set at a slight angle to each other, causing, it is stated, the coarser portion of the mixture, or that which has not previously been vaporized, to be broken up into a minute spray as the gaseous mixture rushes by the vanes.



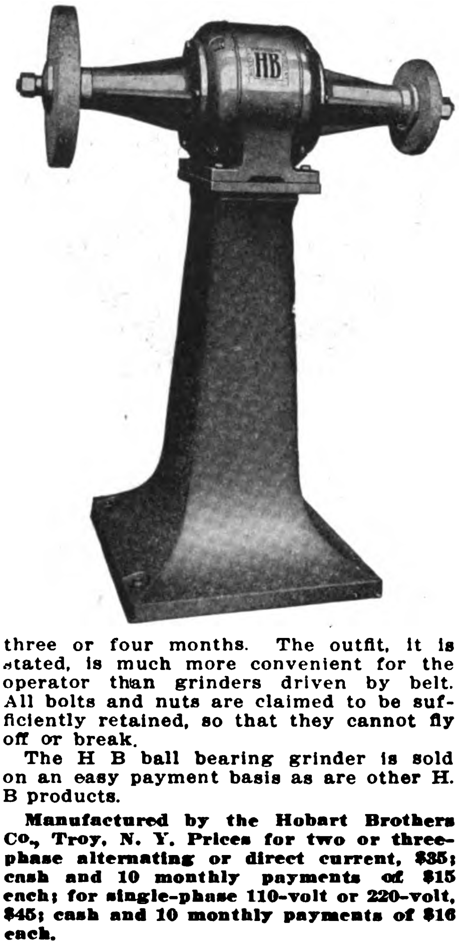
It is claimed by the manufacturer that higher mileage is obtained when the device is used, and that the engine develops more power and the tendency is also to keep the cylinders free from carbon. It is easily attached in a few minutes time by anyone familiar with the use of tools.

Satisfaction to users is guaranteed or money will be refunded. Distributor and jobbing trade solicited.

Manufactured by John B. Chnce, South Attleboro, Mass. Price, one inch and 1⅛ inch, $1; 1¼ inch, $1.50.

The H B Ball Bearing Motor Grinder is one of the newest time and labor saving machines manufactured especially for the grinding of castings, sharpening of tools, tire buffing and the thousand and one uses around the service station machine shop. The grinder is equipped with a two-horse-power quiet-proof ball-bearing electric motor and has ample power for all purposes around the shop.

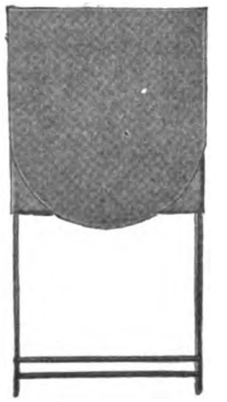
A buffing or wire brush wheel can be substituted for one of the grinder wheels. The machine is strongly constructed throughout to stand up under the heaviest kind of continuous work. The sturdy base and ball bearings insure freedom from vibration, and it requires only a minimum of power to operate. Bearings require lubrication only once in every three or four months. The outfit, it is stated, is much more convenient for the operator than grinders driven by belt. All bolts and nuts are claimed to be sufficiently retained, so that they cannot fly off or break.



The H B ball bearing grinder is sold on an easy payment basis as are other H. B products.

Manufactured by the Hobart Brothers Co., Troy, N. Y. Prices for two or three-phase alternating or direct current, $35; cash and 10 monthly payments of $15 each; for single-phase 110-volt or 220-volt, $45; cash and 10 monthly payments of $16 each.

The Handy-Pandy Folding Chair and Folding Table makes an ideal combination to have in the car when touring or on a vacation trip. The Handy-Pandy folding chair can be folded down out of the way when not in use, and when wanted for the carrying of two extra passengers is easily opened and placed in the tonneau of the car, allowing ample room between the passengers of the tonneau without crowding.

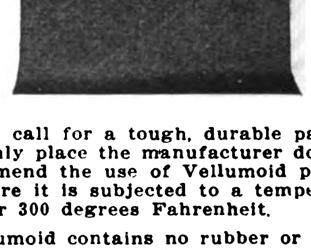


The chair is made entirely of metal, the back and seats of 20 gauge, the legs of ⅛ inch band iron and the braces of ⅜ inch rods. When set up the seat is 17 inches from the floor. When folded the chair occupies a space of 10½ inches by 21 inches by one inch, a convenient size for storing under the seat.

The folding table, not shown, is made of the same material, but has the top marked for a checker board, and can also be used for many other purposes when camping.

Manufactured by the Pandolfo Manufacturing Co., St. Cloud, Minn. Weight of chair, six pounds. Prices and literature on request.

Vellumoid Sheet Packing and Gaskets have as a base a very strong vegetable fiber, which is chemically treated, making it the manufacturer states, oil, water, gasoline, grease and air proof and exceedingly tough. Owing to these properties Vellumoid makes an exceptional gasket for use on all oil, grease, water and gasoline connections, and all places where the conditions call for a tough, durable packing. The only place the manufacturer does not recommend the use of Vellumoid packing is where it is subjected to a temperature of over 300 degrees Fahrenheit.



Vellumoid contains no rubber or rubber substitutes and no mineral matter. It is light in weight, very flexible and has high tensile strength. Because of its compressibility it makes a particularly tight joint and its toughness insures durability.

Manufactured by the Fiber Finishing Co., 67 Milk Street, Boston, Mass. Prices and literature on application.

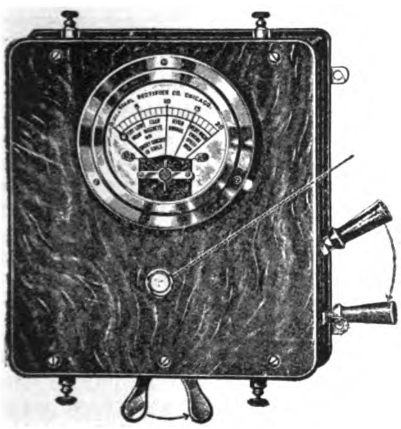
Aluminum Alloy Pistons, known by the trade name of Aluminite, are manufactured for replacement purposes and for fitting to new cars by the manufacturer. They are light, weighing about one-third as much as a cast iron piston of the same size, and offer many advantages not given by cast iron pistons.

It is stated, that the use of Aluminite pistons makes the engine develop more power, because less power is required to overcome the inertia of the engine and, being light, the thrust on the wrist pin, connecting rod and crankshaft bearings is greatly lessened, this meaning less bearing wear and longer life to the engine. By being equipped with such pistons it is claimed that higher speeds are attained without undue engine strain or vibration.

Aluminite pistons are easily fitted by the experienced mechanic to engines of modern make, the cost is not excessive and it is claimed, the advantages gained more than offset the additional cost.

Manufactured by the Green Engineering Co., Dayton, O. Prices and literature on request.

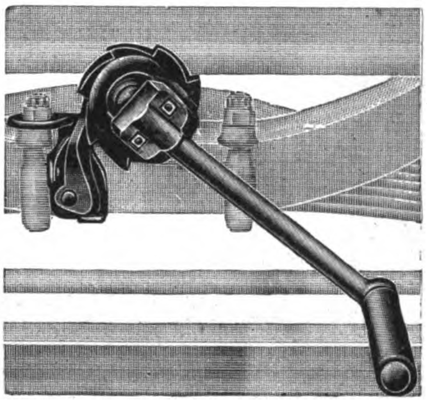
The MagFixer consists of a unique device for testing and locating troubles in the Ford magneto. It is especially applicable for service stations catering to Ford trade and is claimed to locate and remedy in a few minutes time troubles that would take hours to locate by any other method. The MagFixer consists of a neat wooden box to which is attached a meter, scaled into five sections, each scale indicating a certain condition of the magneto. A handle is located at the right and a second handle at the bottom. Two battery posts are placed at the bottom while the two posts at the top allow connection to be made to ground and the magneto when testing the magneto. A meter button is located conveniently below the meter on the front of the box.



In use, a battery is connected to the battery posts, the ground wire is connected to the frame of the car and the magneto post to the magneto plug on the engine. Pressing the button will show immediately, it is stated, whether or not the trouble is in the magneto, indicating the fact on the meter. This indication tells whether the defect is in the magneto or whether there are any short circuits in the coils. Further manipulation of the levers will, it is stated, remove the defect and, if the magneto is weak, recharge it to its full capacity.

Manufactured by the Stahl Rectifier Co., 7401-5 West Jackson Boulevard, Chicago, Ill. Price, $60. Further details and literature can be obtained from the manufacturer.

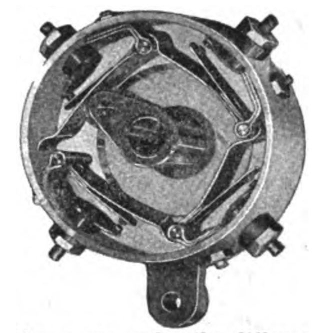
The Ford Non-Kick Cranking Device is an attachment that is fastened by one bolt to the top of the spring clamp, fitting around the starting shaft and consists of a pawl and ratchet device, which prevents the Ford engine from kicking back when cranking, if by chance the spark has been left in an advanced position, lessening, it is stated, the chance of a broken arm. The driving mechanism is clamped to the starting crank at the bend in the handle and the operation of the ratchet and pawl, it is claimed, does not interfere with the regular cranking of the engine. In case of a kick-back of the engine the starting clutch is automatically disengaged, allowing the handle to turn free from the engine.



The device, it is claimed, can be installed in five minutes time by any one handy with a wrench.

Manufactured by the Weldon Auto Specialty Co., 1104 Walnut Street, Kansas City, Mo. For prices and detailed information address Department C.

The K-L Timer for Ford Cars has been brought out for replacement purposes and is stated to be a decided improvement over the older style of Ford timer. The shell is made of metal while the wire terminal posts are insulated from it by large fiber washers. The working parts of the timer are radically different from other types in use, flat springs being employed to make and break the flow of current at the contact points. The springs are hinged at one end while the other is allowed to be free and, when not in use, rests upon the hinge of the spring next ahead. As the cam comes in contact with the spring the spring is raised, making contact at the points through a second and shorter spring riveted to the first.



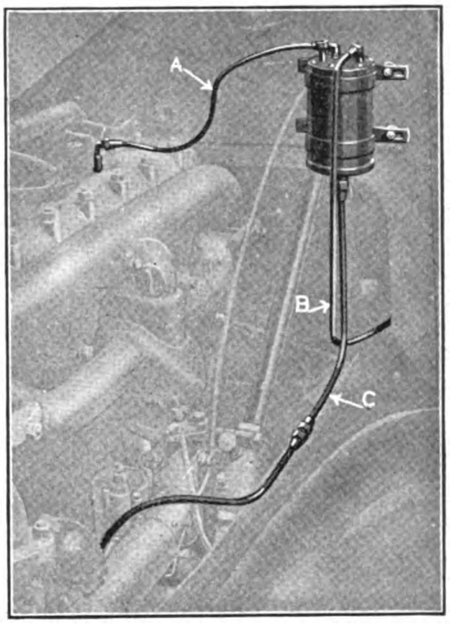
It is stated that wear is reduced to a minimum in the K-L timer and the manufacturer is willing to guarantee it for 20,000 miles. If the purchaser is not satisfied at the end of 15 days he may return the primer and receive his money back.

The contact points are of very large size and made of a special alloy, which is stated to be the equal of platinum in conductivity. The cam consists of a brass frame with fiber roller which has a ¼ inch bearing pressing the cushion spring support, making a soft positive contact. It is stated that after a test of 20,000 miles the timer did not show the slightest wear in any part and that the contact points in the coils and timer were not pitted.

Manufactured by the M-R Co., 122 North 14th Street, Lincoln, Neb. Price, $7. Distributors', salesmen's and dealers' propositions on application.

The New Sparton Fuel Feeder for Automobile Engines is a radical departure from the regular vacuum tank principle of fuel feed in common use. Instead of the vacuum created by the engine pistons being used to suck or draw gasoline from the main tank into the auxiliary tank, a spring-actuated pump is installed in the small tank which is located on the inner side of the dash, the pump being operated by the compression of the engine cylinders, through pipe A.

A shut-off valve is located in the compression line, which automatically closes the compression pipe from the engine, when the gasoline in the tank reaches a certain predetermined height, this being controlled by a float in the tank. As the gasoline feeds down through pipe C to the carburetor, the float drops in the tank, allowing the compresion pipe valve to open and the compression again operates the spring-actuated pump, pumping gasoline into the auxiliary tank from the main tank, through pipe B.



It is stated that this fuel feeder will give much better results than are obtained by any other methods, especially when the engine is laboring in mud, sand, or on a grade, and that the gasoline feed will also be more positive.

The device has been tested under very severe conditions by the engineers of the company in many ways and it is claimed has been found to be without a fault. It is simple in construction, easily installed, and is said to give a positive and unfailing feed under any and all conditions of road travel.

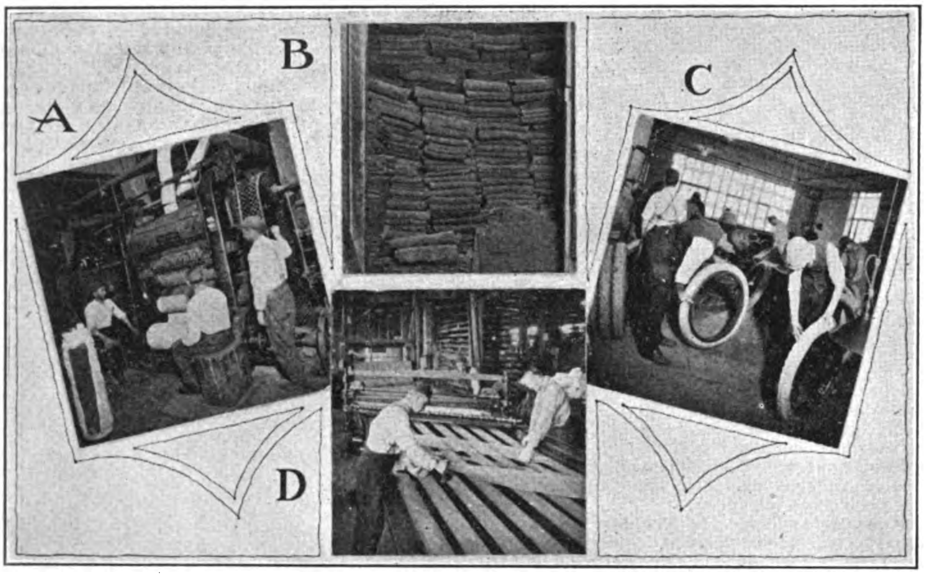
Manufactured by the Sparks-Withington Co., Jackson, Mich. Prices and literature on request.

Importance of Rubber in Automobile Industry

THE manufacture of rubber products which in 1919 became a $1,000,000,000 industry in the United States alone, is consuming crude rubber now at the rate of 350,000 tons annually. To meet this tremendous cumulative demand there has naturally been a great increase in the production of plantation rubber, as the supply of the wild product became entirely inadequate to meet the demand a number of years ago. The accompanying figures, compiled by the Firestone Tire & Rubber Co., Akron, O., show this increase during a period of 10 years:

INCREASE IN CRUDE RUBBER PRODUCTION.

Year	Plantation	Other Sources	Total Tons
1909......	3,600	62,000	69,600
1910......	8,200	62,300	70 500
1911......	14,419	60,730	75,149
1912......	28,518	70,410	98,928
1913......	47,618	60,822	108 440
1914......	71,380	49,000	120,380
1915......	107,867	50,835	158,702
1916......	152,650	48,948	201,598
1917......	213,070	52,628	265,698
1918......	255,950	40,629	296,579



Treatment of Crude Rubber at Morgan & Wright Factory of United States Tire Co., Detroit, Mich.: A, Calendar Machine; B, Rubber "Crepe" as It Comes from the Plantation; C, Final Inspection of Finished Product; D, Fabric Cutting Machine.

The importance of rubber as a factor in the automobile industry today is demonstrated by the fact that over 75 per cent. of the crude rubber produced goes into tire equipment for motor vehicles. The tire business of the country in 1914 amounted to $300,000,000, and in 1920 it is estimated that it will reach the astounding mark of $1,200,000,000.

Production of Tires Trebled in Five Years.

Although the production of tires in the United States has practically trebled in the last five years, the opportunity for much greater development is clear. There are 7,600,000 passenger cars and motor trucks in operation now, and official estimates of the industry place the production of the former, during the forthcoming 12 months, at between 300,000 and 350,000, and of the latter at 375,000 to 450,000, depending somewhat on the status of foreign credits.

The problem of the motor car manufacturer, up to the present time, has been largely one of production alone. The public is buying automobiles as fast as it can get them. There has been no forcing of sales and no stimulation of the appetite for cars has been necessary. The most conservative feel that this will be true up to the point of a production of 12,000,000 cars, allowing that six years is the average life of an automobile. Twelve million cars in use would mean 72,000,000 tires annually at the rate they are being used now, the present figures showing that an average of six tires a year is required by the car owner.

Magnitude of Tire Exports.

The magnitude of the tire industry, as allied with the automobile business, is also graphically shown in a statement of the foreign trade of the United States in automobiles and tires for 1919, prepared by the Division of Statistics of the United States Bureau of Foreign and Domestic Commerce.

The total exportation to all listed foreign countries was 67,145 passenger cars, valued at $73,700,527, and 15,586 commercial cars, valued at $35,425,437. Automobile parts were exported to the value of $42,562,186, while the value of tires exported was $23,924,659.

Sources of Crude Rubber.

A consideration of the sources of the supply of crude rubber therefore becomes of prime importance in this connection. Until recent years all the crude rubber came from the wild forests of rubber trees in Brazil, South Africa, the Philippines and other countries, but the demand for this material grew so fast that nature's supplies could not fill all wants, and the big rubber users of the United States and Europe decided they would have to grow their own supplies. Today practically every big manufacturer of rubber goods in this country maintains its own rubber plantation in Sumatra, Ceylon, India or other tropical country, and the bringing into bearing of the millions of planted rubber trees, raised under the most scientific conditions, will insure an adequate supply of rubber for all needs for all time to come.

U. S. Rubber Plantation in Sumatra.

An example of the size of the various plantations maintained by American companies can be obtained from the reports of the United States Rubber Co. The rubber plantations in Sumatra, Dutch East Indies, owned by this concern cover an area over six times as large as the island of Manhattan. The company owns a total of 93,759 acres, of which about half have been cleared and planted with over 5,000,000 rubber trees. Of these, 2,592,898 trees have reached the tapping stage and are now producing rubber, and new trees are reaching that stage constantly. In 1917 the United States Rubber Co. produced on its own plantations about 7,000,000 pounds of rubber, and this total will be doubled each year until the entire acreage is in bearing.

Goodyear Also Operates Plantations.

The Goodyear Tire & Rubber Co. likewise has a rubber plantation in Sumatra containing over 20,000 acres, and this area is being rapidly cleared and planted to rubber. And yet to show the tremendous demand for crude rubber on the part of tire manufacturers, the president of the Goodyear company in a report to the stockholders stated that even when all of the 20,000 acres which the company is planting to rubber trees have come into full production they will furnish less than one-fifth of the crude rubber requirements of this one company.

Firestone Activities in Singapore.

By the erection of a $1,000,000 plant in Singapore, Straits Settlements, which is now one of the principal centers of the crude rubber market of the world, the Firestone Tire & Rubber Co. expects to cut the cost of handling this product hundreds of thousands of dollars annually. This plant, now in the course of construction, will introduce into the Far East some of America's most modern machinery. The equipment will replace the labor of numerous coolies and much work on the part of the East's other famous burden bearer, the caribou. There will remain, however, the need of the productive efforts of 100,000 persons in meeting the company's requirements.

In addition to Americanizing the East's methods of handling crude rubber, the plant will cut costs perceptibly by cleaning the rubber at Singapore—a process of manufacture now carried on at Akron—and by compressing it for shipment. In this way freight charges will be decreased, since they are based in large part on the space occupied aboard ship.

The cleaning process, carried on by coolie-operated machines, will also effect a saving in that it will permit the rubber to go to the skilled hand of the mill operator immediately upon its arrival in Akron. The plant will effect a further saving by making it possible for the company to sidestep numerous middlemen, since it will place the company's organization in direct contact with the producers.

A city whose streets are heated by a tropical sun, and within whose walls there are 350,000 orientals and only a few white persons, might be supposed not to appeal very forcibly to the best type of American factory executives as a place of residence, yet the Firestone company has had no difficulty in obtaining capable men willing to undertake the direction of affairs at its plant which is being erected at Singapore, where these conditions exist.

S. G. Carkhuff, secretary of the company, who returned to the United States recently after six months spent in the Far East, has discovered what he thinks might be Singapore's peculiar attractiveness. It is a city, he says, without a servant problem. "A white man," said Mr. Carkhuff, "wants at least four servants if he is to abide by the decrees of the caste system which prevails in Singapore. He finds no difficulty, however, in obtaining them. In the aggregate he will spend no more than 40 American dollars each month for his cook, his water carrier, his butler and his gardener."

The plant at Singapore will be operated by a subsidiary company, the Firestone Tire & Rubber Co. (S. S.), Ltd., which was organized for the purpose.

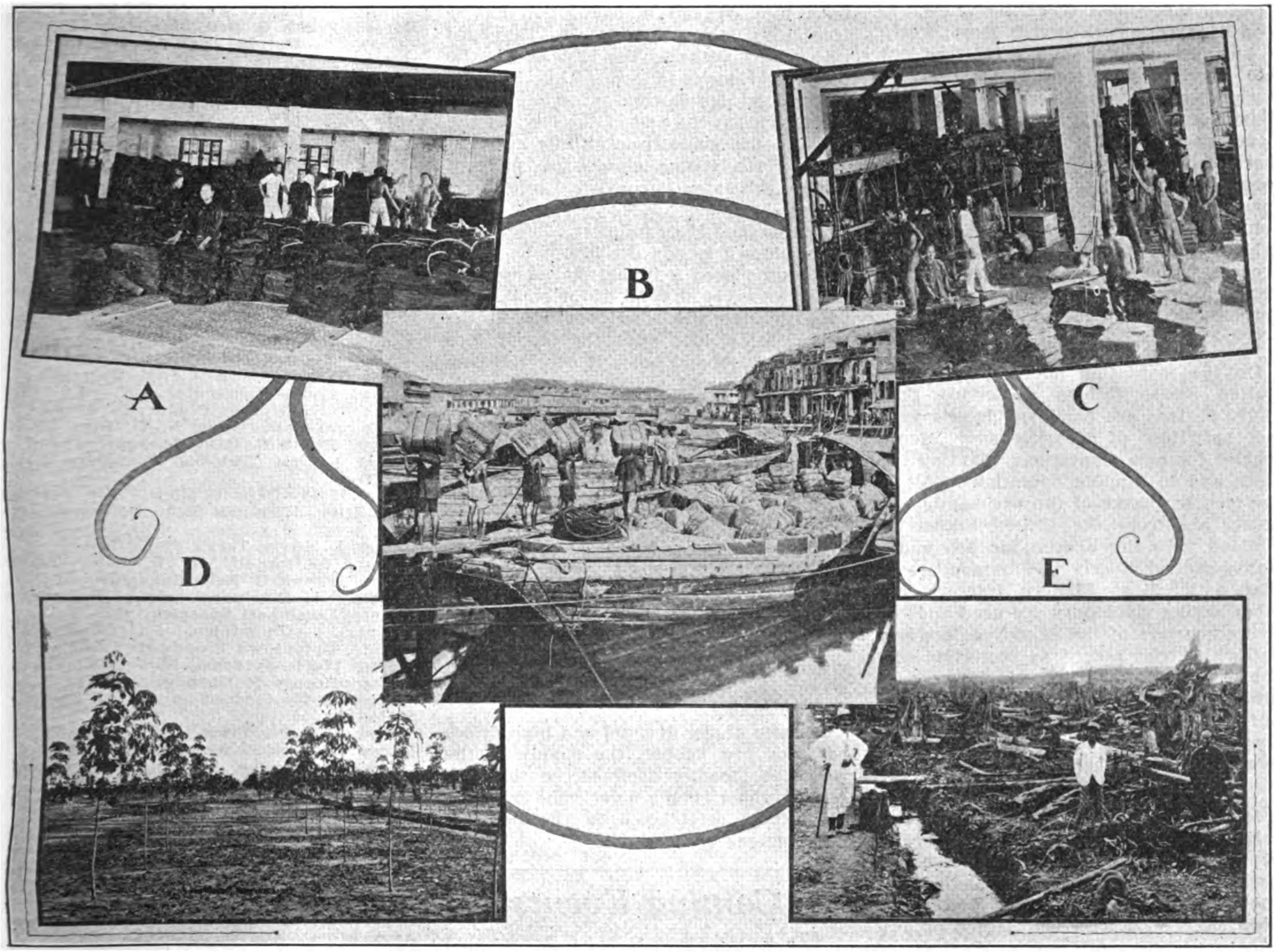
Although the commercial growing of rubber dates back for only a decade, the plantations now occupy about 2,000,000 acres, of which 1,000,000 are in the Malayan peninsula, 500,000 in the Dutch East Indies and the remainder distributed through Ceylon, India, Burma, Cochin China and Borneo, and a comparatively small acreage in the Philippines. The amount of capital invested in the rubber plantations of the Orient is estimated at approximately $300,000,000, chiefly British. Holland and the United States come next in the amount of money invested. In 1918 the total production of rubber from plantations was about 240,000 tons, as against about 50,000 tons of wild rubber from Brazil and other sources.

Methods of Production.

The methods of production used on the plantations are entirely different from those pursued in the wild forests of Brazil. On the plantations everything is done in the most scientific manner and trained experts are at the head of the various branches. The rubber trees are all grown in nurseries maintained on the plantations, and the seed used for this work is carefully selected from the most prolific producers. As the plantations are all located in the tropics, where intense heat and copious rain falls are encountered, the growth of the young trees is very rapid, and after the young seedlings are set out they attain a height of 10 feet or more the first year, and within four or five years are ready for tapping. If tapping operations are carefully done and the tree is not bled to death it will remain healthy and productive for many years, and on the plantations the tapping is done in such a manner that permanent injury to the tree is practically eliminated. On the Upper Amazon of Brazil there are trees over 100 years of age which still produce latex, as the sap of the rubber tree is designated, after being tapped for many years.

Tapping for Latex.

There are a number of ways in which the trees are tapped for their latex, but



Growing and Handling of Crude Rubber at Plantation: A, Receiving and Sorting at Firestone Plant in Singapore; B, Natives (Coolies) Carrying Rubber in Bales Weighing 200 to 250 Pounds Each to a Lighter or "Tong-Kong," a Few Blocks from Firestone Warehouse in Singapore; C, Packing Rubber for Shipment at the Singapore Firestone Plant; D, Rubber Trees, 15 Months Old, on Plantation of United States Rubber Co., Soengi Sikassim Estate, Sumatra; E, View Showing Character of Land Cleared for Rubber Plantation—Jungle Felled and Partly Cleared—Tonah Radja Estate of the United States Rubber Co. at Sumatra.

the prevailing practise on the larger plantations is to make a series of cuts the shape of a V on four sides of the tree, from the bottom up to as high as a man can reach, and a cup is then placed at the point of the V. A tapper is given a certain district in which to operate and he taps a certain number of trees each day, returning later to empty the cups. The latex gathered from these cups is taken to the treating plants, where the tree juices are mixed with lime juice and the mixture allowed to stand. Latex, as it comes from the tree, contains considerable water and the acid is added to separate the rubber from the water. It soon becomes a soft, spongy mass, which is kneaded, washed and dried and cut into small pieces and run through a washing machine with grooved rollers. This changes the "biscuits" into long, clean, crinkly crepe ribbons, which are thoroughly dried by hanging in a drying room. This is the way cultivated rubber comes into the markets today. Before being used for the manufacture of tires, rubber goods, etc., there are a number of processes, some of which are secret, designed for preparing the material for the purpose for which it is intended.

Many Natives Employed.

On the plantation maintained by the United States Rubber Co. more than 14,000 natives are employed in the various activities of clearing away dense jungles for new plantations, planting the trees and in tapping operations. All of the men in charge of the various departments are from the United States or Holland. As the plantations are under Dutch control, nearly all foremen are of that nationality. Modern tractors and labor saving machinery are used and the living quarters of the employees are laid out with strict regard to sanitation and conservation of health. A large hospital, with expert doctors and trained nurses is maintained, and everything possible done to keep the health of the men up to the highest standard.

Rubber Forests of Brazil.

In the vast reaches of the rubber forests of Brazil, nature has established a supply of wild rubber that would be almost inexhaustible if rightly handled, but rubber production in Brazil has never been carried on with any degree of uniformity and the most wanton methods of destruction have been practised in the attempt to secure wild rubber. It is a case of killing the goose to get the golden egg, for in many instances great trees have been chopped down in order that the native gatherers might obtain the small amount of latex which would thus exude from the trunk.

The rubber forests of Brazil are virtually dense jungles, with no means of transportation save water. The rain fall is excessive and streams abound everywhere, which are used as highways for the rubber hunters. Along the principal streams the exporting rubber agents maintain headquarters, and here the native gatherers bring their boat loads of rubber "biscuits" for grading and payment. The system of barter in vogue there is more or less a partnership arrangement. The rubber dealer advances the tapper such food and supplies as he requires, payment for which is made in crude rubber. After deducting the advances so made the remainder is divided between the tapper and dealer on a percentage basis.

How the Wild Rubber Gatherer Operates.

The wild rubber tapper usually lives alone in his particular district which is protected from outside tappers by the rubber company operating in that vicinity. At daylight the tapper sets out on his rounds, carrying a supply of tiny cups, made of tin or similar substance. He taps the trees and inserts these cups until they are all in use, when he retraces his steps and empties the cups which have gathered the juices from the trees previously tapped. This juice is emptied into an earthen jar, made by the tapper, and at the end of the day, by the aid of a fire made from an oily nut that sends forth strong clouds of pungent smoke, this latex is converted into crude rubber.

The method is as follows: The tapper seats himself beside the fire, over which has been placed a funnel-shaped earthen jar so arranged that all of the smoke will pass through the small opening at the top. With a long stick the tapper dips into the latex and holds it over the pungent smoke until a thin layer of crude rubber is formed. This is repeated until a large ball of solid rubber has been produced, after which it is cut loose from the stick and the operation repeated. These balls or "biscuits" are kept until the next market day, when they are graded and paid for by the broker or agent. So expert have these Brazilian rubber dealers become in judging rubber that they can grade rubber by merely handling and observing it, and so accurate are they that it is seldom that the grades established by them are changed when the product finally reaches the United States.

In spite of the demand and high prices paid for raw rubber, the supply of the wild has steadily declined, so that the future rubber supply must come from the plantations established in the hot and wet portions of the earth.

Coming Events

June 18-19—Bushkill Falls, Pa., Annual Outing, Automobile Accessories Business Association of Philadelphia.

June 19—Ogdensburg, N. Y., Dirt Track Races. Fred G. Bell, Manager.

June 21—Paris, France, Organization of International Chamber of Commerce.

June 21-25—Ottawa Beach, Mich., Summer Meeting, Society Automotive Engineers.

June 21-26—Milwaukee, Wis., Wisconsin Truck Tour, Milwaukee Sentinel.

June 22-25—Asbury Park, N. J., Annual Meeting, American Society for Testing Materials.

June 24-25—Isle of Palms, S. C., Semi-Annual Meeting, South Carolina Automotive Trades Association.

June 26-July 25—Antwerp, Belgium, Commercial Vehicles, Tractor and Truck Show.

June 27-July 6—Helsingfors, Finland, Finnish Fair.

July—Lake Huron Tour.

July 4—Hanford, Cal., Dirt Track Events, Hanford Board of Trade.

July 4—Spokane, Wash., Dirt Track Events.

July 5—Batavia, N. Y., Dirt Track Events. Frank G. Bell, Manager.

July 5—Tacoma, Wash., Tacoma Speedway events.

July 9-20—London, England, International Aircraft Exhibition, Society of British Aircraft Construction, Olympia.

July 14-29—Annual Tour, Michigan Pikes Association in Ontario and Michigan.

July 17—Warren, Pa., Dirt Track Races. Frank G. Bell, Manager.

July 17-25—Prague, Czechoslovakia, 12th Annual Automobile Exposition, Czechoslovak Automobile Club of Prague, Industrial Palace, Prague Exposition Grounds.

July 17-18—Inter-Club Run, Chicago Automobile Club.

July 24—Watertown, N. Y., Dirt Track Races. Frank G. Bell, Manager.

July 31—Fulton, N. Y., Dirt Track Races. Frank G. Bell, Manager.

August—Paris, France, Grand Prix Race, Sporting Commission, Automobile Club of France.

Aug. 7—Erie, Pa., Dirt Track Races. Frank G. Bell, Manager.

Aug. 7-Sept. 15—Antwerp, Belgium, Show of Motorcycles, Side Cars, etc.

Aug. 14—Buffalo, N. Y., Dirt Track Races. Frank G. Bell, Manager.

Aug. 15-22—Danzig, Germany, Second Danzig Fair.

Aug. 20-21—Middletown, N. Y., Dirt Track Races. Horace P. Murphy, Manager.

Aug. 21—Elgin, Ill., Road Race, Chicago Automobile Club.

Aug. 21—Johnstown City, Pa., Dirt Track Races. Frank G. Bell, Manager.

Aug. 27-28—Flemington, N. J., Dirt Track Races. Horace P. Murphy, Manager.

Aug. 28—Canadaigua, N. Y., Dirt Track Races. Frank G. Bell, Manager.

Sept. 1—New York-San Francisco Glidden Tour.

Sept. 3-12—Detroit, Mich., 71st Annual Exposition, Michigan State Fair Association.

Sept. 5—Sicily, Targa Florio Race.

Sept. 6—Hornell, N. Y., Dirt Track Races. Frank G. Bell, Manager.

Sept. 6—Cincinnati, O., Speedway Events, Cincinnati Speedway Co.

Sept. 6—Uniontown, Pa., Speedway Events, Uniontown Speedway Association.

Sept. 17-18—Syracuse, N. Y., Dirt Track Races. Horace P. Murphy, Manager.

Sept. 19-25—Springfield, Mass., Eastern States Exposition.

Sept. 25—Allentown, Pa., Dirt Track Races. Horace P. Murphy, Manager.

October—London, England, Commercial Vehicle Exposition, Olympia.

Oct. 1-2—Trenton, N. J., Dirt Track Races. Horace P. Murphy, Manager.

Oct. 6-8—Northampton, Mass., Annual Automobile Show, H. F. & H. Agricultural Society, Three County Fair Grounds. A. J. Morse, secretary.

Oct. 6-7—Gulfport, Miss., Meeting Louisiana-Missisippi Automotive Trade Association.

Oct. 6-16—New York, N. Y., Electrical Show, Grand Central Palace. George F. Parker, manager.

Oct. 8-9—Danbury, Conn., Dirt Track Races. Horace P. Murphy, Manager.

Oct. 20-22—Atlantic City, N. J., Convention National Implement & Vehicle Association. E. W. McCollough, Secretary, 72 West Adams Street, Chicago, Ill.

November—London, England, Passenger Car Show, Olympia.

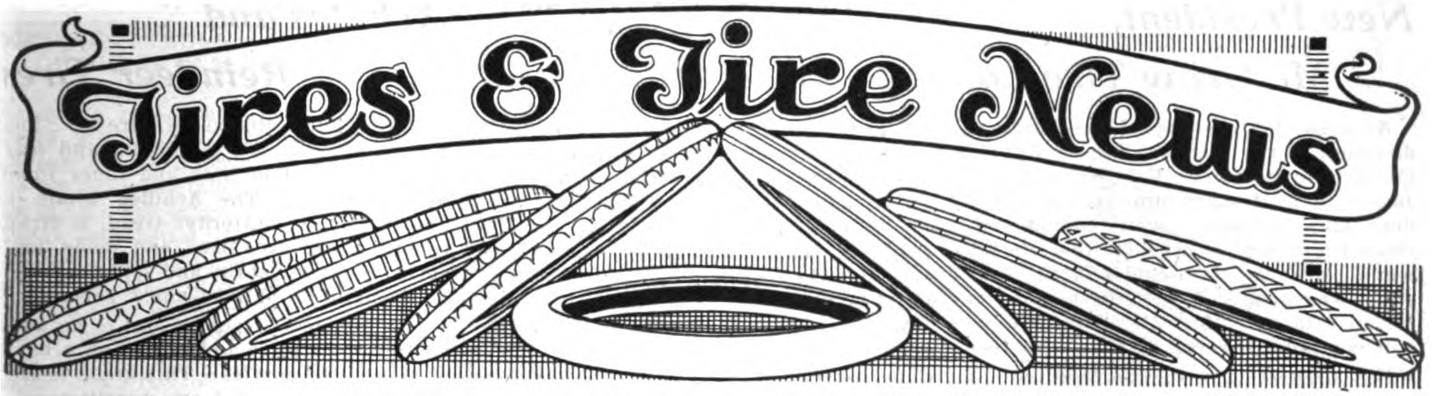
November—New York, N. Y., Annual Meeting American Road Builders' Association. E. L. Powers, Secretary, 150 Nassau Street, New York.

November-December—Buenos Aires, Argentina, National Exposition of American Manufacturers.

Nov. 1-16—Jersey City, N. J., Annual Automobile Show, Hudson County Automobile Dealers' Association, Fourth Regiment Armory.

Dec. 10-18—New York, N. Y., Motor Boat Show, Grand Central Palace.

January, 1921—Little Rock, Ark., Annual Meeting, Arkansas Good Roads & Drainage Association. Robert O. Schaefer, Secretary, Masonic Temple, Little Rock.



Climax Rubber Co.'s Activities

IN A QUIET WAY, but none the less effectively, the preliminary work is being accomplished for what promises to become one of the largest factories in Columbus, O., the plant of the Climax Rubber Co. Ground has been purchased, plans are being drawn and estimates made on the first unit which will be located along the tracks of the Hocking Valley railroad on West Goodale street, in which will be manufactured the Climax compression tube, patents for which have been granted after a series of most rigorous tests. Its construction embodies a new principle that is claimed to give more service and better satisfaction, as all punctures are self-sealed.

These buildings in Columbus will be the second unit operated by the Climax Co. as the initial plant at Huntington, W. Va., is turning out tubes to full capacity. Distributing companies are being organized in each state and it is expected that the full output of several thousand compression inner tubes a day will be reached in October. Columbus is the home office of the company.

In regard to the compression tube itself: It is so molded that about 700 small pockets, more or less, depending on the size of the tube, hemispherical in shape and about three-quarters of an inch in diameter, protrude inwardly. When the tube is inserted in the casing it fits snugly before being inflated. Then, as the air is introduced, these pockets are pushed out against the casing, causing a compression in the walls of the tube. When fully inflated the pockets cease to exist, the tube becoming circular in cross section and similar to the ordinary expanded tube but very different in this respect, that the Climax tube is made thicker because of the excess rubber being forced into the walls of the tube and is also under compression.

This results in a good, springy pneumatic inner tube, so built that, although punctured, no air escapes, this being accomplished by the closing up of any hole made in the tube by the excess rubber introduced into the sides, about 33 per cent. The sides of the puncture are being constantly forced together by the resiliency of this excess rubber.

In other words, there is a big wad of lively rubber compressed in all directions. On one side is the inner wall of the casing; acting opposite to this is the air pressure in the tube; at right angles to these forces we have the other forces acting in all directions in the wall of the tube and each pushing against a corresponding opposite force. These latter forces, as explained above, are caused by the compression of all the excess lively rubber into a smaller space than it ordinarily occupies. It is the fighting against this compression that forces shut and keeps sealed any puncture that is made in the tube. The greater the air pressure the better the tube functions, which is exactly the opposite to the workings of the expanded tube, which leaks faster when highly inflated than when not.

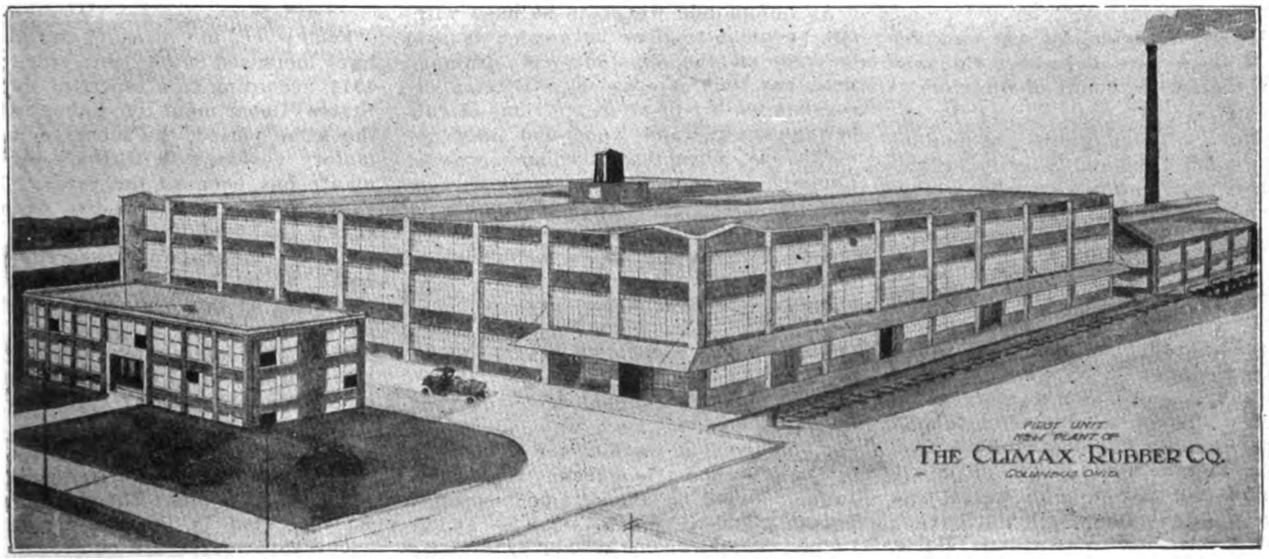
The pockets are compressed, or disappear, at about 30 pounds, so it is not necessary to carry a high pressure to insure proper functioning. If under the normal pressure in the tube air cannot escape when a puncture takes place and cause a blow-out by a rapid out-rush of air at high pressure, one cause for blowouts is eliminated.

TEN STANDARD TIRE SIZES TO BE RETAINED.

Progress is being made in standardization of tire sizes in conformity with the plan proposed by the Rubber Association of America. Before the war the idea of discontinuing the manufacture of tires of odd sizes met with approval from manufacturers.

At the conclusion of the war tire manufacturers, rim makers and car builders continued to cooperate with a view to reducing the number of sizes to the smallest possible number compatible with adequate service. Owners of cars using tires of unusual size will be able to get tires for their cars as long as the cars last, but no new cars will be made calling for any except the standard sizes.

The standard sizes for passenger car pneumatic tires will be 30 by 3½ and 31 by four-inch clincher and the following straight sides: 32 by 3½, 32 by 4, 33 by 4, 32 by 4½, 33 by 4½, 34 by 4½, 33 by 5 and 35 by 5 inches.



New President, Mc Graw Tire Co.

At a special meeting of the board of directors of the McGraw Tire & Rubber Co., held at its offices, East Palestine, O., June 5, John Morgan, formerly vice president and treasurer, was unanimously elected president, succeeding the late Edwin C. McGraw, the founder of the company, who died at his southern home in Miami, Fla., on May 24. Mr. Morgan will continue to serve as treasurer also.

His association with the McGraw Co. extends over the past 10 years, practically from the inception of the company. Throughout this decade he has taken an active part in the direction of the company's policies, having been elected to the office of treasurer in 1912 and the following year was made a vice president in addition. He was born in London, England, in 1880, and came to America in 1905 to introduce the Kempshall, a high grade European tire. He is one of the directors of the Rubber Association of America.

John Morgan, Recently Elected President of the McGraw Tire & Rubber Co., East Palestine, O.

Charles H. Wheeler, factory manager of the McGraw Tire & Rubber Co., was also elected to the board of directors.

The McGraw Co. specializes in the manufacture of high grade pneumatics, and solid truck tires and inner tubes, and maintains distributing branches in a large number of cities throughout the country.

GOODYEAR OPERATES LAUNDRY.

The feeding of 10,000 people daily in four large cafeterias, as well as caring for the sick among 35,000 factory workers makes a lot of soiled linen. In fact it means so much laundry work that the Goodyear Tire & Rubber Co., Akron, O., has announced that it is to install and operate its own laundry. It will have a force of 25 working in two daily shifts.

GOODRICH TIRE REPAIR SCHOOL TEACHES ECONOMY.

The conservation of material is the keynote of instruction in the tire repair school of the B. F. Goodrich Rubber Co. at Akron, O. Practices formerly common in tire repairing are no longer tolerated in the Goodrich school. The student is shown how to cut fabric without waste, to use gum economically and to observe the principle that shiftless methods never lead to profit.

Many of the means of saving taught might be considered of litle importance when considered separately; taken in the aggregate, however, their real worth becomes apparent. The average saving in retreading a tire is stated to be $1.

No examination is required for admission to this school, and when a student enters he is shown each process in the construction of a tire. In the class room he learns the theory and in the factory he becomes familiar, at first hand, with the actual processes. Each step in tire repair is carefully explained and at the work bench he has a chance to become skilled in the work. When he is graduated he is qualified to take a tire damaged in any way whatsoever and to quickly render it ready for duty again.

Classes in the Goodrich school will start July 19, Aug. 16, Sept. 13, Oct. 11, Nov. 8 and Dec. 1.

KENYON CO. TO MAKE CORD TIRES.

The C. Kenyon Co., Brooklyn, N. Y., which operates one of the largest fabric rubberizing plants in the country, is soon to start the manufacture of Kenyon cord tires. This concern has been engaged in the rubber industry since 1857, the product now ranging from rain coats to large rubber blankets used in off-set printing plants, and has included the manufacturing of cord fabrics for other tire manufacturers.

Two big plants are operated on Pacific street and the Bay Ridge water front, Brooklyn, employing nearly 3000 operatives.

TIRELESS WHEEL INVENTED BY BELGIAN.

An automobile wheel, to be used without pneumantic tires but which is said to have all the elasticity of ordinary tires, has been patented by a Belgian. It consists mainly of alternate rings of rubber, aluminum and wood and does not weigh any more than ordinary wheels. The new wheel is reported to be guaranteed to last 3½ years, only the outer band of rubber needing replacement. A factory is to be established in Belgium to turn out these wheels adapted to seven different makes of motor cars.

RUBBER CO.'S SUMMER COTTAGE.

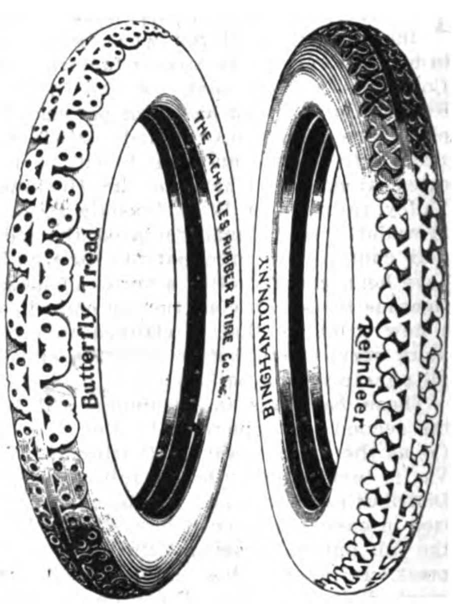
In an endeavor to help solve the vacation problems of the young ladies who are employed in their offices, the Pennsylvania Rubber Co., Jeannette, Pa., on June 1, leased for the summer season, a beautiful and commodious cottage at Put-In-Bay, O., and turned it over to the girls.

Achilles and Reindeer Tires

The Achilles Rubber & Tire Co., Inc., Binghamton, N. Y., is making and marketing automobile tires and inner tubes of high grade. The Achilles grade is known as the "Butterfly" tread, is strictly high-class, over-sized and made with an extra ply of fabric, and sold on an adjustment basis of 7000 miles' service.

The Reindeer is guaranteed to be good value for the price and is sold on a basis of 3500 miles' service. This grade is also made in brands for large distributors.

The Achilles Co. is also engaged in perfecting a new cord tire which will be ready for sale in the fall. Many improvements on and additions to the Achilles plant have been made during the past few months, and the company is planning to erect a large building with a capacity of 2000 tires a day.


THE ACHILLES RUBBER & TIRE Co. INC.
Butterfly Tread
BINGHAMTON, N.Y.
Reindeer

H. J. Smith, president, and A. W. Caney, vice president of the Achilles Co., have each had over 20 years' experience in this line of business.

WAGES AND THE COST OF LIVING.

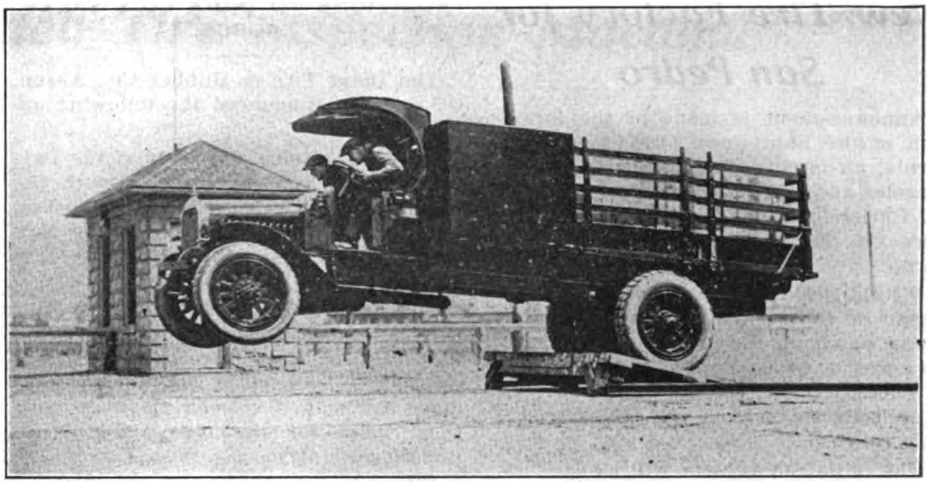
Food prices in Cleveland and Akron, O., have increased 90 per cent. since August, 1914, according to a report of the United States Department of Labor while, in the same period, the increase in hourly factory earnings in Akron's big rubber plants has been at the rate of 119 per cent. In July, 1919, the two were nearly equal, the food increase being 81 per cent. and the wage increase stood 82 per cent. Since then, however, wages have increased 37 per cent. while food prices have gone up only 17 per cent.

It is also interesting to note that the retail prices of tires during this time have only advanced 41 per cent.

The B. F. Goodrich Rubber Co. has established its Boston warehouse in the old Park riding school. The sale of tires has so increased in that section that previous storehouses are outgrown.

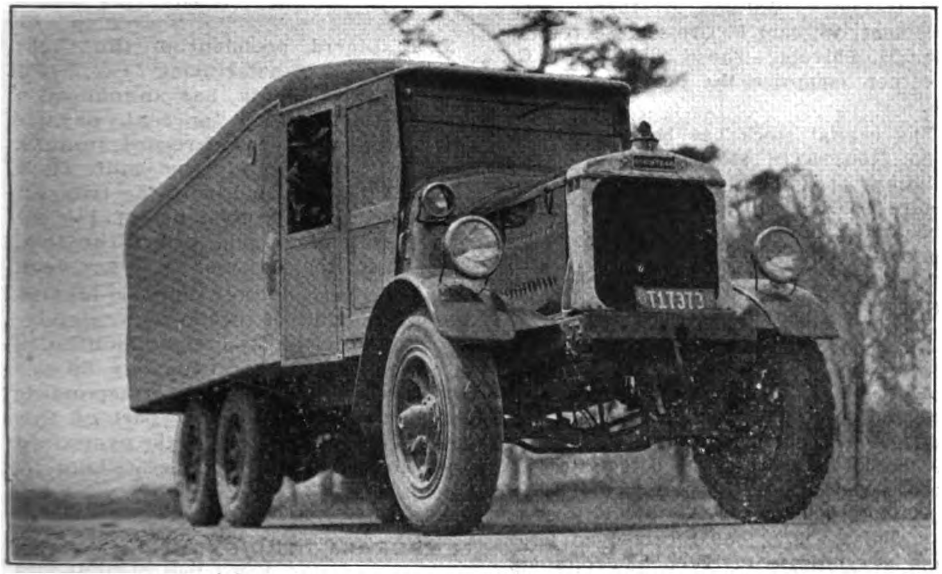
GOODYEAR TURNS OUT 800,000 TUBES IN 30 DAYS.

A world's record was probably made recently in the tube department of the Goodyear Tire & Rubber Co., Akron, O., when 800,000 inner tubes were turned out in 30 days. The magnitude of this production can better be comprehended when it is stated that the amount of air necessary to inflate this one month's output would keep a man alive for 12 years and nine months. Pursuing these calculations further, it is estimated that the 2,000,000 cubic feet of air required to inflate these standard 34 by four-inch tubes to a pressure of 45 pounds, would keep 4711 men alive for one day, with enough surplus to supply the 4712th man for 18 hours, 21 minutes and 12 seconds. These figures are based on the statement of Professor Fisher the eminent British medical authority that the average man consumes 425 cubic feet of air in 24 hours.



One of the Tests Made by the United States Tire Co., at Its Revere Plant at Providence, R. I., the Truck Making a Jump from an Incline to Register Photographically the Degree of Tire Deflection Upon Impact After the Flight Through Space.

Factory experts also figure that if the 800,000 tubes, averaging nine feet in length, were straightened out so as to form one continuous line, the month's production would reach 1300 miles. The company's 1919 production of 5,000,000 tubes would extend 9000 miles if placed end to end.



Goodyear Experimental Four-Rear-Wheel Driven Truck, Now Being Tested in Fast, Long Hauls Between Akron, O., and Boston.

BRITISH RUBBER IMPORTS.

During the period including the first three months of 1920, British imports of crude rubber totaled 59,464,200 pounds valued at $35,471,033, against 49,924,500 pounds in the corresponding period in 1919, valued at $34,172,753, and 41,481,300 pounds, of the value of $34,172,208, in 1913. The chief countries from which this crude rubber was received this year were the Federated Malay States, 17,482,700 pounds; Straits Settlements, 14,159,500 pounds, and Ceylon, 12,963,100 pounds; each of which showed a large increase over the March quarter of 1913, whereas Brazil imports fell from 12,765,200 pounds in the first quarter of 1913 to 4,441,900 pounds for that period the current year.

Re-exports of crude rubber from the United Kingdom in the March quarter, 1913, aggregated 24,238,300 pounds, and were less than one-half those in the corresponding months this year, 50,302,900 pounds; while the values were $21,872,440 and $31,039,082 respectively. Re-exports to the United States this year have aggregated more than the entire re-exports in the first three months of 1913; and are nearly four times the amount sent to this country in the pre-war year, the United States taking 8,416,900 pounds, valued at $7,610,233 in the March quarter of 1913 and 32,497,300 pounds, valued at $420,286,609 this year.

The wholesale market value of crude rubber in London on April 16, 1920, ranged from 54 to 55 cents a pound, after having risen earlier in the year to about 70 cents. The low price quoted is, however, 13 cents above the lowest quotation touched in 1919.

A CLIMAX TUBE ISSUE.

The May number of Auto News, the official organ of the Columbus, O., Automobile club, is largely devoted to the activities of the Climax Rubber Co., 21 West Gay street, that city, which is beginning the manufacture on a large scale of the Climax compression inner tube.

THE
FEDERAL
UBBER
O.
FEDERAL
TIRES
No 10

A Federal Truck Chassis Equipped with Pneumatic Tires Now Being Used by the Federal Rubber Co., Cudahy, Wis., for Testing Economic Value of This Type of Tires.

New Tire Factory for San Pedro

Announcement is made of the formation of the Fabri-Cord Tire Co. of California, an organization composed of Los Angeles and San Pedro business men. J. H. Christian, founder of the Perfection Tire Co., is president of the new concern.

Within the next 30 days work is to be begun on the first unit of the company's plant which, in its entirety, will occupy 30 acres of ground on 17th street, west of Pacific avenue, where it will be served by a spur track from the Southern Pacific railroad.

The initial investment will be $460,000. Of this amount the land represents $180,000, the building $80,000 and the equipment $200,000.

From 400 to 600 men will be employed. The output from the first unit will be 500 tires and 1500 inner tubes daily. The total working force when the plant is complete will be from 1500 to 1700 men.

GOODRICH SUMMER RESORT AND ATHLETIC FIELD.

The B. F. Goodrich Rubber Co. has provided a summer resort and athletic field for its 28,000 Akron, O., employees. This is situated at Rex lake, 10 miles from Akron, and consists of 40 acres of wooded land, and is made available for week end parties, outings and picnics by the fact that the company provides transportation for all such events.

The Goodrich Co. also recently purchased another tract of land located in the city and also on the shores of a small body of water. This park, when completed, will have two baseball diamonds, tennis courts, soccer field, a rifle range, a bathing beach, a canoe boat house and pier, a children's play ground and a stadium.

McCLAREN RUBBER DISTRIBUTION.

The McClaren Tire Co. of Dallas, Tex., has been appointed distributor of the products of the McClaren Rubber Co., Charlotte, N. C., in Texas. R. B. Sticher, vice president of the Security National Bank of Dallas is president of the new Dallas tire distributing company, and associated with him, as directors, are R. E. L. Saner, John Saner and D. E. Wagoner, president of the Security National bank. H. F. Miller, vice president and general manager, was formerly manager of the Racine Tire & Rubber Co.'s branches both at Chicago and Los Angeles.

RAMBLER TIRE LEASE IN NEWARK.

A 10-year lease on the building at 156 Central avenue, Newark, N. J., has been taken by the Rambler Tire & Rubber Co., a Delaware corporation, with its principal offices at 10 West 23rd street, New York. It will make alterations on the building and will occupy the first floor as a sales room. This will be the 50th branch operated by the Rambler Co.

ADDITIONS TO INDIA CO.'S SALES FORCE.

The India Tire & Rubber Co., Akron, O., recently announced the following appointments:

W. W. Alexander, formerly of the Dayton Tire Co., and still earlier with the Diamond Rubber Co., has been named as direct factory representative in the New England territory with headquarters in Boston.

To Blakey & Hall, Pittsburgh, Pa., has been assigned the India distribution in that city and adjacent territory.

Frank G. Schenuit, a well known Baltimore tire man, has been given distribution rights for that city and the surrounding country.

NEW OFFICERS FOR PREMIER RUBBER CO.

The stockholders of the Premier Rubber & Insulation Co., Dayton, O., have elected the following officers: President and treasurer, William Grethers; vice president, William F. Greiser; secretary, John H. Shively. These, with Harry G. Grestner, comprise the board of directors.

The capital stock has been increased from $150,000 to $250,000. Two large buildings at Edmund street and the Baltimore & Ohio railroad are being occupied and a day and night shift is being worked.

OFFER TO TULSA CO. FOR FRENCH RIGHTS.

A. J. Liebman, president of the Compression Tube & Tire Corporation, New York City, distributor of this product in the East, states that the Tulsa Rubber Co., which recently constructed a $1,000,000 factory on the Sand Springs line, Tulsa, Okla., has received an offer from a syndicate of French capitalists for the patent rights to manufacture United States compression inner tubes in France.

BOSTON GILLETTE FACTORY BRANCH.

The Gillette Rubber Co., New York City, has established a branch in Boston to take over the distribution of Gillette tires, in charge of Frank C. Stetson, as New England district manager. Mr. Stetson began his career in the tire industry 18 years ago and has been identified with several prominent companies as a sales man and executive.

PACKARD TIRE STORES MOVE.

The Packard Tire Stores Co., Milwaukee, Wis., has moved into larger quarters at 408 Jefferson street, formerly the headquarters of the Western Motor Supply Co. The Packard Co. distributes McClaren tires, made by the McClaren Rubber Co., Charlotte, N. C., and now has 400 exclusive dealers in Wisconsin and northern Michigan.

Importation of Rubber into France

The French director of customs has recently published the figures on the importations of crude rubber into France. The total imports for 1919 were 32,455 metric tons against 19,927 tons in 1918. The countries contributing to the total, by tons, were: Brazil, 3235; England, 12,638; French Congo, 516; Senegal, 321; West Africa, 1006; East Indies, 8294; and other countries, 6442 tons.

The value of the importations in 1919 is given as $41,713,090, against $11,920,554 in 1918. Importations of 11,772 metric tons of manufactures of rubber, comprising tires, tubes, shoes, clothing, bandages, tubing, etc., valued at $42,678,862, are reported. American manufacturers furnished a large quantity of this merchandise.

GLOBE TIRE'S 10 PER CENT. STOCK DIVIDEND.

J. B. Linerd, president of the Globe Rubber Tire Manufacturing Co., 1851 Broadway, New York, has announced a stock dividend of 10 per cent. payable July 1 to stockholders of record June 30. This is the second 10 per cent. stock dividend this year and, with the two regular quarterly cash dividends of 1½ per cent. each, already paid, brings the total dividend for the half year to 23 per cent.

The business of the company for the first five months of the present calendar year, and for the first eight months of the sales year, is approximately 60 per cent. over that of the corresponding periods last year. A large part of this increased demand is due to the over-sized cord tire brought out two years ago by the Globe Co.

TEMPORARY INJUNCTION ALLOWED.

It is stated that the McElrath Tire & Rubber Co., which was recently formed at Ravenna, O., has been allowed a temporary injunction restraining the McElrath Building Co., also of Ravenna, from using the word "McElrath" in connection with its business.

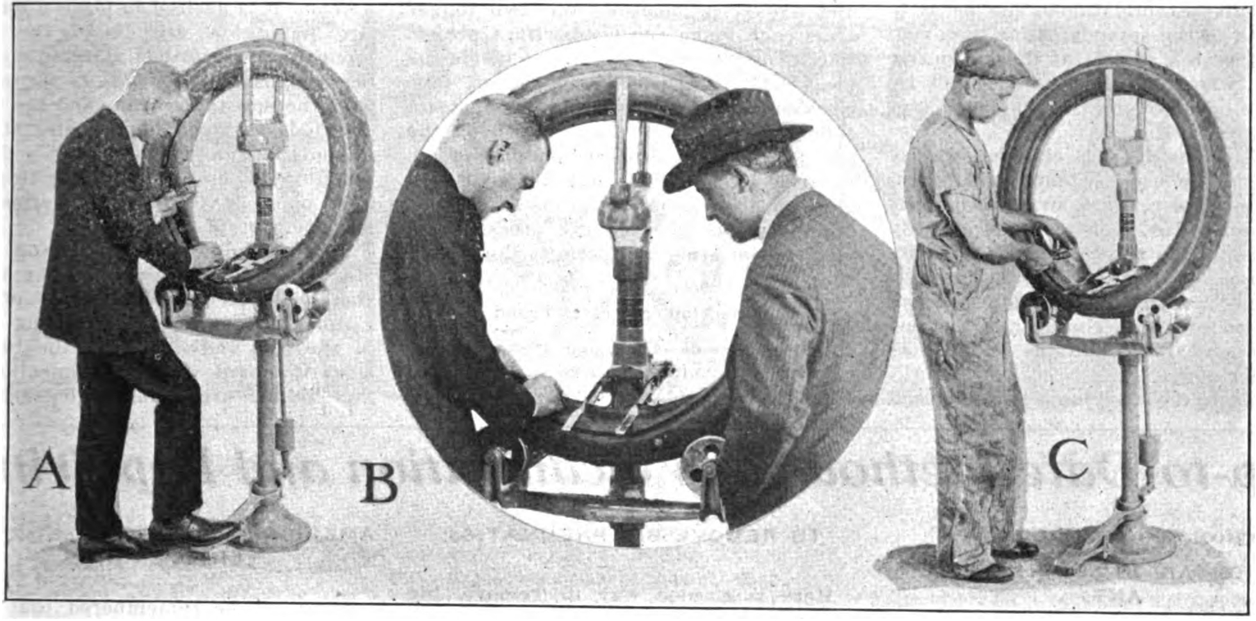
In its application for injunction the plaintiff alleged that there is no person by the name of McElrath connected with the defendant company and that the adoption of the name was "an artifice calculated to produce and to perpetuate a fraud both upon the public and plaintiff." The petition was sworn to by Milo E. Evans, secretary of the plaintiff company.

The McElrath Tire & Rubber Co. is erecting a large factory in Ravenna, and it is expected that production of the McElrath tire will be under way shortly.

MASON SALES INCREASE.

Sales of the Mason Tire & Rubber Co. for the quarter ending April 30, totaled $2,140,812, an increase of over 100 per cent. over the same period last year.

The Ramsdell Tire Inspection Machine



Using Ramsdell Tire Inspection Machine: A, Fitting Inner Tube; B, Examining Inside of Tire for Stone Bruises, Etc.; C, Fitting Inside Patch.

A TIRE inspecting machine has recently been placed on the market by the Ramsdell Brothers Manufacturing Co., 5700 Walworth avenue, Cleveland, O., after exhaustive tests, which is stated to fill a long felt want in tire branches where it is necessary to inspect casings to show the customer the defects in his tires, when asking for an adjustment, and pointing out conclusively whether or not they are of such nature as to warrant replacement.

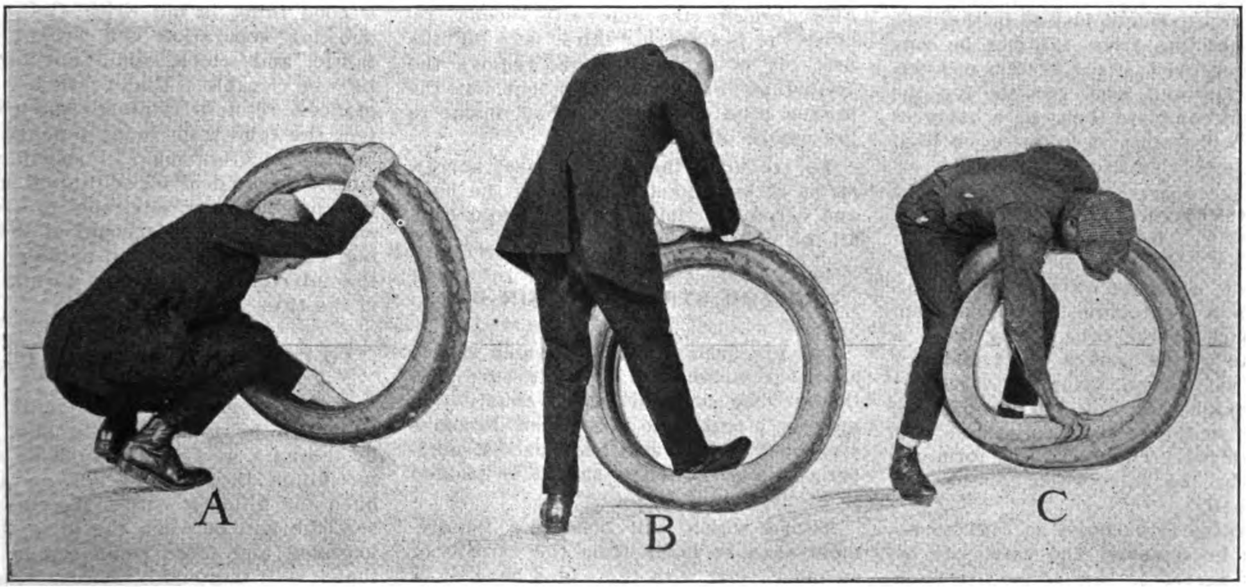
A ready use is also found for this tire inspection machine in repair shops in the location and determination of the nature of damage to tires, whether inside or out, examination for tread cuts, stone bruises, nails in the tread, or the thousand and one defects that can occur.

The machine again proves its worth when removing tubes that are stuck in the tire, or when replacing new tubes in tires that have a stiff, heavy bead. Spreading the sides with the machine facilitates the removal of stuck tubes or the replacing with new tubes, lessening the time required to do the work and making it possible for the repairer to do it with greater ease.

The tire testing machine consists of a foot operated stand, mounted on a metal base, which may be fastened to the floor, if desired. An upright hollow steel tube, fitted in a socket in the base, is fastened to it by means of a set screw. The upper end of the tube is provided with a head casting, also fastened to the tube with a set screw, the head fitted with two tubes or rods spaced correctly to hold the tire in a vertical position. Midway the steel tube is fastened, by two set screws, a cast stand equipped with two arms, each provided with a flanged roller wide enough to take the ordinary broad tire. The rollers are free to move in either direction and are supported by arms from the stand and are mounted on hardened steel shafts.

Above the stand, fastened by set screws to the steel tube, is located a casting having an arm at each side equipped with three slots in each arm. The slots are several inches long, two being located lengthwise of the top and the third running downward from the top. The spreader arms of the machine operate in these slots, being connected to and operated by a foot pedal at the base. The foot pedal is fastened to the steel tube just above the base by a collar, allowing free movement of the pedal.

A lip is provided on the base casting which acts as a catch for pedal-operated



Inspecting Tire by Old Method: A, Feeling Inside of Tire for Tack Points, Rough Spots, Etc.; B, Inspecting Tire for Fabric Breaks; C, Replacing Inner Tube.

pawl on the foot pedal, holding the spreader arms in opposite directions when they are attached to the beads of a tire under examination. The pedal is connected to the spreader arms by a rod, provided with a weight at the bottom of the rod, which enables the arms to release the beads of the tire when the foot pedal is released.

Such a tool will, it is claimed, after a short period of use, be found indispensable to the tire repairer or branch manager when called upon to render speedy decisions in the matter of adjustments on customers' tires. By using the tire inspecting machine the customer is enabled to look into the interior of the casing and see the conditions exactly as the dealer does.

To operate the machine a tire is placed on the rolls with its top fitting between the two vertical bars or tubes at the top of the machine. The arms are lifted over and placed in position, the two longer arms each being equipped with a projection about an inch long, fitting inside the bead, while the shorter two arms, likewise equipped, are fitted at the opposite side of the tire. Pressing down on the foot pedal exerts pressure on the spreader arms, opening the tire at the beads, allowing inspection of the inside. Releasing the pedal releases the pressure applied to the arms and permits the tire to close.

Inspection of Tire Tread.

Inspection of the tire tread is performed by placing the tire on the rolls, allowing the beads to rest upon the rolls. Turning the tire on the rolls allows the repairer to examine the tread for punctures, sand pockets, nails, etc.

When it is desired to place a tube in a tire having a stiff bead, the tire is mounted as described above for examining the inside. The tire is spread open with the spreading arms, and the tube is inserted as shown in the illustration.

Applying an inside patch is done in much the same manner, the tire being held open by the spreader arms while the operator fits the patch.

The old method of examining the inside of a tire is shown in the illustration, as is also the old method of fitting a tube. The chances of missing defects in the tire and damaging the tube, besides the hard work in connection with this method, are plainly to be seen.

Up-to-Date Methods of Vulcanization and Repairing

(FROM GOODYEAR NEWS.)

EVERY DETAIL IN SHOP IS IMPORTANT.

The vulcanizer is more than a repair man he is a high grade mechanic turning out a product. He is also a business man providing a real mileage saving service for users of tires.

As a mechanic building a product he, of course, wants to use the best available materials and the best available methods, so that his customers will be satisfied with the product turned out for their use. Any repair in a tire must be of the proper quality to give customers a good return on the amount charged for that repair. In order to give this fair return for the money spent in the shop, that repair must be good enough to fulfill all the conditions under which the tire is going to be used.

As a business man he owes more to his customers than the turning out of a quality repair. He is a very valuable part of the chain of service which tire users are now demanding.

Therefore, it must be recognized that every detail in the business is capable of constant improvement just as in the business of building tires. It can be continually improved. If the system of keeping accounts and cost records for the shop is not complete then—as a business man he will want to improve on that part of his service to the public.

BROKEN VALVE STEMS EASILY REPAIRED.

To repair a broken valve stem the fittings should be removed and the stem slipped back in the tube. Now make a small hole in the tube a short distance from the valve stem, bring the valve out again through this hole and in so doing the fabric in the original valve hole will not be injured. The small cut formerly occupied by the valve stem can be vulcanized easily.

If the valve is battered so that no fittings can be removed, the valve can be sawed off across to the cut with a hack saw and the nut can then be easily taken off.

TO REMOVE BIG PNEUMATICS.

Here is a good way to remove big pneumatic truck tires which is especially effective if the casing seems to be rusted to the side of the rim and resists any attempt at removal, no matter how much grease graphite is applied.

By pushing the valve stem inside and taking an ordinary carpenter's square, or if this seems too expensive, a piece of steel thin enough to insert between the rim and the tire so that it runs through to the permanent rim on the other side, the rim can be removed.

By using a hammer and driving the steel around the rim from stem to stem the tire will be loosened and will fall off easily. Next grease the rim and remove all rust.

TO REPAIR CLINCHER TIRE CASINGS.

The repair of regular clincher casings can easily be effected by making a quarter section at the point where the bead is broken, in the following manner: First, remove the sidewall; second, remove the bead strip; third, take out the first ply of fabric; fourth, remove the second ply of fabric; fifth, cut out the broken bead on a bevel. Push inside to the center of the bead.

To rebuild the casing use narrow strips of building fabric, lay in the bead and carefully trim to shape. Build back all the plies removed.

PAD FOR STRETCHED AIR BAG.

One precaution that repair men should always remember is to make sure that the air bag fits the casing snugly. In making a cure, the bag often becomes stretched after it has been used a number of times. Then it should be padded to fit the casing to be cured.

A pad which will meet the requirements can be made from the carcass of an old casing, with the edges beveled to fit. The method of applying the pad is shown.

AMERICAN TIRES NOT USED ON MILLIMETER RIMS.

It should be remembered that American tires are not designed to fit millimeter rims or millimeter tires American rims; that is, a tire marked 32 by four should not be used on a rim marked 815 by 105, neither should an 815 by 105 tire be used on a 32 by four rim. The rim seat diameter and circumference of the two are the same, but the beads are different in width and height and good results cannot be secured if they are interchanged.

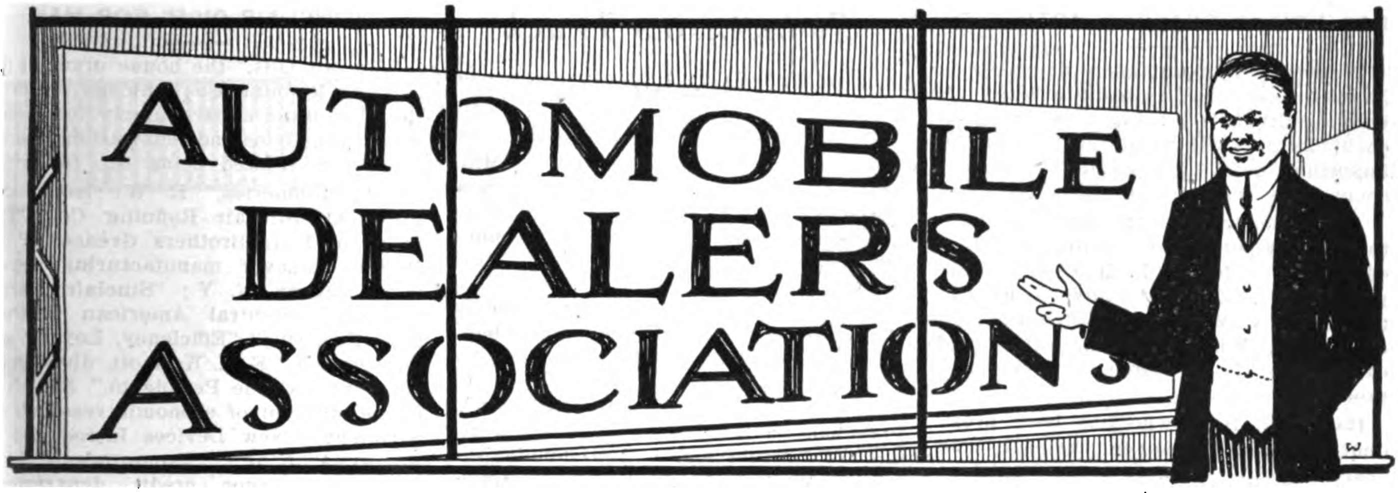
There are some oversize tires made in the millimetre type, but the regular size should not be confused with the oversize. For example, an 815 by 105 millimeter tire should not be used on an 810 by 90 millimeter rim, as it will result in damage to the beads.

RELINERS AND INSIDE PROTECTORS.

Reliners, if made of flexible material and well designed, are, according to the Firestone Tire & Rubber Co., Akron, O., a good thing in old tires; that is, tires showing separation and breaks in the fabric, and which would not ordinarily be serviceable. Under such circumstances, reliners reinforce the tire, protect the tube from being pinched in the fabric and often make it possible to secure a great deal of additional mileage. It is not, however, advisable to use reliners in new tires on account of the creeping, chafing and heating occasioned and the interference with the normal action of the tire.

TO CEMENT SEPARATED CORDS.

A slight separation of the cords in cord tires can be repaired with good result by taking a grease gun, such as is used for filling the grease cups on automobiles and filling it with C-16 cement. Insert the gun between the plies that are loosened and force some cement in so that it will thoroughly permeate between the plies. The drying of such a repair will take at least two days.



State Organization Formed in Newark

Over 100 delegates from trade associations representing every section of the state attended the first annual conference and election of officers of the newly formed New Jersey Automotive Trade association at Atlantic City. The temporary organization of the body was made permanent by the re-election of the following officers: President, John L. Brock, Trenton; vice president, C. P. Broadhead, Atlantic City; treasurer, Ralph G. Earle, Hackensack; secretary, Harvey S. Moore.

Horace A. Bonnell, former president of the Newark trade association, was chosen to represent the state association on the special motor vehicle commission to be chosen by the governor.

ONE LICENSE WITH DUPLICATE NUMBERS.

The Louisiana-Mississippi Automotive Trade association. the headquarters of which are at 718 Poydras street, New Orleans, La., announces that it has received the following ruling regarding the use of license tags by dealers:

"The system of buying one license and using as many as four duplicate numbers of the one license will be permitted in this state, provided, however, the dealer buys one license and duplicates to match for every kind of car handled by him. That is to say, if he handles Overland cars he may buy one license tag and four sets of duplicates to demonstrate his Overland cars. If he handles Fords, Mitchells or other makes of cars he would be required to buy one license tag and duplicates for each of the other makes. * * * The law positively prohibits the use of pasteboard tags for demonstration purposes or otherwise."

Headquarters for the 16th Orphans' Automobile Day outing this month were established at the Automobile Dealers' association, 1845 Broadway, New York. This year several thousand children will be taken to the Bronx Exposition and Amusement park, the use of which was donated by President H. F. McGarvie.

CARES FOR 4000 SHRINERS' AUTOMOBILES.

During the big Shriners' convention in Portland, Ore., in June, the Garage and Repair Men's association of that city took upon itself the provision of temporary quarters for some 4000 of the 5000 or more cars that conveyed a portion of the visitors to that city. It was found that about 2200 could be accommodated at the various public garages, and arrangements were made by the members for accommodation of about as many more at private quarters. And it is thought that the remainder of the out-of-town cars can be taken care of by parking in front of dwellings and at garages not formally listed.

The fact that the Democratic nominating convention occurs at San Francisco at the same time of the Shriners' meeting has crowded Pullman cars and other railroad equipment in that section to the limit, and hundreds will travel by automobile that otherwise would doubtless ordinarily rely on rail transportation.

TWO NEW CRAFTS ORGANIZATIONS.

Portland, Ore., one of the foremost cities in the country in automotive trade and crafts organizations has just added two more associations to the list. These are the Automotive Body Builders' of Oregon and the Portland Automobile Top Builders' association.

The officials of the Body Builders are as follows: President, Fred Dundee; secretary, William P. Casey; first vice president, H. C. Hodgkins; second vice president, George Wentworth; treasurer, E. M. Tucker. The initial membership is 25.

The Top Builders are officered as follows: President, J. H. Crans; secretary, E. Lennox; treasurer, Eugene Kuhlman.

Another organization closely allied to automotive interests that was organized recently at Portland is the Portland Rubbers Workers' club, the president of which is L. M. Harper; W. A. Peters being vice president and Al Courts secretary-treasurer. The following applications for membership in this association have just been received: East Burnside Vulcanizing Works, Alberta Tire Shop and Weldon & Shaw.

New Members of Equipment Ass'n.

The Automotive Equipment association has admitted the following concerns to membership: Jobbers — Automotive Equipment Co., Newark, N. J.; Consolidated Grocery Co., Jacksonville, Fla.; Dayton Iron & Steel Co., Dayton, O.; P. J. Cronin Co., Portland, Ore.; General Auto Supply Co., Lancaster, Pa.; Keyes Supply Co., Ltd., Ottawa, Ont., Can.; Kimball-Upson Co., Sacramento, Cal.; Kopac Brothers, Omaha, Neb.; Lomont & Co., Fort Wayne, Ind.; Mid-West Auto Supply Co., Dubuque, Ia.; Motor Accessories Co., Allentown, Pa.; George W. Nock Co., Inc., Philadelphia, Pa.; Robinson Brothers Co., Louisville. Ky.; Joseph Strauss, Inc., Buffalo, N. Y.

Manufacturers—American Bureau of Engineering, Inc., Chicago, Ill.; Alvord Reamer & Tool Co., Millersburg, Pa.; Apex Electric Manufacturing Co., Chicago, Ill.; The Carborundum Co., Niagara Falls, N. Y.; Conant & Donelson Co., Conway, Mass.; Federal Brass Co., Chicago, Ill.; Gill Manufacturing Co., Chicago, Ill.; National Lamp Works of General Electric Co., Cleveland, O.; Neville Steering Wheel & Manufacturing Co., Detroit, Mich.; Presto-Felt Manufacturing Co., Toledo, O.; F. W. Stewart Manufacturing Corporation, Chicago. Ill.; Stewart Manufacturing Co.. Oakland, Cal.

HELD USED CAR SALE.

The Memphis, Tenn., Automobile Dealers' association recently inaugurated a novel scheme for the disposal of second hand cars by its members. It was a "used car sale" held on a convenient vacant lot in that city, and continued for four days. Approximately 200 cars were offered for sale the opening morning. Each machine was plainly marked with a price tag and every exhibitor had a representative on the grounds for demonstrations. The collection included almost every type of motor car known, from cheap roadster to luxurious limousine.

This unique sale was under the general direction of L. F. Carter of Grand Rapids, Mich.

DES MOINES DEALERS' ACTIVITIES.

With the reorganization of the Des Moines Dealers' association a new system of activity was inaugurated whereby each director will be at the head of an important committee assuming the responsibility for work in his department.

The directors and the lines of work they will supervise are as follows: Don Chemberlain, fours; L. B. Chase, trade practises; R. E. Stacey, advertising and publicity; A. M. Brackett, finances and legislation; William Gibson, shows and expositions; L. A. Doren, meetings and programmes.

Harter B. Hull, who has been president of the association for the past three years, is to inaugurate a series of monthly dinners.

The association is formulating plans for a truck show to be held in connection with Iowa state fair in August.

NEW MEMBERS OF PORTLAND ASSOCIATION.

The following concerns have recently joined the Garage and Repair Men's association of Portland, Ore.:

Columbia Garage, A. A. Smith, proprietor, 107 Fessenden street; Fields Motor Car Co., service department, 14th and Alder streets; Francis Motor Car Co., W. P. Stokes, manager, Hawthorne and Grand streets; Gill Piston Ring Co., J. D. Lynch, manager, 409 Burnside street; Park Rose Garage Co., F. Kruse, manager, Park Rose; Peoples' Auto Repair Shop, S. Clifton, proprietor, 5529-5531 Foster road; Oregon Auto Exchange, James E. Kelley, proprietor, 448 Flanders street; Red Cap Garage, A. H. Braman, proprietor, 409 Stark street.

LOUISIANA-MISSISSIPPI TRADE ASSOCIATION.

In accordance with a resolution affiliating the Louisiana-Mississippi Automotive Trade association with the National Automobile Dealers' association, the dues of the association were increased to include the fees for national membership. The new scale places the dues at $65 for dealers handling more than 50 cars a year, and $40 for those handling under 50 cars.

The next meeting of the Louisiana-Mississippi Automotive Trade association will be held at Gulfport, Miss., Oct. 6 and 7.

PREMIER MOTOR CORPORATION.

The Premier Motor Corporation of America, 810 Pennsylvania building, Philadelphia, Pa., is to operate a plant for the manufacture of a four-cycle marine type of engine and a two-cycle motor. The president of the corporation is Timothy O'Leary.

SAXON PRODUCTION SCHEDULE.

The production schedule of the Saxon Motor Car Corporation, Detroit, calls for over 500 cars in June and 1000 cars a month thereafter.

Twin Cities Truck Dealers

The Twin Cities Commercial Car Men's association was formed at Minneapolis, Minn., at a meeting of 22 truck dealers and manufacturers. The Minneapolis men will cooperate with a similar movement on the part of St. Paul dealers.

The purpose of the organization is stated to be to help individual members solve the problems of their business, to raise the ethical tone, and to further the Babcock highway plan. The officers are: President, Harry Dafoe; vice president, Carl Will; treasurer, J. A. Donnelly; directors, W. R. Stephens, George R. Holmberg, E. W. Brehm, W. T. Clapp.

PORTLAND ASSOCIATION OPENS EMPLOYMENT BUREAU.

In the interests of the automotive industry of the state, and particularly of the city, the Portland Garage & Repair Men's association of Portland, Ore., has opened an employment bureau at its offices, 601 Beck building. The object will be to supply garages, repair shops and other branches of the industry with expert mechanics and other workers, and the automobile trade schools in the vicinity have been urged to place their best talent at the command of the bureau with a view to obviating, as much as possible, the threatening scarcity of labor and of effecting a satisfactory distribution of whatever help is available.

PHILADELPHIA USED CAR DEALERS.

At a recent meeting the Philadelphia dealers in used motor cars formed an organization to be called the Philadelphia Used Automobile Dealers' association. The following officers were elected: President, Samuel Gorson; vice president, William Baron; secretary, Augustus Rosenbluth; treasurer, Milton Stern; directors, Solomon Morris, Daniel Goodman, Al Thalheimer.

It was decided to close the places of business of the members on Sundays after June 8.

ASSESSMENT FOR GOOD ROADS.

The Portland, Ore., Garage and Repair Men's association has voted to assess each member $5 to aid in defraying the expenses of the Good Roads campaign in that state.

COFFEYVILLE DEALERS' ASSOCIATION.

The local automobile and accessories dealers of Coffeyville, Kan., recently met at the Chamber of Commerce rooms to form an association.

ATHOL MANUFACTURING CO.

The Athol Manufacturing Co., Athol, Mass., maker of materials for automobile tops, is to build a branch plant at Marysville, Mich.

"SINCLAIR OILS" FOR MAY.

"Sinclair Oils," the house organ of the Sinclair Refining Co., Chicago, offers in the May issue a particularly interesting series of articles and illustrations, among the topics treated being the following:

"The Refineries," E. W. Isom, vice president, Sinclair Refining Co.; "The Story of Four Brothers Grease," P. E. Potter, manager manufacturing department, Albany, N. Y.; "Sinclair Marine Service;" "Central American Railroad Uses Fuel Oil;" "Efficiency, Loyalty and Cooperation," E. A. Kermott, division accountant; "Crude Petroleum," Joseph E. Pogue, director of economic research department; "New Devices Introduced by Robert A. King;" "Promptness," J. M. Judson, manager credit department; "Denver to Alamosa Via Truck." A group of half tones, introducing the associate editors of "Sinclair Oils," is included, and considerable space is devoted to the activities of the various divisions and refineries.

FRANKLIN STOCK INCREASE APPROVED.

The board of directors of the H. H. Franklin Manufacturing Co., Syracuse, N. Y., has approved an increase in preferred stock capitalization from $5,000,000 to $15,000,000, and also an increase in common stock from 20,000 shares, par value $100, to 600,000 shares of no par value; $1,500,000 of seven per cent. cumulative sinking fund preferred stock is now offered at par, $100 a share. For every two shares of preferred stock the purchaser will be given the right to buy one share of the new no-par-value common stock at the price of $50 a share.

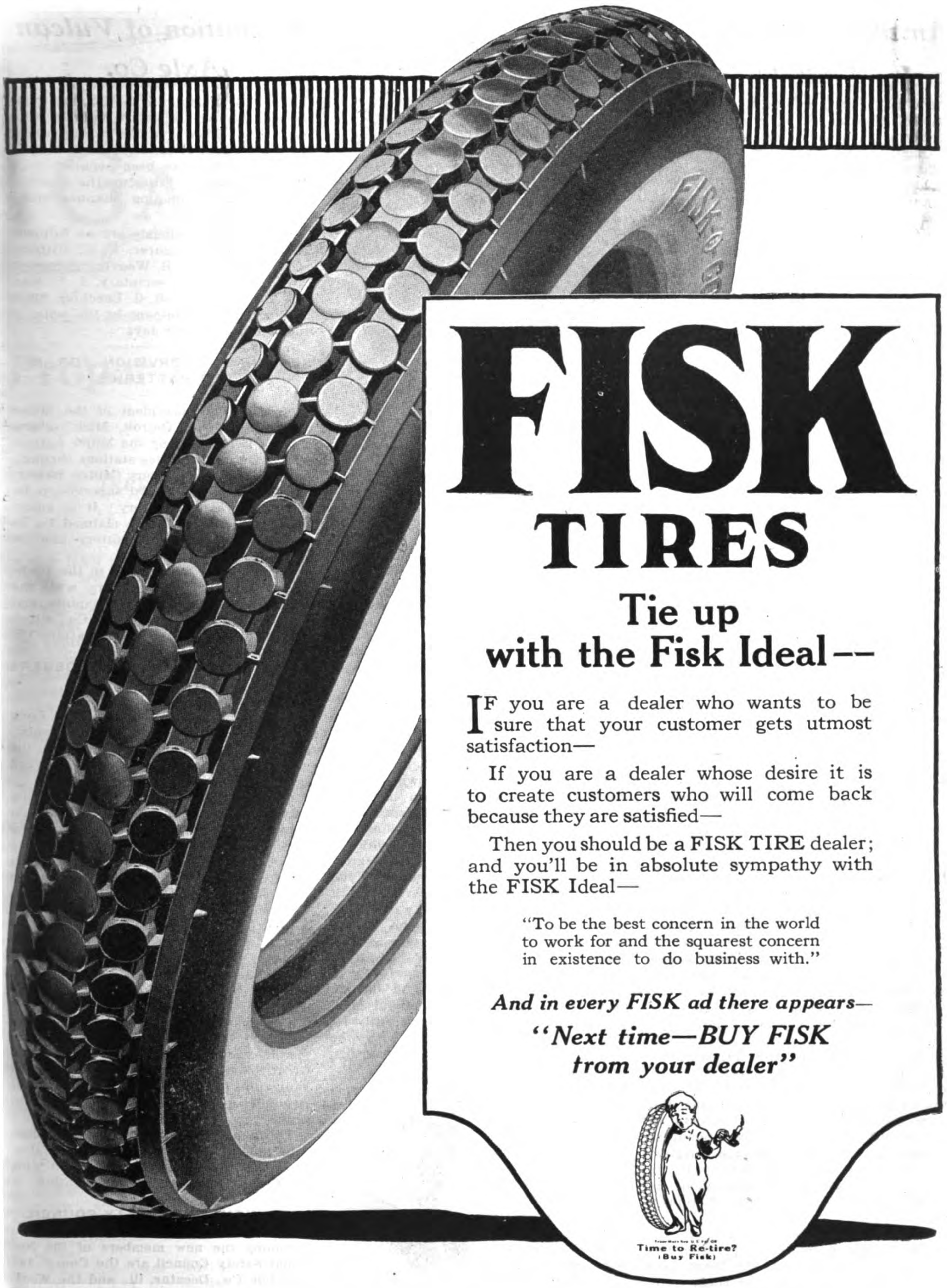
The purpose of this stock increase is to take care of future expansion and to supply funds as needed in the enlargement of the plant.

JEFFERSON ELECTRIC INCREASES PRODUCTION FACILITIES.

The Jefferson Electric Manufacturing Co., 426-430 South Green street, Chicago, has leased additional manufacturing floor space, which will enable it to double its production of Jefferson products, including ignition coils for every requirement of the automobile, truck, tractor, gas engine, motor boat and motorcycle and the Combination spark plug, Auto lamp and Ford Unit tester, Ford magneto lamp regulator and electrical transformers of every description, bell-ringing, toy, sign lighting, wireless and Auto transformers, as well as custom made transformers of any size and style.

FORT WAYNE DEALERS' OFFICERS.

Following are the officers of the Fort Wayne Automobile Dealers' Trade association, recently elected: President, Matt Jones; vice president, Ward Becker; secretary, C. Schiefer; treasurer, Fred Pennell. The association presented the retiring president, A. L. Randall, with a gold watch and chain. Mr. Randall has presided over the association since its organization, five years ago.



FISK

TIRES

Tie up with the Fisk Ideal--

IF you are a dealer who wants to be sure that your customer gets utmost satisfaction—

If you are a dealer whose desire it is to create customers who will come back because they are satisfied—

Then you should be a FISK TIRE dealer; and you'll be in absolute sympathy with the FISK Ideal—

> "To be the best concern in the world to work for and the squarest concern in existence to do business with."

And in every FISK ad there appears—

"Next time—BUY FISK from your dealer"

American Influence in England

Ira A. Kip, Jr., president of the Duratex Co., Newark, N. J., in an interview following his return from a recent trip to England and France, stated that the influence of American methods in automobile construction and quantity production in Europe is more clearly shown this year than at any other period of the industry.

"It is astonishing," said Mr. Kip, "to note how fast certain European manufacturers are coming to quantity production. I talked with executives of the Willys-Crossley Co. of Manchester, England, the Harper-Bean and Austin companies, the three largest English manufacturers; the Citroen Co. of Paris, and others, and all seemed to realize that the hope of the automobile industry lies in quantity production as has been proved in America. Both American machinery and American products have been adopted by the leading manufacturers. In many cases even American men are being sought for executive positions.

"The financial situation in England is improving rapidly and automobile manufacturers there do not seem to be worrying about the future. The Willys-Crossley Co., for example, has purchased one of the largest munition plants in England. This is located at Manchester and when the machinery is entirely installed it will be one of the finest automobile factories in Europe. It predicts that about the beginning of 1921 it will be producing 100 cars a day, which production has never been equalled by any European manufacturer.

"The situation in France, on the other hand, is more serious on account of their not being able to obtain raw materials. None of the French manufacturers, with the exception of the Citroen Co. of Paris, is anywhere near big production. These people are making a small, light car selling at 18,000 francs, or about $1050 in American money. At present their production is around 50 cars a day. They told me, however, that it was their aim to increase this figure shortly, as they are very far behind in orders. Executives of this plant, as of others, seem to have difficulty in comprehending the great production of our largest American manufacturers. When I told them the number of cars being made by some of our largest plants they could hardly believe me.

"My conviction that American methods and many American products lead the world has been definitely confirmed. In regard to our own product, Duratex, the facts speak for themselves. Seventy-six successful automobile manufacturers throughout the world now use Duratex. And it is significant that Duratex is the only coated fabric used throughout as standard equipment on any European car."

The Combined Motors Corporation has leased the property at 119 West 63rd street, New York, from the Haggstrom-Callen Co.

F. C. Gilbert, President and Treasurer, Vulcan Motor Axle Co., Detroit.

KENNEDY CAR LINER & BAG CO.

The Kennedy Car Liner & Bag Co., Shelbyville, Ind., recently acquired and will operate a subsidiary factory in Woodstock, Ont., Canada, to meet the rapidly increasing demand for its product by the Canadian trade. The subsidiary concern will be known as Kennedy Car Liner & Bag Co., Ltd.

GROWTH OF COMET AUTOMOBILE CO.

Headed by George W. Jagers, as president and general manager, for many years a prominent figure in the automotive industry, the activities of the Comet Automobile Co., Dayton, O., maker of Comet automobiles, have grown in scope and the production has been increased until this year the output is expected to average 10 cars a day and the plans contemplate the completion of 3630 cars for 1920, as against 600 in 1918. An aggressive export campaign has resulted in the demand for upwards of 100 cars a month in that field. Mr. Jagers was for 12 years, general manager of the Racine Manufacturing Co., and, previous to that, spent 14 years with the J. I. Case Threshing Machine Co.

Working with Mr. Jagers, in the capacity of assistant to the general manager, is C. F. Jamison, who recently resigned an executive position with the Central Service Corporation, Indianapolis, Ind. Mr. Jamison's other connections in the automotive field have been as southwestern sales representative of the Chalmers Motor Co. of Detroit, general sales manager of the Saxon Motor Corporation and assistant general manager of the Elgin Motor Car Corporation.

Formation of Vulcan Axle Co.

The Vulcan Motor Axle Co. has been incorporated at Detroit to build a complete line of axles for motor vehicles. It is capitalized at $1,000,000, and a large modern factory has been secured, with ample shipping facilities, in the heart of the Milwaukee Junction manufacturing district of Detroit.

The executive officials are as follows: President and treasurer, F. C. Gilbert; vice presidents, R. B. Weaver; Sidney C. Love, C. C. Miller; secretary, J. T. Hanlon; chief engineer, R. G. Beechler. They have all been prominent in the axle industry since pioneer days.

PERSONAL SUPERVISION FOR MILLER BATTERIES.

J. H. Miller, president of the Miller Battery Co., Inc., Detroit, Mich., states that he is fast placing the Miller battery with dealers and service stations throughout the country. Every Miller battery has Mr. Miller's personal supervision before it leaves the factory. It is adaptable to all cars and it is claimed by its makers that no better battery can be made.

Mr. Miller is well known to the trade, having been for three years with the Pumpelly Battery Co., Indianapolis, and later with the Detroit Battery Co., which he left to organize the Miller Battery Co.

NEVERFAIL CARBURETOR JOBBERS APPOINTED.

The Neverfail Carburetor Co., Long Island City, N. Y., has recently appointed the following jobbers to distribute the new Neverfail model carburetor for Ford cars:

F. Hersh Hardware Co., Eastern Pennsylvania; J. C. English Rubber Co., New Jersey; Select Products Sales Corporation, Long Island and Brooklyn; Bailey & Co., North Carolina to Texas; Monarch Sales Co., Indianapolis; Deckert Brothers, Western New York and Western Pennsylvania; E. A. Patterson & Co., Kansas; The Mountain Tire & Gas Co., Colorado.

TO SELL AUTOMOBILE SPECIALTIES IN ENGLAND.

The County Chemical Co., Ltd., of Birmingham, England, one of the largest manufacturers of motor specialties in Great Britain, is establishing a selling organization to handle, in that country, automobile specialties made in this country.

This new selling organization will function under the name of British Sales, Ltd., but will operate in connection with the County Chemical Co. organization.

NEW MEMBERS, SAFETY COUNCIL.

Among the new members of the National Safety Council are the Comet Automobile Co., Decatur, Ill., and the Wood Brothers Thresher Co., Des Moines, Ia.

The ACCESSORY and
GARAGE JOURNAL

VOL. X. PAWTUCKET, R. I., JULY, 1920 No. 3

Proper Protection by Insurance an Important Factor in Use of Motor Car

New Rates Represent Advance of Practically 40 Per Cent. Over Last Year.

WHEN it is remembered that there are nearly 7,000,000 motor cars owned and operated in the United States today, it may well be realized that any change which vitally affects the protection of this army of automobile users in the legitimate exercise and enjoyment of their rights of ownership and operation will be of paramount interest.

An increase in the rates for automobile fire and theft insurance was predicted before action was actually taken by the National Automobile Underwriters' association early the present season, based on the increased risks occasioned by the augmentation of casualties, thefts, etc., concomitant with the increasing use of the motor car throughout the country. The new rates adopted represent an advance of practically 40 per cent. For fire and transportation risks on gasoline and steam privately owned passenger types of automobiles the rates range from 40 cents to $1.50. Alphabetical symbols have been assigned to all makes of automobiles in the classification manual, the range being from A to H inclusive, according to price of car, where operated, etc. These rates are key or basic, applicable to classes for all territories.

The fire rates for automobiles in New England, the eastern and western conferences, are to be the basic key rates before mentioned, classes A to H inclusive. The fire rates to be used for new automobiles in the southern conference territory (excluding the State of Mississippi) range from 60 cents to $2.25, the schedule being arrived at by applying substantially a 50 per cent. loading on the rates adopted for use in the New England, eastern and western conference territories.

Alphabetical class letters from L to W, inclusive, were agreed on to represent rates for theft insurance. The assignment of rates to these classes, which have been adopted for use in the so-called standard schedule territory in the New England, eastern, southern and western conferences, range from 25 cents to $6.35, according to class.

Penalty and Country Schedules.

For use in such territory in all conferences as require penalty rates for theft, the rates range from 50 cents to $10 according to class.

For use in the so-called country schedule territory, rates have been adopted ranging from 20 cents to $1.75. This is designated as Country Schedule A. A schedule has also been adopted known as Country Schedule B, of theft rates for use in farm or rural territory, and differentiated from the country schedule for general use, the rate for Schedule B being 15 to 75 cents, according to class.

Commercial Vehicles.

Rates for commercial vehicles for fire and transportation risks range from 75 cents to $2.35. No change was made in theft rates on commercial cars.

The new rates applicable to automobile fire and theft insurance are now the same for both new and second hand cars. Formerly a higher rate was made on a car bought second hand. The "loss of use" coverage upon which a charge was formerly based at the rate of 10 per cent. of the property damage clause is now eliminated, and under the new conditions the loss of use is attached to the property damage clause and is included in that rate.

It would be wise for the car owner, when receiving an automobile insurance policy from the broker, to read the contract over carefully. Particular attention should be given to see that the factory number of the car is correctly stated and that the automobile is properly described in the policy, especially such items as list price, number of passengers, whether driven by owner or chauffeur, whether used for pleasure or business or whether driven by the assured alone or by any other member of

ANY factor which affects in any way the cost and the safe and economical use of the modern motor car will be at once recognized as well worthy of consideration by the dealer and distributor, as well as by the manufacturer.

While the present condition of a demand greatly in excess of supply continues in the motor car market, it may not appear so essential to the short-sighted dealer to cooperate with other agencies, such as automobile associations and similar organizations, that are devoting their energies towards safety, economy, utility and pleasure in the ownership and operation of the automobile, the time is sure to come and is, perhaps, not so far in the future as it appears at the present time, when these conditions of high prices and congestion will be superseded by a much more conservative policy on the part of both buyer and manufacturer, and the wise dealer is the one who is building up his business on a basis looking to the future as well as the present.

There should be care and cooperation on the part of all concerned in any way with the manufacture, distribution and use of the motor car in order that casualties, fatalities, thefts, etc., may be reduced to the smallest possible minimum; and one of the results which should automatically follow would be a reduction in the tolls which the insurance companies are today obliged, on account of the constantly increasing risks, to impose on the motor car owner as the price of his protection in the use and enjoyment of this great factor in modern life and activity.

his family. The rate is affected by these particulars and therefore they should be noted very carefully.

Immediate Notice Should Be Given.

Under a theft and fire policy covering an automobile, the contract particularly provides that in the event the car is stolen immediate notice is to be given to the police in the vicinity where the car disappeared. The next step to protect the owner's interests would be to send a registered letter to the insurance company or to the broker who represents the assured.

There is a reduction in insurance rates where the assured uses more than one car, but driven by only one chauffeur. This reduction is a considerable one, and it would pay the owner to call the attention of the company to this fact.

Another class of insurance is what is termed "collision," which was first written by American casualty companies in 1907. The following year this form was undertaken also by fire and marine companies. In the beginning the company was not liable unless the amount of damage exceeded $25. The companies soon found that nearly all claims were running in excess of $25, so they altered the form by excluding from their liability the first $25 of each loss. In subsequent years the full collision plan was adopted and the $100 and $50 deductible clauses were introduced in the place of the $25 clause. The tendency of rates in this class of car insurance has been upward, as it has always been unprofitable for the underwriters.

FEATURES OF NEW RATES.

Features of the new rates are a moderate increase for public liability on passenger cars, a substantial advance in public liability rates on commercial vehicles and a radical augmentation in collision rates for all classes.

General increases are principally applicable in congested traffic territories, amounting to about 10 per cent. for passenger cars and approximately 35 per cent. for commercial. Collision rate advances are based on unprofitable experiences of all insuring companies and, while varying considerably according to the type of car, amount to at least 40 per cent. over last year's rates. Property damage rates are based on the inclusion of loss of use liability and are slightly less than last year's rates for the two hazards combined.

Territories have been slightly modified, but in general conform to last year's boundaries, with the important exception that a new intermediate territory between six and seven has been created.

The new rating continues car valuation as a basis, but by establishing a key symbol for each make of car, has obviated the defect in last year's system which necessitated an advance in the premium rate every time the maker of a car advanced his price.

Property Damage and Liability.

Property damage automobile insurance was first written in this country in 1899. It covers the owner as to any damage the machine might cause to the property of others. Within the last two or three years a demand arose for the broadening of this clause to include what is called "loss of use." Where a motor car is a necessary adjunct to a business and is damaged, making it necessary to hire another car, the law allows recovery, in addition to damages on the car, of the expense of hiring another car in the interim. As stated above this clause is now included in the regular policy.

The first liability insurance written in this country was in 1898 on electric vehicles. Gasoline and steam cars followed in 1899. For a few years at the start liability rates were far from uniform and stable. They were based, to some extent, on the horsepower of the car. The original basis was a flat premium for cars not exceeding a certain horsepower, with a certain additional premium for each additional horsepower. There was no conference or agreement of any kind on the part of the underwriters in different parts of the country. Each company quoted its own rates based, more often than anything else, it is stated, on underbidding competitors, with the result that this class of business was found unprofitable for most of the companies during the first few years. The companies finally awakened to the fact that before any real progress could be made there would have to be some uniformity in forms, rates and methods of rating, and that this could be attained only by some cooperation between themselves. Following this realization they adopted horsepower as the basis of rating and groups of horsepower ratings were established with a definite premium rate for each group. In time the automobile liability business was included in the liability conference, which later became a part of the National Workmen's Compensation Service Bureau. Chiefly as the result of the activities of this bureau and the cooperation of its members, automobile liability insurance has progressed more in the last four years than during the preceding 12.

Fire and theft insurance had much the same experience, namely, an early period of chaotic conditions. The folly of attempting to successfully handle the business under such conditions finally made itself manifest to the leading companies with the result that in 1909 a few companies organized an association out of which has grown the National Automobile Underwriters' association.

Development of Rating.

For some time after horsepower was adopted as the basis for rating, the advertised horsepower of the various models of cars was accepted. The advertising of horsepower at variance with the actual horsepower resulted in a change to insurable horsepower. The developments in the types of engines made the formula for computing insurable horsepower incorrect and changes were again necessary, and the companies abandoned horsepower and adopted list price as the basis for rating pleasure cars with variations in the rates according to whether or not the car is driven by chauffeur or owner, and the purposes for which it is used.

While the basis of writing commercial cars is still according to classification, provision has been made for insuring fleets on the payroll basis, instead of the specified car or named chauffeur basis, and also for the promulgation of an experience rate based on the experience of each individual risk.

Rates Higher in Congested Centers.

After the business started it did not require a very long time for experience to indicate that the liability and property damage loss ratio is always higher on cars operated in congested centers. Accordingly, higher rates were charged for cars operated in such centers. This system is still in effect, but it has been greatly refined so that now the entire United States is divided into territories for rating purposes.

The original liability policy has been liberalized and now protects the assured up to its limits, and the company agrees to defend suits, even though groundless, pay interest on judgments up to the policy limits and sometimes beyond. In New York state insolvency of an automobile owner is no defense to his insurer against paying damages, thus making the automobile liability policy a contract of insurance instead of a contract of indemnity. Until 1918 only one assured person was covered in a single policy unless an extra premium was paid. Now there is "omnibus coverage." The policy limits, originally $5000 to $10,000, have been increased to large amounts to meet the demand for full protection, the additional premium for large limits being as low as consistent. Now there is under consideration the issuance of unlimited policies.

Personal Liability Most Serious Risk.

Personal liability or damage claims and suits resulting from injuries inflicted by a car on the person of another party is the most serious risk that an automobilist must face today. His car may be wrecked, burned or stolen and the limit of his loss will be the value of the machine at the time of the incident. He may accidentally strike a pedestrian and be suddenly called upon to face a verdict of $25,000. It apparently makes little difference where the blame actually rests, especially if it happens to be a child involved. In such cases, very frequently the accident is unavoidable, the child darting out from the curb in front of the machine or appearing suddenly from behind some other vehicle, yet there is hardly a jury empanelled that will not render a verdict in favor of an injured child against an automobilist. In Paris, France, and some other continental cities, in case a pedestrian is struck by a motor car, he is held to be at least partly to blame and liable to arrest as well as the car driver. In this country, in spite of the fact that in a large percentage of the accidents the pedestrian is obviously at fault, the automobilist finds himself on the defensive.

Therefore, it would seem to be wise,

if the car owner can afford only one of the five principal lines of automobile insurance—by all means to choose personal liability—for, as has been stated, while insurance against fire, theft or collision may save him thousands, insurance against the personal injuries inflicted by his machine may save him tens of thousands. And judging from recent reports of classified casualties, a motorist takes about as many chances on hitting pedestrians or injuring people in other vehicles as he does on having his car stolen or burned.

The cost of personal liability insurance varies as to the make of car and the territory in which it is operated, and also as to the limits taken out. It is written in so-called "minimum" limits of $5000 to $10,000; that is, the insurance company will pay a maximum of $5000 in claims arising from the injury or death of any one person in any one accident, and $10,000 in claims arising from death or injuries to two or more people in any one accident. But in view of the increasing amounts awarded in jury verdicts these $5000-$10,000 limits are insufficient. Additional protection above these limits can be bought at a very small proportional increase in rates.

Claims for Property Damage.

Claims for the damage that a man's car may inflict upon the property of others is another form of liability which the automobilist is frequently called upon to face. Verdicts for property damage do not, as a rule, run as high as those in personal liability cases, probably for the reason that, in the first case, the actual damage may be definitely determined by the actual value of the property destroyed, while in the latter the claims are limited apparently only by the imagination of the injured party or the presumed ability of the defendant to pay. The liabilities included in this class arise from damage inflicted by one machine on another in collision, to property carried on other vehicles damaged or destroyed in collision (for example, should an automobilist run down a milk wagon and scatter the load, he would probably be called on to make good the loss), and for property adjoining the highway, such as lamp posts, telegraph poles, plate glass windows, etc., so frequently damaged.

Property damage is usually written in $1000 limits, and also varies in cost as to the make of the machine and the territory in which it is operated. Notwithstanding the fact that property damage liability verdicts run very much lower than personal liability ones, $1000 limits are rather small; to play safe this figure should be doubled or even trebled.

One big advantage of insurance is that it relieves the automobilist of the expense and trouble of attendance on fighting out a case in court. The insurance companies try to settle actions out of court, but when they do have to go into court before a jury all the costs of the proceedings are borne by them.

Steer Clear of Cut-Rate Policies.

In buying insurance, the automobilist should steer clear of any bargain or cut-rate policies. An insurance policy is, after all, merely a promissory note, and unless it has a strong, reliable company behind it, ready to make good these promises to pay and protect, it is not worth the paper upon which it is written. The cost of policies of a similar nature is practically the same in all of the old, reliable companies, and one written at a lower rate probably has some important feature lacking and does not afford the same protection.

When it comes to a choice between a company with weak resources and a shaky financial system, but with a low rate, and a strong company with ample resources at the standard rate, it is wisdom to choose the latter. At the moment of taking out the policy it may cost a few dollars more to insure in the good company, but when it comes to the time for payment of losses, it may have cost a few thousand more to have been represented by the weak company.

What Standard Policies Include.

Most of the standard fire and theft policies insure against direct loss or damage to the body, machinery and equipment of the automobile described therein, while within the limits of the United States (exclusive of Alaska, the Hawaian islands and Porto Rico) and Canada, including while being built, on the road, railroad car or other conveyance, ferry or inland steamer, or coastwise steamer between ports within the said limits.

Following are the perils insured against: Fire arising from any cause and lightning; while being transported in any conveyance by land or water, the stranding, sinking, collision, burning or derailment of such conveyance, including general average and salvage charges for which the assured is legally liable; from theft, robbery or pilferage, excepting by any person in the assured's household or in his service or employment.

Most of the standard fire and theft policies exclude liability for loss or damage to robes, wearing apparel, personal effects or extra bodies; also the usual exemption from liability from loss or damage caused directly or indirectly by invasion, insurrection, riot, civil war or commotion, military, naval or usurped power, or by order of any civil authority.

The insuring company does not hold itself liable beyond the actual cash value of the property at the time any loss or damage occurs, and such loss or damage shall be ascertained or estimated accordingly, with proper deduction for depreciation however caused, and without compensation for the loss of use of the property, and shall in no event exceed what it would then cost to repair or replace the automobile or such parts thereof as may be damaged with others of like kind and quality; such ascertainment or estimate shall be made by the assured and the insuring company or, if they differ, then by appraisal by competent, disinterested parties appointed by the assured and the company, one by each, these appraisers selecting a competent and disinterested umpire. If the appraisers cannot agree upon the selection of an umpire, after a period of 15 days, he shall be chosen by a judge of a court of record in the county and state in which the property insured was located at the time of the loss. The appraisers shall individually appraise the damage or loss and, failing to agree, shall submit their differences to umpire.

Policy Voided by Misrepresentation.

The entire policy becomes void if the assured conceals or misrepresents any material fact or circumstance concerning the insurance or the subject thereof.

IMPORTANT POINTS FOR CAR OWNERS.

Car owners should read over insurance contracts carefully, giving particular attention to see that factory number of car is correctly stated, that the vehicle is properly described, especially such items as list price, number of passengers, whether driven by owner or chauffeur, whether used for business or pleasure, or whether driven by assured alone or by other members of his family. The rate is substantially affected by these particulars.

Under theft and fire policy, immediate notice of theft should be given to police in vicinity where the car disappeared, and a registered letter of notification should be forwarded to the insurance company or its representatives.

The automobilist should steer clear of bargain or cut-rate policies and insure only in old, reliable companies. At the moment of taking out the policy it may cost a few dollars more, but when the time comes for the payment of losses, it may cost thousands more to be represented by a weak company.

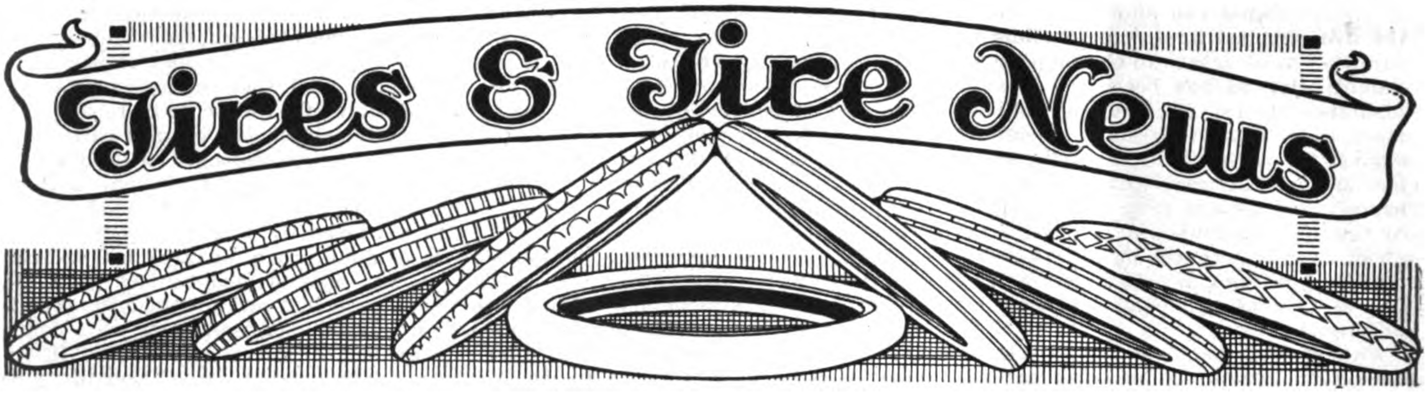
If the car owner can afford only one of the five principal lines of insurance, he is advised, by all means, to choose personal liability, for while protection against fire, theft or collision may save him thousands, personal liability insurance may save him tens of thousands.

The policy also becomes void, unless otherwise provided by agreement in writing added to it, if the assured be other than the unconditional and sole owner of the property; or in case of transfer or termination of the interest of the assured in the property other than by the death of the assured; or in case of any change in the nature of the insurable interest of the assured in the property described in the policy whether by sale or otherwise.

Unless otherwise provided by agreement in writing added to the policy, the company is not liable for loss or damage to property insured while encumbered by any lien or mortgage; while the automobile described is frequently or habitually used as a public or livery conveyance for carrying passengers for compensation and for one week after the termination of such use; or while being rented under contract or leased, or operated in any race or speed contest.

No suit or action on the policy or for the recovery of any claim under it shall be sustainable in any court of law or equity unless the assured shall have complied with all the requirements stated in the policy; nor unless commenced within 12 months after the happening of the loss.

Tires & Tire News



New Factory of Lee Tire & Rubber Co.

The accompanying illustration shows the completed plant of the Lee Tire & Rubber Co., with the addition consisting of new milling department and vulcanizing room. The company has added 14 mixing and warming mills and eight vulcanizers to its equipment, giving a capacity of over 3000 tires a day. The Lee Puncture-Proof tire is being made in additional amounts, well over 50 per cent. being of that type, the balance being largely cord tires.

Sales of the Lee Tire & Rubber Co., Conshohocken, Pa., in the first four months of 1920 totalled more than $850,000, an increase of 60.5 per cent. over the corresponding period last year, while the net earnings were more than $325,000, an increase of 50 per cent. Estimates of earnings for the full year are between $9 and $10 a share. The production schedule calls for 500.000 tires this year as against 300,000 last year.

MILLER SHOWS BIG INCREASE IN BUSINESS.

The business of the Miller Rubber Co., Akron. O., shows an increase of 1200 per cent. in the last five years. The working force has grown, in 24 years, from 25 to 6000, and the floor space occupied from 1200 to over 1,000,000 square feet. Business for the current year, it is estimated, will reach $50,000,000.

PERFECT WORK ON CALENDERING MACHINE.

How carefully work must be done in rubber tire and tube making is revealed by a statement that a gang of men on a calendering machine at the Akron, O., manufactory of the Goodyear Tire & Rubber Co. recently broke all records for perfect work and percentage of bad stock for the period of a month. During that time the crew in question rolled 24,450 yards of tube stock for inner tubes, the most difficult of all calendering work, with a percentage of bad stock of but 1 1/10th. Another gang had a percentage of 1.28 for the month. These records are all the more astounding when it is considered that tube stock must be rolled almost to 1/1000th of an inch and that the inspectors will reject it if there is any appreciable variation.

SHIPPING FACILITIES FOR RUBBER TRADE.

One of the forthcoming acquisitions to the trans-Pacific lines of vessels calling at Singapore is a service by the Los Angeles Pacific Navigation Line, a new company, which announces its intention to operate a line of freighters running direct between the Pacific coast metropolis and Far Eastern ports, with Singapore as its eastern treminus. One of the main objects of the launching of this new line, as stated by the promoters, is to serve the rubber manufacturing industry in and around Los Angeles, giving direct connections with the crude rubber plantations of the Far East.

Standard Four Co's Publicity

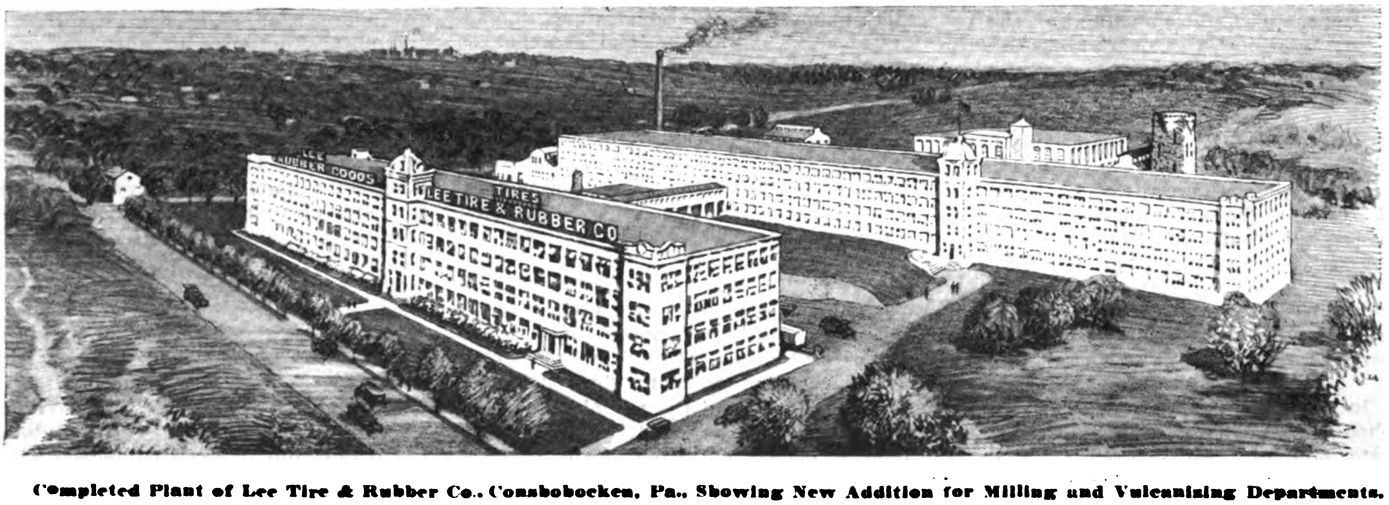
The Standard Four Tire Co., Keokuk, Ia., has inaugurated a novel publicity campaign, the basis of which is 26 original paintings portraying Indian lore and legend in many of its most interesting phases.

The scenes cover a wide variety of subjects, including the following titles: "The Indian Runner," "The Medicine Man," "The Indian Oath of Fidelity," "Archery," "The Marriage Ceremon "The Great Spirit," "The War Dance," "The White Captive" and "Arrow Making," and they are works of some of the leading commercial artists of the country.

J. B. Gabeline, president of the Standard Four Tire Co., authorizes the following statement concerning the reason for this extensive art programme:

"Standard Four Tires are manufactured in the locality where once lived one of the most unique characters among Indian chieftains. His name was Keokuk and he was noted not so much for his warlike qualities as for his fidelity to a promise. Among all of those with whom he had dealings the word of Chief Keokuk was indeed as good as his bond. He never broke a promise.

"Thus it occurred to officials of the Standard Four Tire Co. that the spirit and character of the old and respected chief might well represent the policy and aims of the company. Hence the adoption of a slogan that reads, 'Chief of the Tire Tribe.'"



Completed Plant of Lee Tire & Rubber Co., Conshohocken, Pa., Showing New Addition for Milling and Vulcanizing Departments.

Burdick Tire Co's New Factory Unit

The new factory unit of the Burdick Tire & Rubber Co., Noblesville, Ind., now nearing completion, is one story of brick, 75 by 120 feet, and will be used as a power house. The new factory building, which was completed about two months ago, is of solid reinforced concrete, 100 by 200 feet. It is three stories in height and contains over 75,000 square feet of floor space. By August the output is expected to reach 250 casings and 500 inner tubes a day, and by the end of the year 500 casings and 2500 tubes daily. With this as a basis the company will be turning out 2500 tires and 5000 inner tubes a day by the latter part of 1921, and to attain this production it will be necessary for them to employ over 1000 persons.

The officers of the company are as follows: President, H. G. Steinheimer; vice president and general manager, F. E. Teachout; secretary and treasurer, H. P. Steinheimer. The executive offices are at 10 South LaSalle street, Chicago, and the factory and general offices are at Noblesville, Ind.

IDEAL CO.'S HOUSE ORGAN, THE GREYHOUND.

One of the neatest and best arranged house organs issued by any concern in the industry is the Greyhound, now well into the second volume of its existence. This is published by the Ideal Tire & Rubber Co., Cleveland, O., maker of Greyhound tires and tubes, and the table of contents for the June number includes articles on "Greyhound Ford Casings," "Steps in Rubber Manufacture," "Tracking an Auto by Its Tire Trail" and "Our Method of Marketing Greyhound Tires." It is well illustrated and its departments devoted to wit, gossip from factory and sales branches, etc., are lively, interesting and helpful.

DIRECTORS OF HANNIBAL RUBBER.

The Hannibal Rubber Co., recently incorporated at Hannibal, Mo., has elected the following directors: C. O. Maves, S. O. Osterhout, R. B. Goodson, D. D. Mahan, W. J. Richards, A. E. Gibson, C. C. Haywood of Shelbina; W. G. White of Whiteside, and H. M. Still of Kirksville. A factory is being erected at the foot of South Maple avenue and Collier street and will probably be ready for occupancy the latter part of the month. The authorized capitalization is $1,000,000.

SIX-WHEEL BUS AT AKRON.

A pay-as-you-enter auto bus, patterned after the new type of street cars and capable of hauling 100 people, is being designed by the Goodyear Tire and Rubber Co., Akron, O., as an experiment in broadening the field for pneumatic tires.

It will be equipped with six wheels, and the company later intends to operate a bus with eight wheels similar to the double trucks on street cars.

ADDITIONS TO INDIA COMPANY.S PERSONNEL.

The India Tire & Rubber Co., Akron, O., has made two more important additions to its executive staff in K. C. Burtscher, who has become traffic manager, and Calvin F. Troupe, who is placed in supervision of the southern Wisconsin territory.

Mr. Burtscher is well known in transportation circles through his former connection with the Wheeling & Lake Erie railroad. He has also spent two years in Goodyear's traffic department.

Mr. Troupe was formerly branch manager for the Fisk Tire and Rubber Co. in Milwaukee, Wis. He will now make his headquarters in that city, working in direct connection with the Ramler Rubber Co., India distributor.

SURETY CO. HAS ENLARGED.

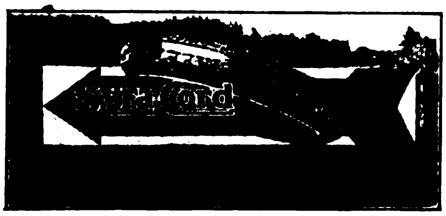
The Surety Tire & Rubber Co. is now installing machinery and equipment in its new plant at Kansas City, Mo., which will make possible a daily production of 1000 cord, 1250 fabric, 1000 Sternwear and 5000 ordinary tubes. The company is capitalized at $1,500,000.

STANDARD SYRA-CORD ROAD SIGN.

The accompanying illustration shows the standard Syra-Cord road sign that the Syracuse Rubber Co., Inc., Syracuse, N. Y., has patented and is erecting throughout the United States at head-on locations on highways. It is considered both one of the largest and most striking road sign designs in use in the country and is creating a great deal of favorable comment in publicity circles.

For a number of weeks past the company has been experimenting with a sample sign in the vicinity of Syracuse. Several different color schemes were tried. The one finally adopted is that now on the sign—a gigantic red arrow, 50 inches long and 10 inches high, passing through an immense Syra-Cord tire. The background of this sign is in a light blue that is calculated both to set off the red arrow and act as a contrast to any background on which the sign might be located. Across the face of the arrow in black, outlined by white, are the words "Syra-Cord," and the company's slogan, "Built by Cord Tire Specialists." On the tail of the arrow is a space for the name and address of the dealer handling the tire in any given territory.

H. H. MacBride, advertising manager, states that the company is already under contract with one of the largest sign companies in the United States to build these signs throughout the country.



Enlargement of Goodrich Plant

The B. F. Goodrich Rubber Co., Akron, O., has building expansions under construction which will increase the size of the plant 20 per cent. and cost, with new equipment and machinery, in excess of $10,000,000. The new buildings will provide 779,000 square feet of additional floor space, making a total of 4,554,304 square feet. Several thousand additional workers will be required next year to care for the contemplated increased production.

The largest of the new buildings under construction is an eight-story warehouse for raw materials with 530,000 square feet of floor space. When completed it will be the largest factory building in the city. The second largest building will have nearly 200,000 square feet and will be used exclusively for tire building. Other new buildings being erected include a giant water softening plant, an electric current transformer station, a large refrigeration building and an extension to the boiler house of Mill 2.

A better idea of the extent of the new construction can be obtained from the fact that the added floor space alone is larger than that of three-fourths of the rubber companies of the United States. It emphasizes the steady growth of the Goodrich Company since it was organized 50 years ago, many years before any other rubber factory was opened in the "Rubber City."

The original plant of the Goodrich was a building 40 by 100 feet and only 35 employees were on the first payroll. Today this original building could be tucked away and lost in any of a dozen of the company's buildings. The force of 35 employees has grown to an army of 28,000 men and women.

GOODYEAR'S POLICE FORCE.

The police force of the Goodyear Tire & Rubber Co. now comprises 200 men, or 50 more than the entire city of Akron, O. In addition to guarding the factories, this force, under Chief John Kidney, looks after the residential section of Goodyear Heights, with a population of 5000 people; the Wingfoot Lake air station, where the dirigible balloon activities of Akron are centered; and a rim plant operated by the company at Thomastown, a suburb of Akron.

TERRELL CO. ORGANIZED.

The Terrell Tire & Rubber Co. has been organized at Kansas City, Mo., with capital of $1,000,000, for the purpose of manufacturing automobile tires, tubes and other rubber products. The company has the exclusive rights for the making of Fabric-Cord tires, a pneumatic tire invented by A. C. Terrell of Kansas City, president of the company. The other officers are: Vice president, Otto W. Croy; secretary and treasurer, R. L. Meierhoffer.

Practical Hints on Vulcanization and Repair of Tires

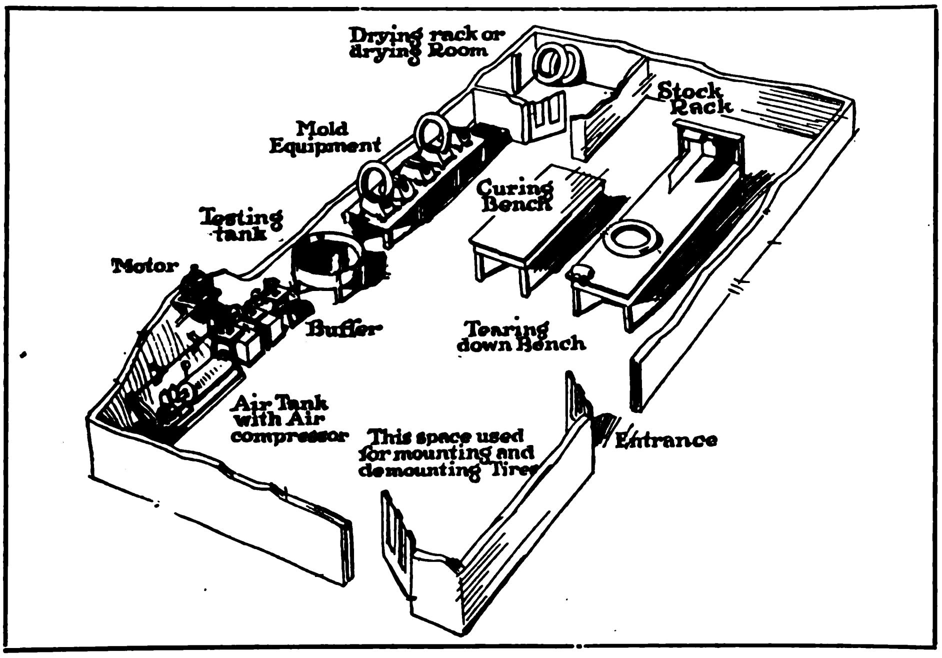
(From Goodyear News.)

WELL ARRANGED VULCANIZING SHOP.

Tire vulcanizing is a trade in which, if the various operations are simplified, much useless detail and lost motion may be eliminated, adding to the efficiency of the shop. The layout or plan of arrangement of a repair shop is one of vital importance. As every shop has different dimensions it would be difficult to formulate any set plan of layout which would apply in every case.

The necessary equipment and the relative position of each will not be taken up with regard to dimensions, but considered only in the details of their operative efficiency.

Mold equipment should be located so that it is not exposed to a constant draft. This equipment should be set in as close as possible to one of the walls. Directly in front of this should be the double shelf curing bench, the lower shelf of which is used for bead molds and the second for air bags. The top of the bench is used for preliminary curing operations.


Drying rack or drying Room
Stock Rack
Mold Equipment
Curing Bench
Testing tank
Motor
Buffer
Tearing down Bench
Air Tank with Air compressor
This space used for mounting and demounting Tires
Entrance

To the right or left of the mold equipment place the circular tube testing tank. Next to this should be the buffing stand and air compressor. Care should be taken to cover the air pumps to exclude buffing dust. Arrange these last three pieces of equipment so that sufficient room is left for working around them.

The drying room, or if the drying room is not used, the drying rack should be located at the opposite end of the shop from where the buffing is done and in a direct line with the rest of the equipment mentioned. Keep the room or rack far enough from the mold equipment to prevent an accelerated action in the drying.

In the middle of the shop place a large tearing down and building up bench, wide enough to permit work at it from either side. At one end of this bench place a notched stock rack with iron piping as a support for the various rolls of repair materials. If the shop's location affords a cellar or basement, the best arrangement is to provide for the tearing down and buffing equipment there. The compressor can be also located in the cellar. This would leave the ground floor for a drying, building up and curing room.

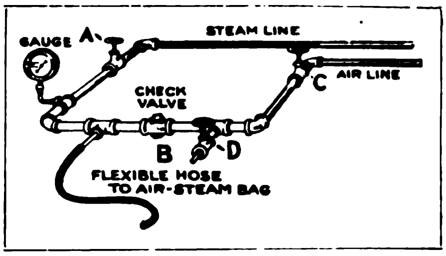
1. Don't attempt to have your sales room a part of your vulcanizing shop proper.
2. Don't huddle or crowd your equipment; leave operating space where necessary, thus facilitating the cleaning up operation. A clean shop is an absolute necessity.
3. Don't fail to leave a good sized space for mounting and demounting tires from rims.
4. Don't have your tube testing tank near your raw materials.
5. Don't expose your mold equipment to drafts.
6. Don't fail to take advantage of natural light, especially in reference to building up and tearing down.
7. Don't fail to furnish plenty of artificial light if sunlight isn't available.
8. Don't fail to properly guard your buffing equipment. This will prevent buffing dust from scattering.

Connection to Air and Steam Bags.

The accompanying drawing shows the arrangement of piping and valves for making connections to combination air and steam bags. By the arrangement a change over from air to steam or steam to air can be made without disconnecting the connections on the bag. In carrying out this operation it is important that the directions are followed very closely.

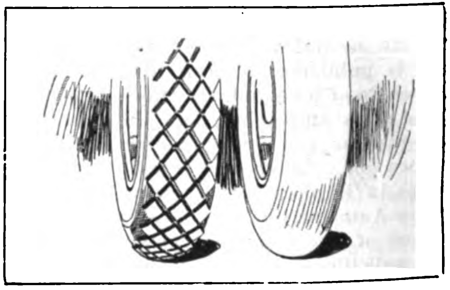
The flexible tube is connected to the bag. The valve C is opened, valves A and D being closed, thus admitting air to the bag. When it is desired to make the change over to steam, valve C is closed and A and D opened.

The purpose of the valve D is to prevent air from leaking into the bag with the steam in case valve C should leak. This sometimes happens unless valve D is put in the line due to the fact that the air pressure is higher than that of the steam. Check valve B prevents the steam or condensed water from flowing back into the air line in case the air is shut off.



EQUAL TRACTION OPENS WAY FOR TIRE SALES TALK.

In making a tire inspection it is a good plan to tell the owner the story of equal and unequal traction. Show him with a diagram, using pad and pencil that, by shifting his casings so that they balance each other, he can obtain equal traction (equal gripping and pulling power of the casing on the road surface.) This also enables him to obtain hundreds of miles of mileage otherwise lost. (See diagram.)



It is a well known fact that, due to the peculiarities of driving, traffic rules, of starting and stopping, that tires wear out as follows: Rear right first, then rear left, right front next and left front last. If the motorist has this explained to him he will more readily agree with you when you prescribe retreading or repairs, shifting casings or purchase of new.

FABRIC RUPTURES.

Fabric, like steel or any other article, has its limit of strength, and when taxed beyond that point will break. A rupture of this nature may be caused from a cut or bruise and usually, although not always, splits with the bias or in the direction of the threads of the rubber. The bruise does not always leave a mark in the rubber cover on the outside, and it is, therefore, sometimes hard to understand why a tire blows out when being driven on a perfectly smooth street. The cut or bruise may originally be very small, but it causes the fabric to continue to strain and break at this weak place, and to eventually pinch the tube or blow out.

DIRECTION OF REVOLUTION DOES NOT AFFECT LIFE.

Does it make any difference in the manner of the application of a casing in regard to the direction of revolution? This is a question asked by a Wyoming man and can be answered as follows: There is little difference in the lasting quality of a casing to be derived from changing the running direction when putting it back on the wheel. While running in one direction the cords in the casing are necessarily pulled or strained in one direction, and naturally, when the direction of revolution is reversed, the strain is reversed. Whether this is good or injurious for the casing is a question, but seemingly there is but little to be gained according to experiments in reversing the direction of revolution.

With this method it is also necessary to tighten up the clamps from three to five minutes after the casing has been placed in the mold.

SIMPLE DEVICES THAT WILL SAVE TIME AND MONEY.

In the accompanying illustration is shown an advertising device used by a New Jersey repairman, who used to lose a good many air gauges because thoughtless customers carried them away.

He cut sections from a Goodyear tire showing the tread pattern as well as the construction of the casing, and bored holes in them through which chain links were fastened and to the other end of the chains the air gauges. The combination is so unusual that he says motorists examine the section of casing and come in to ask questions about the tire. This often gives him an opportunity to sell a tire.

TREAD WEAR MAY BE CAUSED BY BRAKE BANDS.

Excessive wear to the tread of a tire does not necessarily indicate irregular alignment of wheels. If on the rear wheel the damage may be caused by one or both brake drums being too tightly adjusted. If the clamping brackets of demountable rims are not tightened evenly the rims will wabble and grind the tires off in a short time.

The canting of the front wheels outward at the top, for the purpose of easier steering and turning of curves to better advantage, varies from one-quarter to 1⅛ inches between inside felloe measurements. If the wheels stand too far outward at the top there is some binding effect at the axles; the tires do not roll freely, the strains on the fabric are not equally distributed and the rubber on the side wall is more exposed to wear.

It is the general impression that excessive wear to the tire tread is caused from misalignment of the wheels, and the real fault is not, therefore, always discovered even when the car has been inspected by a mechanic. If, on test, the wheels are found to be in alignment, other conditions that might cause wear are not considered, and the tire is itself assumed to be defective. Excessive wear on the tread may often be traced to a loose or worn hub disc, bent axle, steering rod or knuckle, or a connecting rod that is either too long or too short. If on a rear wheel the damage may be due to the brake drums, as stated above.

THE QUESTION BOX.

Q. Is it important to cut fabric for sectional repairs on the bias?

A. All manufacturers of fabric tires cut their fabric on a bias to give resiliency to the carcass. In making a sectional repair the object is to get a job that will not be stiffer than the rest of the tire. Hence, if fabric used is cut on the bias, the repairman is more likely to get a job that will not be stiff.

Q. What is the cause of tread gum loosening from the casing?

A. Improper buffing, the use of a poor grade of solvent in cement, or dirty spots on the old carcass due to a water-soaked condition, are probable causes for loosening of the tread.

Q. What is the correct amount of cushion gum to apply to a casing which is being retreaded?

A. One thirty-second of an inch of G-170 cushion gum.

Q. What is the cause of retread work coming off the casing in pieces?

A. Probably over-cure.

Q. What is the best way to repair fabric separations caused from running on a flat tire?

A. It depends entirely upon the extent of separation of the plies. If the casing is too badly separated, it will not be profitable to make a repair. For slight separation, one-ply deep and not over two or three inches long, the ply might be split, the edges raised, cemented and placed in position and a patch of new fabric applied on the top.

Q. Is high test gasoline necessary for use in cutting C-15 cement?

A. No. The point to remember in using a solvent is that it shall be free of oil residue. Oil in a solvent will give all manner of trouble in a cure.

RIM CUTS.

Rim cutting is not always a result of running with under-inflated tires. In fact the construction of the beads has been so improved that running soft does not usually damage the beads to any great extent. Rim cuts are more likely to develop from dented rims, and very frequently from heavy loads, fillers, etc. If a tire has been ridden deflated for a considerable distance at any time, the rim flanges may have been battered down and have become rough. In such an event the next tire to be applied is sure to be cut around the beads. If not neglected too long, such an injury may be satisfactorily repaired.

DEGREES OF HEAT, NOT PRESSURE, MAKE BEST CURE.

There is only one proper cure for a given material when it comes to the question of applying heat. It is needless to say that the time of cure naturally depends upon the thickness of the raw materials used.

Steam gauge pressure is only standard at sea-level and 40 pounds in that case represents 286.7 degrees Fahrenheit. In all elevated parts of the country, such as Denver, the 40 pounds of steam pressure would be lower by several degrees. For this reason, care must be taken to observe the altitude in which the cures are made.

Another condition to be aware of is that there may be trapped air in the mold or condensation may have taken place. In this case the steam gauge would still read 40 pounds steam pressure but the heat of those molds would be far below 286.7 degree Fahrenheit.

Therefore, the important thing to remember in curing is not steam pressure, but degrees of heat.

If possible use a thermometer on the molds and then the repairman will know whether or not he has the proper curing heat.

DANGER OF NEGLECT.

Car owners cannot sometimes understand why tires having good covers and appearing to be all right from the outside fail to give more service, and are surprised to learn from the repair man that it is not advisable to rebuild the tire. This is often due to water working through neglected cuts in the cover and causing separation, decay and disintegration of the fabric.

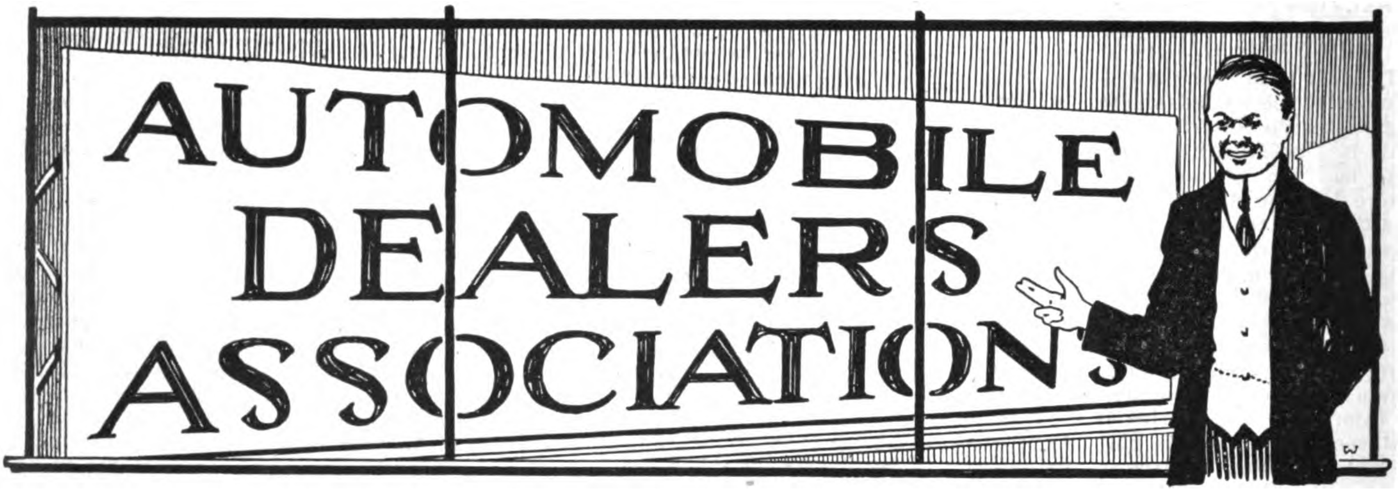
A neglected cut spreads or opens under the weight of the car. Dirt and moisture works in and when the wheel revolves this foreign matter is held and a wedging action takes place. In time sand boils form and continued neglect means the entire separation of the tread.

BEST UNIONS MADE BY TREAD CONTACT.

When repairmen find treads "letting go" where the new rubber joins the old, they can be sure, if the cement is thoroughly dry and the solvent has no oil residue, that the trouble is due to the fact that they have not made the tread union consist of tread gum to tread, i. e., they have probably united tread gums by means of a union of cushion stock.

HUDSON TIRE CO. INCORPORATED.

The Hudson Tire & Rubber Corporation has been formed with capital of $1,000,000 and executive offices at 503-504 Proctor building, Yonkers, N. Y., and will commence at once the building of a modern factory on a 20-acre tract of land in that city, where cord and fabric tires, tubes, solid truck tires and other rubber goods will be made. The officials are: President and general manager, W. M. Doucette; vice president and treasurer, H. B. Seymour.



Dafoe Heads Minn. Association

With a view to bettering local trade conditions and lending aid to the proposed Babcock good roads amendment movement, Minneapolis and St. Paul motor vehicle dealers have perfected a permanent organization under the name of Twin City Motor Vehicle Men's association. The following officers were chosen:

President, Harry Dafoe, Federal Motor Truck Co.; vice president, Carl Will, Wilcox Co.; treasurer, Joseph A. Donnelly, Mack Co. Board of directors, E. W. Brehm, Brehm-McMullen Co., Acme distributor; J. C. Compton, White Co.; W. R. Stevens, Pence Auto Co.; G. E. Holmberg, Stevens Corporation, Republic truck distributor. P. S. Wells of the Master Motor Truck Co. was appointed chairman of a permanent entertainment committee.

The election of a secretary was deferred pending the appointment of a paid assistant secretary.

"Minneapolis and St. Paul commercial car dealers have long been in need of such an organization," says President Dafoe, "and with an association composed of live-wire distributors, manufacturers and factory representatives, we are assured immediate success in our undertaking. With the Babcock good roads amendment coming up for adoption or rejection at the November election, it behooves the motor truck dealers to busy themselves spreading propaganda favorable to the movement for, unless this amendment passes, we can see no immediate improvement in roads throughout the state and unless there are improvements, and vast improvements, made within the next few years, the motor haulage project will be retarded in its progress and our opportunity to relieve freight congestion will be lost, in part."

Harry Dafoe, President Twin City Motor Vehicle Men's Association.

OUTING OF PHILADELPHIA ACCESSORIES ASSOCIATION.

The Automobile Accessories Business association of Philadelphia held its annual outing at Bushkill, Pa., June 18 and 19, which was attended by 100 members, who made the trip in 35 automobiles with a Graham Brothers truck for the conveyance of baggage, tire repair outfit, etc. The affair commenced with a lunch served in the rooms of the Philadelphia Automobile Trade association before the start on the 100-mile run through Sellersville, Quakertown, Coopersburg, Allentown, Bethlehem, Nazareth, Wind Gap, Saylorsburg and Stroudsburg. Upon arrival at Bushkill a dinner was served and the evening was spent in dancing, games, etc.

The second day was occupied with baseball and other outdoor sports, visits to spots of interest in the vicinity, etc., and the return trip was made in the afternoon by the way of Delaware Water Gap. A feature of the journey home was the entertainment provided at Easton by the representatives of the automotive industry under the auspices of the Easton Motor association, the committee of arrangements, including Robert G. Arnold, executive secretary; C. H. Quig, Fred L. Way and C. C. MacDougall. A visit was made to Lafayette college.

The chairman of the Automobile Accessories Business association's outing committee was George L. Fischer of J. H. McCullough & Sons.

Florida Association's Bonding Plan

The plan proposed by the Florida State Automobile association for taking care of a state bond issue for a state system of roads and bridges with revenues derived from state registration fees, or licenses, on motor vehicles, is as follows:

A bond issue of $5,000,000 running for 20 years from July 1, 1921, maturing June 30, 1940, at five per cent. interest.

A bond issue of $5,000,000 running for 18 years from July 1, 1923, maturing June 30, 1940, at five per cent. interest.

A bond issue of $5,000,000 running for 16 years from July 1, 1925, maturing June 30, 1940, at five per cent. interest.

A bond issue of $5,000,000 running for 14 years from July 1, 1927, maturing June 30, 1940, at five per cent. interest.

Based at 50 cents per hundred weight on all motor driven vehicles, at an estimated average weight of 2000 pounds, the revenue to be derived from a total of 75,000 such vehicles for the year 1922 would amount to $750,000. After deducting 10 per cent. for cost of tags, expenses incident delivery of tags, registration certificates, licenses, etc., the net revenue available for taking care of the bond issue would amount to $675,000 for the first year.

All funds collected from motor vehicle licenses, after paying the annual interest on the bonds, would be placed in a sinking fund, and the interest on these funds at four per cent. per year would be added to the principal of the sinking fund each year and also draw interest.

Before the close of the year 1940 there would be a sufficient amount in the sinking fund to retire the four issues of bonds and a balance of $3,076,127 which could be used for road building or repairs.

Electrical Craft has been organized as a department of the Portland Garage and Repair Men's association of Portland, Ore. Its membership comprises R. W. Lee & Co., Gibson Electric Garage and Storage Battery Co., Sunset Electric Co., Electric Service Auto Co., Keene & Morrison, Johnnie Walker, Bolton Service Station, Fred Dundee, Ballou & Wright and the Pacific Eisemann Co.

Curran-Detroit Increases Capital

The sales campaign inaugurated by the Curran-Detroit Radiator Co., Detroit, Mich., the first of the year, has resulted in so great a demand for its radiators that the capitalization has been increased to $1,000,000, but it remains a Michigan corporation. The personnel of the management is as follows: President, Edward T. Curran, B. S., L. L. M., M. D., Detroit, radiation engineer, inventor of Curran radiators and Detroit water heaters and founder of the Detroit Heater Corporation; vice president, W. H. Fahrenbach, attorney-at-law and capitalist, Cleveland, O.; second vice president and general manager, Harry H. Rowe, Detroit, sales expert, associated for 16 years with the sales departments of the Burroughs Adding Machine Co., the Packard Motor Car Co. and the Federal Truck Co.; treasurer, John Kelly, Detroit, formerly with the United States Pattern & Manufacturing Co., pattern and manufacturing expert; secretary, Thomas W. Booth, at present associated with the Burroughs Adding Machine Co. as production manager of the Canadian branch, with which company he has been associated continuously for the past 14 years.

The board of directors is composed of the foregoing, together with William J. Murray, president of the Murray Cartage Co.; Edwin T. Harms, vice president of the Detroit Vapor Stove Co.; M. N. Nahikian, insurance broker and capitalist, and Harry F. Lacey, cost accountant expert of Detroit.

The chief engineer is H. I. Phillips, A. E., M. T., formerly experimental engineer of the Northway Motor Co., Detroit; also Bureau of Air Craft, United States army, graduate U. of M. Godfrey E. Hamel, Detroit, formerly with Price, Waterhouse & Co., certified public accountant, is auditor, and the company's attorney is Ex-Senator Clarence E. Gittens, Detroit, of the firm of Gittens, Heald & Lux.

MAC-LAR BATTERY CO. BECOMES MICHIGAN CORPORATION.

At a recent meeting of the board of directors of the Mac-Lar Battery Co., Inc., Detroit, it was decided to change the company from a Delaware to a Michigan corporation, and to increase the capital to $125,000.

In the year and a half of its existence the Mac-Lar Battery Co. has attained a nation-wide distribution for its product, the Mac-Lar "Spike-Test" lighting and starting batteries. The new plans of the company provide for following up this successful record with an even more intensive merchandising campaign and largely increased production.

The officers of the organization are: President, Walter L. Malotte, director and Michigan representative of the Gilliam Manufacturing Co. and vice president of the A. E. Bowman Co. of Detroit; vice president, A. E. Bowman, president of the A. E. Bowman Co., automobile accessory jobber of Detroit; secretary, W. J. Clark, Michigan representative of the Standard Bolt Co., Columbus, O., and of the Fitzgerald Manufacturing Co., Torrington, Conn., also second vice president of the A. E. Bowman Co.; treasurer, L. A. Steele, former assistant secretary of the Newberry estate; production and factory manager, C. J. Larsen.

INCORPORATION OF VICTOR RITE-LITE CO.

The Victor Rite-Lite Co., Inc., 339-345 Bloomfield avenue, Montclair, N. J., has been incorporated with a capital of $125,000, and having purchased the Standley Non-Skid Chain Co., it will automatically take over the national distribution of the Standley products, which will include the well known collapsible luggage carrier, non-skid chain, rim tool, etc.

The Victor Rite-Lite Co., will manufacture and feature an invention which can be readily attached to any car, and which will enable the lamps of the car to swing with the wheels, namely the Victor Rite-Lite, that is, when the car turns a corner the light is where it is wanted, on the road. This invention is very simple and will be a great benefit to the automobile world, in that it eliminates the danger of the curve and makes night riding safe.

Due to the fact that the company has already sold its entire output for six months in advance, it is now recapitalizing for $3,000,000 in order to erect a foundry, enlarge the machine shop, drawing mill, warehouses, etc.

The concern is headed by Hector S. Hill, president, an eminent man in the automobile world; Benjamin Rotsman, vice president; George J. Crabb, treasurer; Edward J. Rennie, secretary.

NEW OFFICIALS OF MADISON CO.

The Madison Tire & Rubber Co., Inc., the general offices of which are at 20 West 60th street, New York City, announces the appointment of Jean Nehmelman as sales manager, and George Shortmeier as manager of the New York branch. Sylvan E. Weil will continue as assistant sales manager.

Central Auto Top Co. Formed

The Central Auto Top Co. of Indianapolis, Ind., which came into existence as a partnership in 1912, has been incorporated under the laws of Indiana and has taken the name of Central Auto Top & Leather Co. and will continue the same line of business and broaden its operations by the manufacture of leather products, such as belts, fan belts, automobile clutch leathers, leather specialties and belt repairing. The original company made automobile tops, victoria tops, seat, tire, radiator and hood covers, dust hood, door hand pads, back pads and repairing.

The capitalization of the Central Auto Top & Leather Co. is $75,000, and the officers are as follows: President, William Swoboda; vice president, Chester A. Carlisle; secretary, Charles Swoboda; treasurer, William Marble. The new line will be in direct charge of Charles Swoboda, who has been with the Hide Leather & Belting Co. of Indianapolis for 29 years as superintendent.

Officials of the Central Auto Top Co.: B, William Swoboda, President; C. Chester A. Carlisle, Vice President; A, Charles Swoboda, Secretary; D, William Marble, Treasurer.

The Central Auto Top & Leather Co. has grown from a small beginning until now it is probably one of the best known top companies in the Middle West, and through its fair policy has built up an enviable reputation. All the products are guaranteed for material and workmanship.

Its business has rapidly increased since its inception on Michigan street, and has made two removals necessary, first to 330 North Illinois street, and later to its present quarters at 421-425 North Capitol avenue, and a new factory is contemplated in the near future. Messrs. William Swoboda, Carlisle and Marble, the original partners, are experienced top makers, having gained their early experience in the carriage business before tops became standard on automobiles.

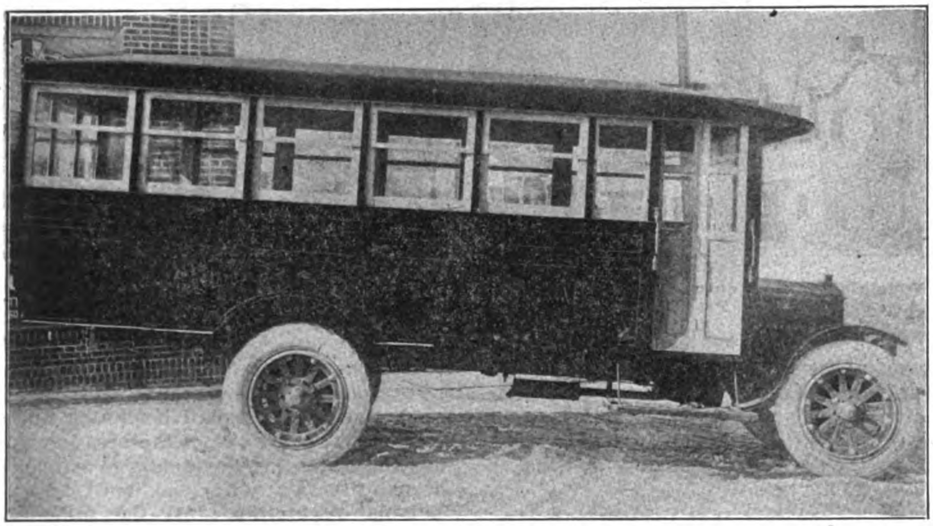
ROTH & SCHLENGER MOVE.

Roth & Schlenger, Inc., dealer in automotive accessories, tires and supplies, Newark, N. J., announces that it has purchased the building at 29 William street, corner of Halsey street.

EXPORT DEPARTMENT
W.

Rainier Omnibuses in China

Nantoon, China, is being made a model city a la America, and not the least of the a la mode touches will be the running of six motor omnibuses on Rainier chassis, each carrying 30 passengers. Chang Chein, former Chinese minister of commerce and agriculture, who has recently been studying American manners and customs, is the moving spirit behind this civilizing enterprise. He recently left New York and will return to his office at 721 Fifth avenue in the fall, his dream largely fulfilled.



One of the Fleet of Rainier Truck Chassis Equipped with Passenger Body, for Public Service in the City of Nantoon, China.

The Rainier omnibuses will be operated by a company controlled by Mr. Chang and will have definite routes and schedules. He believes truck transportation to be the foundation of progress in China and is going to try the Rainier trucks on the rebuilt roads of Nantoon in anticipation of larger fleets to follow. The Rainier omnibuses are to be the only means of transportation in Nantoon.

MOTOR BUS LINE IN PERSIA.

The Parsis Yaganegi Co. of Teheran, Persia, recently ordered a Federal truck with a body specially built and equipped for service in a modern mail and passenger bus line to be operated in that country. The body is mounted on a 1½-ton chassis, with enclosed driver's cab built integral with the body, with standard type windshield, fitted with curtains in front. Immediately back of the cab is a mail and baggage compartment with a door at each side, glass windows protected by wire screens, and a step below each door. The passenger compartment occupies the rear half of the body and provides leather upholstered side seats for from eight to 10 passengers. It is separated from the baggage room by a screen partition with sliding door. Each side has single drop windows, while the passengers enter and exit by double rear doors with step below. A rail around the top provides additional space for luggage.

Pneumatic tires are used on all four wheels, which is almost an absolute necessity for passenger traffic over the poorly paved streets of Asiatic cities.

HAYNES REPRESENTATIVE IN ONTARIO, CAN.

British & American Motors, Ltd., 77-85 Avenue road, Toronto, Canada, successor to the well known firm of Wolseley Motors, Ltd., has acquired the exclusive selling rights for Haynes Character cars throughout the Province of Ontario. The president of British & American Motors, Ltd., is W. H. Gooderham, who is well known to the motoring public of Toronto.

Motor Shows to Be Held Abroad

Consul E. J. Norton of Sydney, Australia, gives notice that, owing to the success of the motor show in that city last January, preparation for an even larger show the early part of 1921, under the auspices of the Motor Traders' association of New South Wales, is already in progress. Applications for space will be received during and after August and and must be forwarded through the motor dealers of Sydney who are members of the association. The association strongly recommends a display of moving picture films of American industrial and manufacturing enterprises each night of the show in connection with the exhibits.

The date for the international exhibit of samples, etc., to be held at Barcelona, Spain, has been fixed as Sept. 25 to Oct. 10 inclusive.

AMERICAN CARS IN SHANGHAI.

In Shanghai, China, American cars are in the ascendancy, according to Consul W. Roderick Dorsey, who reports that on June 30 last in the Shanghai consular district the number in use was:

Passenger cars, 1790; commercial vehicles, 45; cycles, 186. The totals for the years 1916, 1917 and 1918 were 1002, 1373 and 1728 respectively.

It is estimated that there are about 350 public passenger cars and about 75 miles of road suitable for motor traffic in and near Shanghai, including the recently constructed highway to Woosung.

INDIA WANTS HIGH PRICED CARS.

Although recent statistics show an enormous preponderance of American-made automobiles in the import trade of India, it is stated by American consular officials there that there is apparently little attempt to introduce high priced cars there and, in fact, there is a general supposition that America makes only low and medium priced machines.

The fact is that there is fully as much ostentation among wealthy Indians as among other peoples, and if a car was seen there worth $10,000 there would be an immediate demand for still more expensive ones.

Personal News of Industry and Trade

Berry Is Stevens-Duryea Manager

George M. Berry assumes on July 1 the duties of the office of vice president and general manager of the new factory at Chicopee Falls, Mass., of the Stevens-Duryea Co. Mr. Berry first became prominent in the automotive industry with the Jeffery Co. at Kenosha where, after serving in several capacities, he became vice president and treasurer. Upon leaving the Jeffery forces some years ago he joined the Willys-Overland staff at Toledo where, as director of branches, he had charge of building, equipping and organizing the extensive branch system of that company. More recently his duties had been widened to include general sales as well as branches.

George M. Berry, Vice President and General Manager, Stevens-Duryea Co.

E. A. Samels, who less than a year ago, entered the sales department of the Four-Wheel Drive Auto Co., Clintonville, Wis., has been appointed assistant sales manager. Mr. Samels received his early experience in the Chicago office of the Locomobile Co. of America, which had charge of a number of the company's branches and territorial supervision over 24 states. Later he acted as special Chicago representative for A. J. Banta, president of the Maxwell Sales Co.

E. A. Samels, Assistant Sales Manager, F-W-D Auto Co.

Frank J. Wessley has sold his garage on Lexington avenue, Mount Kisco, N. Y., to the Mount Kisco Laundry, Inc.

Charles P. Newby, who joined the Bethlehem Motors Corporation in the fall of 1919 as field manager, has been appointed general sales manager. Mr. Newby was connected with the interests of Walter E. Flanders for over 10 years. In the early days of the automobile industry he was branch manager of the E-M-F Co. at Sioux Falls, S. D., and later branch manager of the Studebaker Corporation at Minneapolis, Minn. He became the first district manager for the Maxwell organization with the northwest as his territory, and was promoted to western sales supervisor and then to sales manager. After leaving the Maxwell factory organization he became distributor of Maxwell cars in Iowa and then on the Pacific coast. In undertaking his new duties, Mr. Newby finds the 1920 Bethlehem production schedule carrying an increase of 275 per cent. over 1919. The company has under way additional buildings and equipment to cost $1,300,000, which will care for the increased demand. With the completion of these additions the capacity of the plant will be in excess of 20,000 vehicles yearly.

C. L. Strange and W. F. West have purchased the Fields Motor Co., Dalles, Ore.

C. P. Newby, General Sales Manager, Bethlehem Motors Corporation.

Sloan Becomes Buda's Treasurer

H. M. Sloan has been appointed treasurer of the Buda Co., Harvey, Ill. He was formerly assistant to the president of the Chicago, Milwaukee & St. Paul railroad and also served on the War Industry board during the war. After his graduation from school, Mr. Sloan started in railroad service with the Fremont, Elkhorn & Missouri Valley railroad, was later transferred to Chicago to the vice president's office, resigning such position to enter the comptroller's office of the Chicago, Rock Island & Pacific railroad in 1902. He became chief clerk in 1904 and was appointed auditor of disbursements Jan. 1, 1905. In July, 1906, he was transferred to New York, becoming assistant to the vice president and later assistant to the chairman of the executive committee. Dec. 1, 1909, he was appointed vice president of the Chicago, Rock Island & Pacific railroad, which office he held until the receivership, at which time he became assistant to the president until September, 1918, when he went to Washington.

H. W. Sloan, New Treasurer of the Buda Co., Harvey, Ill.

C. M. Eason, widely known in the automotive trade for his development of the tractor business of the Hyatt Roller Bearing Co., has been appointed sales manager of the Hyatt division of the General Motors Corporation, succeeding B. G. Koether, who has been made assistant general manager. Mr. Eason was formerly general manager of the Engineering Development Co., Moline, Ill.

Stanley P. McMinn, head of the McMinn Tire Co., Bridgeport, Conn., has added a wholesale department. He handles the products of the Gates Rubber Co.

Clifton Re-Elected President of N. A. C. C.

Col. Charles Clifton, of the Pierce-Arrow Motor Car Co., Buffalo, N. Y., was re-elected president of the National Automobile Chamber of Commerce at its recent annual meeting. Other officers chosen were as follows: First vice president, Roy D. Chapin, Hudson Motor Car Co.; second vice president, passenger car division, C. C. Hanch, Maxwell Motor Co.; second vice president, motor truck division, Windsor T. White, White Motor Co.; secretary, A. J. Brosseau, International Motor Co.; treasurer, H. H. Rice, General Motors Truck Co.; general manager, Alfred Reeves. The directors were Charles Clifton, Pierce-Arrow Motor Car Co.; Windsor T. White, White Motor Co.; Horace E. Dodge, Dodge Brothers; Harry M. Paige, Paige-Detroit Motor Car Co.; W. C. Sills, Chevrolet Motor Co.

R. Jackson Jones, Assistant General Manager, Traffic Motor Truck Corporation, St. Louis, Mo.

Captain Walter Wanderwell, driving a Moon Six car equipped with a special camping body, recently arrived in Los Angeles, Cal., on his trip around the world. In 1912 Captain Wanderwell began a walk around the world, starting from Posen, Poland, and finishing at Atlanta, Ga., in 1918, having gone 82,000 miles on foot in five years. In September, 1919, he left Atlanta, piloting the first official automobile tour around the globe since the world war. Up to the present time this party has travelled 68,000 miles, and expects to end the tour in New York in 1922.

G. E. Swartz, formerly mechanical superintendent of the Torbensen Axle Co., Cleveland, O., has resigned to become manufacturing manager of the Timken-Detroit Axle Co.

Edwin Riley Johnson, president of the Johnson-Dickerson Automobile Co. of Dallas, Tex., recently died in that city.

Louis Chevrolet, the internationally known racing driver, brother of Gaston Chevrolet, winner of this year's Indianapolis Speedway race, has retired from the track and will devote his time as a designer of engines for the manufacturer of the Monroe car. He is probably one of the oldest racing drivers in the sport in point of experience, having driven cars in every part of the world.

Col. Charles Clifton, Again Elected President of the N. A. C. C.

A. C. Barber has been appointed sales manager of Willy's-Overland, Inc., to direct, under the supervision of Edwin B. Jackson, vice president in charge of sales, whose office is in New York, the distribution of Oyerland and Willy-Knight cars from the factory at Toledo. Since the first of the year, Mr. Barber has been manager of two principal selling divisions in the Willys-Overland organization, the east central and west central, comprising the districts of Cleveland, Detroit, Chicago, Indianapolis and St. Louis. He joined Willy-Overland in 1916. From 1904 to 1916 he was sales manager for the Moline Plow Co. at Moline, Ill., and was advanced to that post from that of branch manager at Kansas City and Minneapolis, having started with the Moline Co. as salesman at Kansas City and later made assistant manager of sales at St. Louis.

A. C. Barber, Sales Manager, Willys-Overland, Inc.

Younggreen President of Advertisers' Club

Charles C. Younggreen, advertising manager of the J. I. Case Plow Works Co., Racine, Wis., has been chosen president of the Advertisers' club, recently formed in that city. Mr. Younggreen was formerly advertising manager of the Wisconsin Agriculturist, vice president and general manager of the Kansas Farmer, director of the Kansas State fair and manager of the First National tractor show at Hutchinson, Kan., and was in the aviation branch of the United States army during the war. The Advertisers' club will be affiliated with the Associated Advertising Clubs of the World.

Jules Goux, the French racing driver, winner of the 1913 Indianapolis Speedway race, and one of the contestants this year, was recently married to Miss Ruth Davis of Indianapolis. Mr. Goux is general sales manager for the Peugeot Auto Co. of Paris, France, and will go to France with his bride, but intends to return to this country to participate in the 1921 race.

Charles C. Younggreen, Advertising Manager, J. I. Case Plow Works Co., President Racine Advertisers' Club.

F. B. Kirkbride, who has been vice president of SKF Industries, Inc., New York City, since the organization of that company, has been elected president to succeed B. G. Prytz, who resigned the presidency to become managing director of the parent SKF company with headquarters at Gothenburg, Sweden.

James W. Powers, formerly with the Jaxon Steel Products Co., Jackson, Mich., has been appointed sales manager of the Motor Starter & Air Pump Co., maker of Long Stroke truck tire pumps and garage compressors, with offices at 562 Book building, Detroit, Mich.

L. H. Boydston has been appointed manager of the Chicago branch of the Service Motor Truck Co. He has been associated with this company for some time as division sales manager.

Garland Has Joined Wisconsin Parts

Ralph C. Garland has joined the Wisconsin Parts Co. as chief engineer. He is a pioneer in the motor truck industry, having been connected with the engineering department of the American Locomotive Co., Prvoidence, R. I., in 1906, when that company was making the Alco truck. He later was with the Thomas Taxi Cab Co., Buffalo; the Pope Manufacturing Co., Hartford; the United States Motors Corporation, the Crane Motor Car Co., the Edwards Knight Motor Car Co., New York City, and the Martin Tractor Co., Springfield, Mass. He also held positions as designing engineer with the Briscoe Motor Co., Jackson, Mich., and Willys-Overland Co., Toledo. During the past four years he has been in the engineering department of the General Motors Corporation, specializing on ball bearing applications. He also was one of the experts who had a part in designing the Class B motor truck. The Wisconsin Parts Co. proposes to install a large experimental laboratory of which Mr. Garland will have charge.

Ralph C. Garland, Chief Engineer, Wisconsin Parts Co.

George E. Yokem, Buick distributor at Port Huron, Mich., is to sell the White truck in Michigan and has opened sales rooms in Detroit.

Edgar L. Garson has been appointed sales manager of the Garson Motor Sales Co., which distributes Commonwealth products in Detroit.

C. R. Query has opened a vulcanizing and repair shop in the Jones building, Jackson, Mo.

F. M. Crawford has bought the Noll & Mayer battery station at Wamego, Kan.

Randall Ford has opened a tire repair shop in the Gazette building, next to the Brandt Garage, Plainville, Kan.

W. H. Batdorf, Columbus, O., has been appointed distributor of the Dixie Flyer for central Ohio.

B. G. Koether, Made Assistant General Manager, Hyatt Division, General Motors Corp.

F. E. Blanchard has been appointed assistant engineer of the engine division of the Buda Co., Harvey, Ill. He was formerly connected with the Milburn Wagon Co. as engineer and general manager of the truck division. His early experience was with the Pope-Toledo Motor Car Co. and later in the testing department of the Willys-Overland Co. During the war he was active in experimental air plane division of the Fisher Body Co., Detroit.

Joseph DeCarlo is to occupy a new show room and garage at Broadway and 16th street, Troy, N. Y.

Fred Butler and **Walter Chowning** have opened an automobile repair shop on West Main street, Laredo, Mo.

Walter J. Strittmatter has become manager of the exchange department of the Stearns-Detroit Sales Co.

E. M. Strause is sales manager of the Kreiser Automobile Co., Lowell, Mich.

John S. Edson has purchased the Dearing Garage at Dearing, Kan.

Paul H. Knoll, Purchasing Agent, J. I. Case Plow Works Co., Racine, Wis.

Koether Again Promoted by Hyatt Co.

B. G. Koether, whose promotion to vice president of the Hyatt Roller Bearing Co. several months ago was announced, has now been made assistant general manager of the Hyatt division of the General Motors Corporation. Although he still remains a vice president of the Hyatt selling company, he has relinquished his duties as director of sales and advertising work to devote his entire efforts to boosting Hyatt production to meet the enormous demand which he has played so prominent a part in creating. This work will keep him at the company's plant at Harrison, N. J., where he has made his headquarters since leaving Detroit.

Paul H. Knoll has been appointed by the J. I. Case Plow Works Co., Racine, Wis., as director of purchases. He has had wide experience in the tractor field and is well qualified for his new position. He was one of the original owners and executive officers of the Bull Tractor Co., and was, for many years, with the Simmons Hardware and Big Four Tractor companies.

F. E. Blanchard, Assistant Engineer, the Buda Co., Harvey, Ill.

J. H. Quackenbush has been appointed, by Walter P. Coghlan, general sales manager of the American Hammered Piston Ring Co., Baltimore, Md., as assistant to the general sales manager. Mr. Quackenbush, at the time of his appointment, was district sales manager of the company for New Jersey, Delaware, Pennsylvania, Ohio and West Virginia. He has a wide acquaintance in the automotive equipment trade throughout the East. B. B. Wolfe, a former factory representative in that district, succeeds Mr. Quackenbush as district masager.

Charles Ethan Billings, founder of the Billings and Spencer Co., Hartford, Conn., and chairman of the board of directors of that company, is dead, aged 85 years.

Earl Payne and **Will Haynes** have opened a garage at Meriden, Kan.

Willys Heads Republic Truck Co.

John N. Willys has been elected president of the Republic Motor Truck Co., succeeding F. W. Ruggles, retired. In November, Messrs. Willys and Ruggles, together with W. J. Baxter, acquired a majority of the stock of the Republic Co. from Cleveland interests, this carrying with it the control of the Torbensen Axle Co. Shortly afterwards Mr. Willys was elected chairman of the board of directors, in which capacity he served until the retirement of Mr. Ruggles. The concerns directly under Willys control now include Willys-Overland, Inc., Moline Plow Co. and Electric Auto-Lite Corporation.

Frederick Spencer has been appointed, by Sherwood Hall, Jr., president of the Hall Motor Co., of Boston, distributor of the Hupmobile, superintendent of the service department of the Hall Co. Mr. Spencer has been, for 15 years, with the Winton Co., during the last four of which he has been superintendent of the service station. Stafford Rogers, who has been associated with the Hall Motor Co. for the past year, lately as service manager, has gone into the sales department.

John N. Willys, Elected President of the Republic Motor Truck Co.

Kenneth A. Moore, formerly general agent of the New York Central railroad lines, has been added to the staff of the National Automobile Chamber of Commerce, as assistant traffic manager in the western district with headquarters at 1009 Ford building, Detroit, Mich.

Captain L. E. Gossett, a graduate of the Motor Transport Corps of the United States army, has joined the staff of the National Automobile Chamber of Commerce in the motor truck department to assist particularly in the rural motor express division.

David Galowitz has purchased six lots, 38 to 48 Providence street, Newark, N. J., as a site for a one-story, brick garage, 100 by 100, to cost about $30,000.

George A. Hammer, who has just associated himself with the advertising agency of MacManus, Inc., Detroit, Mich., is well known in the publicity field. His first connection was as assistant general manager and advertising manager of a large manufacturing plant in Chicago. He next joined Shaw-Walker at the time the publication, "System," was converted from a manufacturer's house organ to a general business magazine. In following years he was an advertising representative of the Butterick Publishing Co. and the Curtis Publishing Co., his connection with the latter extending over the last 11 years.

H. C. Osterman, vice president and field secretary of the Lincoln Highway association, met his death while driving on the highway between Tama and Marshalltown, Ia., the night of June 7. In turning out for an approaching car the machine which Mr. Osterman was driving skidded and overturned, instantly killing the driver. Mr. Osterman had been connected with the association since 1913 and was making his 21st transcontinental drive at this time.

S. A. Host, who was connected with the Lincoln Highway association in the capacity of assistant secretary and publicity director during 1916, 1917 and 1918, has rejoined the association in the same capacity as assistant to A. F. Bement, vice president and secretary. Mr. Host has been for the past 15 months connected with the advertising and sales department of the Goodyear Tire & Rubber Co. in Akron, O.

B. E. Aaronson, who has succeeded M. S. Lines as sales manager of the Gordon Tire & Rubber Co., Canton, O., has been special sales representative of the Mohawk Rubber Co. for the past three years. Before that he was connected with the Empire Rubber Co. in the sales department and previous to that was with Goodyear.

Lewis F. Johnson is manager of the Rhode Island branch of Hare's Motors that was recently opened at 163 Broad street, Providence. Mr. Johnson has been in the automobile business for 15 years, having been connected with the White, Packard and Pierce-Arrow companies.

John C. Boice, manager of the Vesta Storage Battery Co., has started to make extensive alterations on the premises at 47-49 West 63rd street, New York City, recently leased, involving an expenditure of about $350,000.

W. C. Arthur was recently made assistant secretary and counsel for the B. F. Goodrich Co., Akron, O. He was formerly manager of the legal department of that company and is a graduate of the University of Pennsylvania law school.

W. R. Eaton, formerly advertising manager of the Gates Rubber Co., Denver, Col., has been elected vice president of the Penny Rose Advertising Agency, Chicago, in charge of automotive and rubber products accounts.

Charles Weed, one of the best known salesmen along the Automobile row of New York City, has joined the sales department of E. S. Partridge & Co.

Seiberling President of Highway Assn.

F. A. Seiberling, president of the Goodyear Tire & Rubber Co., Akron, O., has been elected president of the Lincoln Highway association, succeeding H. B. Joy, who became the head of that body last December. Mr. Sieberling did not accept re-election at the annual meeting at that time, because of the press of other business matters but, with the inability of Mr. Joy to serve longer than four months, Mr. Seiberling agreed to again devote part of his time to the development of this gigantic highway project in which he has always been deeply interested.

S. E. Ackerman, sales manager of the Franklin Automobile Co., Syracuse, N. Y., is in Europe, where he will make a general study of business conditions. His itinerary includes London, Paris and Brussels. The Franklin Co. now has direct sales representation in Holland, Denmark and Norway.

F. A. Seiberling, Who Has Been Chosen President of the Lincoln Highway Association.

Henry Caldwell, formerly automobile editor of the New York Tribune and New York Herald, has been made publicity representative of Hare's Motors, Inc., 16 West 61st street, New York City.

Frank B. Willis, sales manager of the Kelly-Springfield Truck Co., has been in Chicago installing a branch at the former headquarters of the Winton Co., 2501 Michigan avenue.

C. B. Morse, late advertising manager of the New York Packing Co., has been appointed general advertising manager of Hare's Motors.

A Vito, proprietor of a new garage in Webster, Mass., has taken the agency for Chandler and Cleveland cars.

S. J. Wise, formerly a salesman with the Kelly-Springfield Rubber Co., has joined the Fisk Rubber Co. forces.

Robert A. Loving, president of the Loving-Oldfield Auto Co., Baltimore, Md., recently died in that city.

PLANS OF THE AMERICAN ROLLS-ROYCE CO.

Rolls-Royce of America, Inc., which recently acquired the factory of the American Wire Wheel Co., at Springfield, Mass., plans to produce 380 chassis a year at the outset, the list price of which will probably be about $12,000. The American built car will be an exact duplicate of its English prototype, the materials being of American production insofar as they can be secured of high enough quality to pass the scrutiny of the company's technical experts.

The American company is capitalized for $3,500,000 seven per cent. cumulative participating preferred stock ($7,500,000 authorized), and 35,000 shares of common stock (75,000 authorized) of no par value.

HAYNES DISTRIBUTOR IN THE EASTERN TERRITORY.

Wayne Smith & Co., 22nd and M streets, northwest, Washington, D. C., has acquired the exclusive selling rights for Haynes cars in the territory comprised by the District of Columbia, St. Mary's, Calvert, Charles, Prince George's, Montgomery, Washington, Alleghany and Garrett counties in Maryland, and 20 counties through the northern part of Virginia.

The service department of the new Haynes distributor in Washington will be in charge of Harry B. Hartung and Earl Ennis.

NEW FORD PRODUCTION RECORD.

All previous production records at the factory of the Ford Motor Co., Detroit, were broken in the month of March, both for the number of cars produced in one day and in one month. March 27, 4256 cars left the assembling lines at the home plant and branches, while the record for the month was 94,299 cars. These figures represent production in the United States only.

Notwithstanding the fact that production in April dropped to less than 50 per cent. of normal, because of the strike, Ford officials say that for the fiscal year, which ends July 31, they will have attained the million mark of production.

PRODUCTION RECORD OF CLEVELAND AUTO CO.

In its first eight months of operation the Cleveland Automobile Co., Cleveland, O., attained a production of 7500 cars, with a little more than half of its plant completely equipped. The schedule called for an output of 3000 cars a month by June 1, and a total of 25,000 for 1920.

BLAKE & BRYAN ENLARGE.

Blake & Bryan, which has been conducting an automobile business in the Slemmer building, Centerville, Md., has purchased the Connolly blacksmithing and wheelwrighting shops, which will be converted into an automobile repair shop.

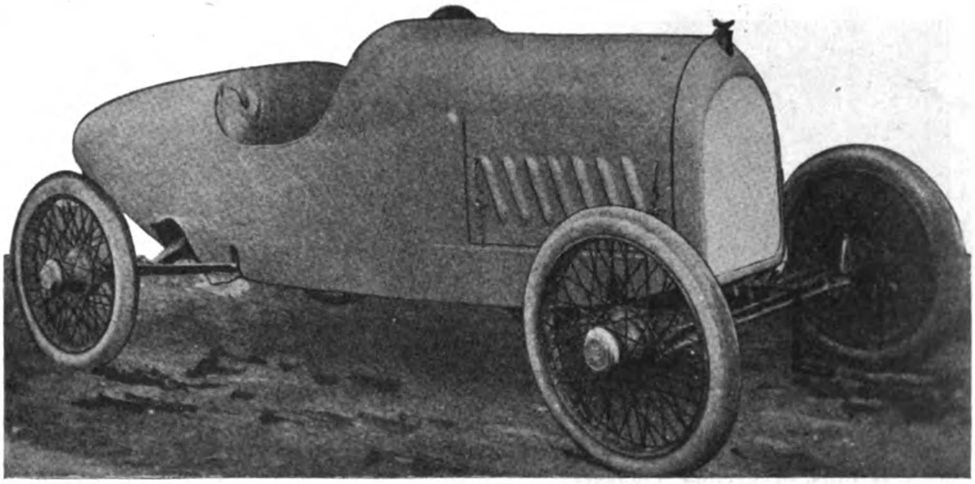
Speedway Bodies for Ford Cars

Accompanying illustration shows Speedway body for Fords and other cars, made by Morton & Brett, 811-815 East 23rd street, Indianapolis, Ind., which is designed to afford a combination body of improved racing type with the riding comforts of a touring car. The Speedway body is depicted on a standard chassis, equipped with underslung parts made also by Morton & Brett.

It is claimed by the manufacturer to be the strongest and best constructed body on the market for Fords. It has a radiator shell of foreign design, with extension filler, which fits over the regular Ford radiator of any model and allows proper cooling. The hood is perfect fitting and has large, deep, pressed louvers, giving additional ventilation. The cowl is designed to divert the wind and dust over the driver's head—a beautifully flared cowl—and a better lined one it will be hard to find on track or road, the maker states. The leg room is ample and this adds to the comfort of riding and, with the deep upholstery which is plain, securely fastened and supplied with plenty of springs, makes another feature not to be overlooked in the selection of a body

The seat and back are removable, giving access to the ample storage space provided. The regular Ford gas tank is retained in the rear, without any alteration, the necessary arrangements for this being made. In addition to these desirable qualities this body presents the famous Speedwell wedge tail, which is stated in itself to be worth the price of the body, inasmuch as it gives a great reduction in wind resistance and increases the speed from five to 10 miles an hour. The underslung feature lowers the regular Ford frame 4½ inches by a simple but unbreakable device, correct in design and construction, made of the toughest material obtainable, yet at a price within the reach of anyone wishing to lower the Ford frame, and allowing high speed with safety. In this reconstruction the front axle extends three inches in front of the radiator and the spring is hung behind the axle. A removable crank replacing the original Ford part is another feature. The rear end of the frame is shortened 5¾ inches by moving the rear cross member ahead, allowing the rear spring to be hung in front of the rear axle. No other work has to be done to lower the frame and very little mechanical experience and few tools are required. The parts have been in use for 10 years on track and road at high speed and this has been found the safest and best method of underslinging a Ford car.

Morton & Brett states that it will furnish dealers' and distributors' proposition and prices upon request.



Speedway Body for Ford and Other Cars Made by Morton & Brett, Indianapolis, Ind.

SHIPMENTS OF MULLINS BODY CO. LARGE.

The shipments of the W. H. Mullins Co., Salem, O., automobile body makers, for the first four months of the year, were, despite transportation difficulties, more than 100 per cent. larger than the value of sales for the corresponding period a year ago, figuring $1,170,000, as compared with $567,000 a year ago. The company's earnings for four months, before taxes, amounted to $337,000, as compared to profits of $123,000 a year ago. The current profits are at the rate of above $10 a share on the stock. Unfilled orders on hand are in excess of $4,000,000.

NEW EDELMAN FACTORY.

E. Edelman & Co., Chicago, Ill., announces the formal opening of its new factory at 2638-2656 North Crawford avenue. The event marked the 10th anniversary of the organization of the company.

MARMON SALES CONVENTIONS.

The Nordyke & Marmon Co., Indianapolis, manufacturer of Marmon motor cars, held a salesmen's convention in that city, in two sections; the first, June 28-July 2, and section two, July 6-10.

Officials of the Chandler Motor Car Co., Cleveland, O., state that shipments in the first four months of 1920 were 3½ times as large as those in the same period of 1919.

Jenkins Vulcan Spring Co's 10th Anniversary

JULY 15, 1920, marks the 10th anniversary of a pioneer in the spring replacement field, the Jenkins Vulcan Spring Co. of Richmond, Ind. Although it is now 10 years since the company assumed its present corporate form, Vulcan springs had their beginning 16 years ago in Sumter, S. C., where they were fitted to the famous Cadillac single cylinder model.

The Jenkins Vulcan Spring Co. today is operating a large plant which is devoted exclusively to the manufacture of high grade springs for replacement purposes. This is the only plant in the world devoting its production exclusively to spring replacement, with an organization specializing on that class of work, studying carefully the needs of the business as to quality and types of springs, maintaining a distribution which places the needed spring within reach of any motorist without delay.

A. L. Ellis, Production Manager.

T. B. Jenkins, president of the company and the original founder of the business, commenced his business career as a bicycle dealer, having a very small shop in Sumter, S. C., immediately after his discharge from the army at the close of the Spanish-American war. The business was very small in the beginning, but at once began to realise substantial growth. It was in 1903 that Mr. Jenkins embarked in the automobile business as a side line to his bicycle business. In a few years the bicycle business was closed out and his entire effort and capital directed toward the building up of an automobile agency.

The very first springs for replacement purposes were sold in 1904 for the Cadillac one-cylinder car, for which car Mr. Jenkins had the agency in a number of counties. These springs were made under contract by a spring maker in the North. The roads in the South were very bad and there was much spring breakage requiring a stock on hand at all times for the models in current use.

T. B. Jenkins, President.

From the very beginning the possibilities of this particular department of the automotive business were recognized, and the stock of springs was enlarged as rapidly as possible, to insure the widest service that could be given. In 1907, the trade name Vulcan was chosen as being representative and easily remembered. As early as 1908 there were several thousand springs carried in the Sumter stock, and shipments were made freely into seven or eight states from that establishment.

Following insistently his idea of developing this business to its fullest extent, Mr. Jenkins closed out entirely his automobile sales business and, just 10 years ago, on the 15th of July, 1910, it was decided to enlarge the scope of the business, and to deal exclusively in spring replacements on a national scale, with headquarters and factory in St. Louis. From that date, the business was known as the Jenkins Manufacturing Co., and realized substantial growth, keeping pace with the growth of the industry as a whole.

In October, 1917, the company was reorganized with a capital stock of $500,000, the new corporate name being the Jenkins Vulcan Spring Co. Factory and headquarters were located in Richmond, Ind., the present center of activity for the company, which now operates seven of its own branches in the principal strategic centers of distribution. Several hundred of the most influential jobbers in the United States are carrying full stocks of Vulcan springs, and thousands of dealers are prepared to supply quickly an exact duplicate of almost any broken spring.

D. T. Hersey, Director of Sales.

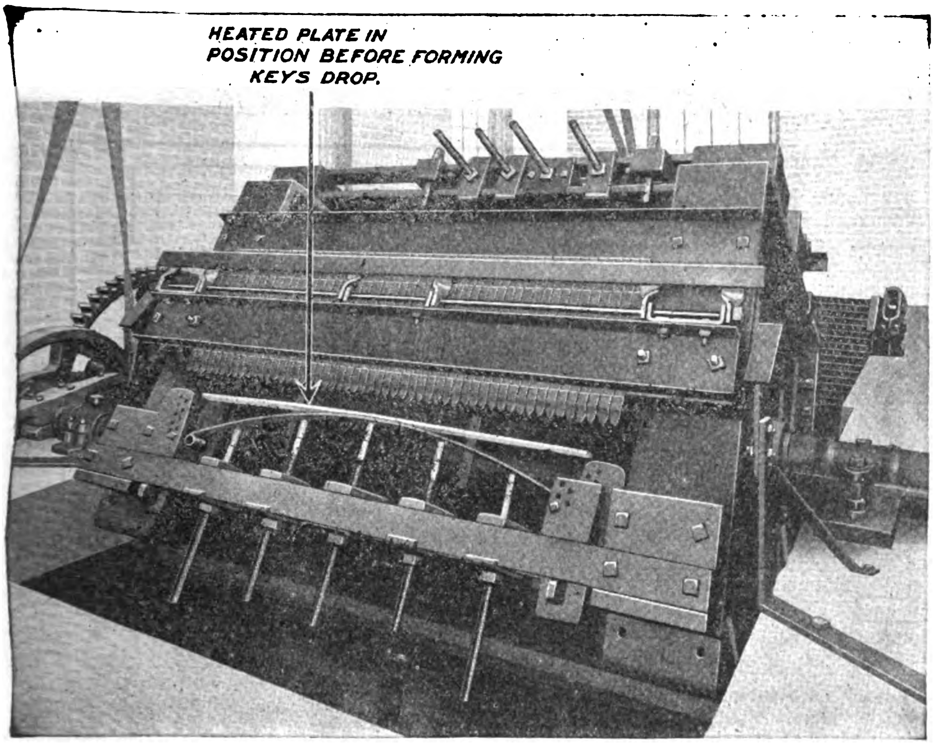
The company advertises extensively in about 20 of the principal trade papers, and in leading periodicals of national circulation. The production today is approximately 600,000 springs a year, and will be much larger when raw material can be obtained. The stock of springs that must be carried on hand for a proper maintenance of the service is nearly 4,000,000 pounds, about 30 per cent. of which is distributed in seven branches, the remainder in the stock rooms of the company in Richmond.

Edgar F. Hiatt, Vice President and General Manager.

Edgar F. Hiatt, vice president and general manager, formed his connection with the business about one year ago. Mr. Hiatt has been president of one of the leading banks in Richmond for a number of years, and is a business man of recognized vision and ability. Mr. Hiatt forebook a banking career of acknowledged prominence and high promise to come actively into the manufacturing and distributing field, which offered even greater possibility of substantial development.

Recently the company has connected with it, in the capacity of production manager, A. L. Ellis, who is probably one of the most experienced production executives in the leaf spring industry in this country. Mr. Ellis has been more than 20 years actively engaged in leaf spring production and, before coming to the Jenkins Vulcan Spring Co., was for 12 years superintendent of the spring division of the Detroit Steel Co.

In charge of the sales department, as director of sales, is D. T. Hersey, a sales



Some of the Special Machinery Used Is of the Company's Own Patented Design.

executive of wide experience in the automotive accessory field. Mr. Hersey was for a number of years actively connected with the Splitdorf Electrical Co. in the capacity of assistant general manager of sales. There are few executives in the automotive industry with a wider acquaintance among the principals engaged in accessory distribution.

The replacement spring business has reached very large proportions and is today one of the principal factors in the automotive industry. It is estimated that there are several million springs broken annually in the United States, the breakage being directly traceable to three causes: First poor workmanship in the springs themselves; second, irregular surfacing of the roads; third, overloading. There are other causes, such as excessive speeding and improper design of the springs themselves with reference to the work they are called upon to perform, and neglect of the spring as, for instance, inattention to lubrication and the tightening of clip bolt nuts, etc.

A trip through the Jenkins Vulcan factory is a most interesting and informative experience. The equipment is modern in every respect, and some of the special machinery used is of the company's own exclusively patented designs, with marvelous capacities for both production and quality. The entire production is being constantly Brinnell-tested, and the testing laboratory is complete in every detail. The manufacture of springs in itself is a most interesting study, and the layman is accustomed to taking for granted a number of things, with reference to the making of the spring, which, as a matter of fact, require the closest possible scrutiny and care.

It is with truth stated that a man can lift, in one hand, $1,000,000 worth of watch hair springs. That value represents little more than the skill and care exercised in manufacture, and inasmuch as one man can lift such a large value, it is sufficient argument that the raw material itself is insignificant except as to correct formula of analytical content. In like degree it is important that the utmost care be taken in the making of a thoroughly good automobile leaf spring. This is the guiding principle of the Jenkins Vulcan Spring Co.—to build them with the utmost care.

The results of this policy have shown themselves clearly in the performance of Vulcan springs. Vulcan methods of manufacture have put strength and endurance into a part of the car on which comfort, service, and even safety depend. The realization of this fact, by the motoring public, is demonstrated in the steady growth of Vulcan sales. Added to this quality is the wide-spread service afforded by Vulcan distribution. A spring for any make or model of car is available without delay throughout the greater part of the United States and Canada. More dealers are constantly being enlisted in the Vulcan ranks, and the company will not rest satisfied until it has met, in the fullest measure, the requirement of its slogan, "In Every Town for Every Car."

WESTINGHOUSE UNION BATTERY CO.

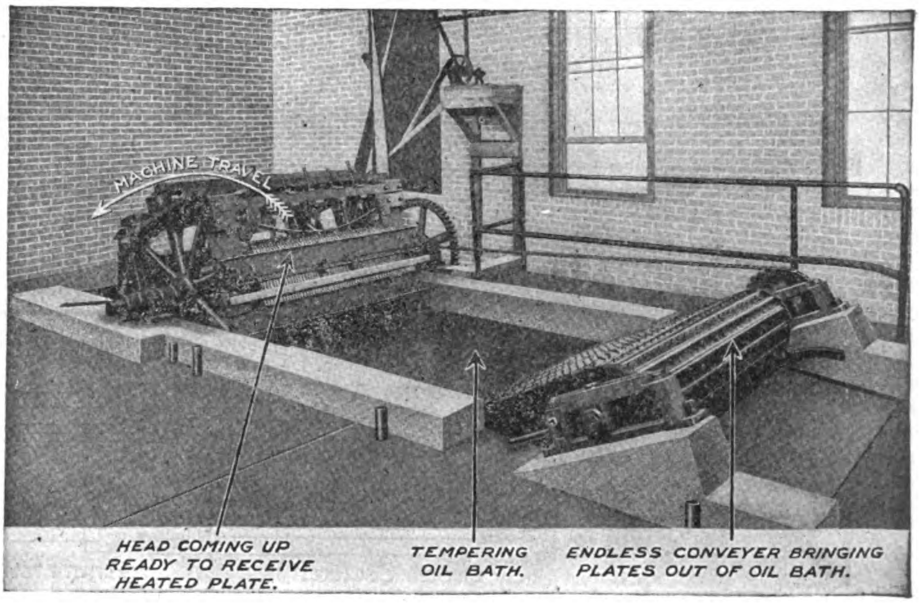
Recent publicity of the Westinghouse Union Battery Co., Swissvale, Pa., has led to a misunderstanding, as it was interpreted to mean that the Westinghouse Electric & Manufacturing Co. was entering the storage battery field. The latter concern authorizes the statement that the Westinghouse Union Battery Co. is owned and controlled by the Westinghouse Air Brake Co., Wilmerding, Pa., and that the Westinghouse Electric & Manufacturing Co. is in no way connected with the manufacture, distribution, sale or service of its product.

HAWTHORNE MANUFACTURING CO. CEASES BUSINESS.

The Hawthore Manufacturing Co., Bridgeport, Conn., maker of automobile and bicycle lamps, has announced the permanent suspension of business. E. A. Hawthorne, vice president of the company, stated that the shut down was caused by the inability to get raw materials and that the affairs of the company would be liquidated at once. The plant has been in operation for about 10 years and employed 300 persons.

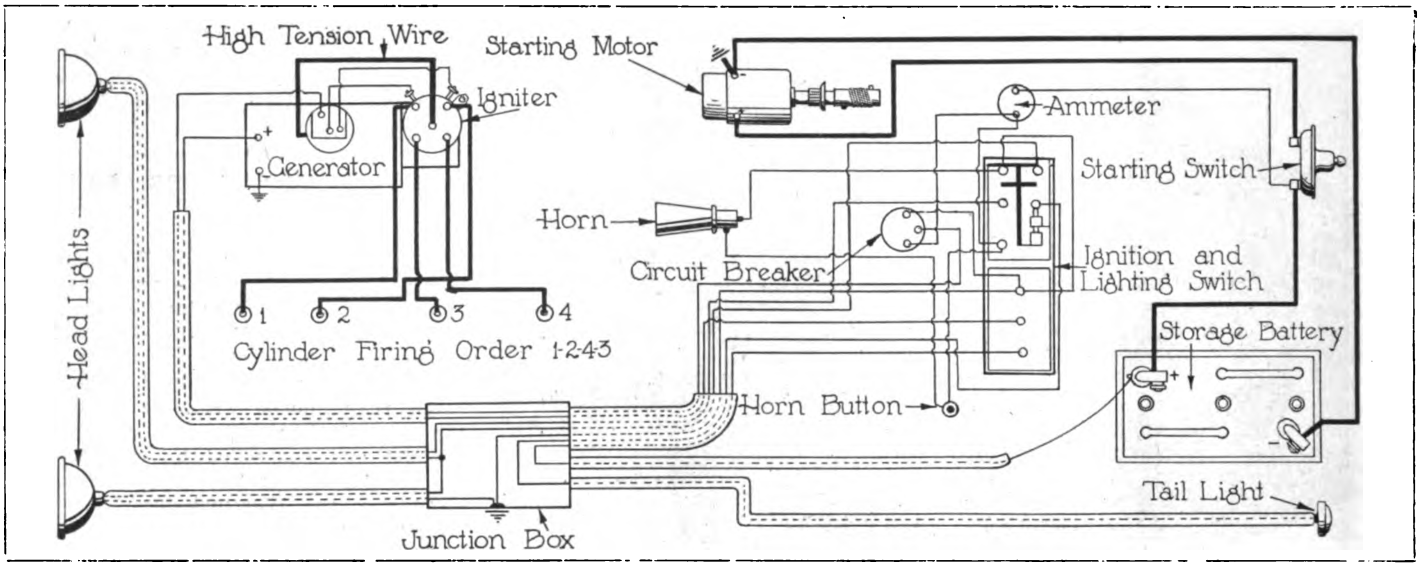
BIG TRANSFER IN THE BRONX.

The Hotchkiss Garage & Repair Co. has leased the four-story garage at Southern boulevard and 163rd street, known as the Allen Garage, in the Bronx borough, New York, for a period of 21 years at an aggregate rental of $357,000.

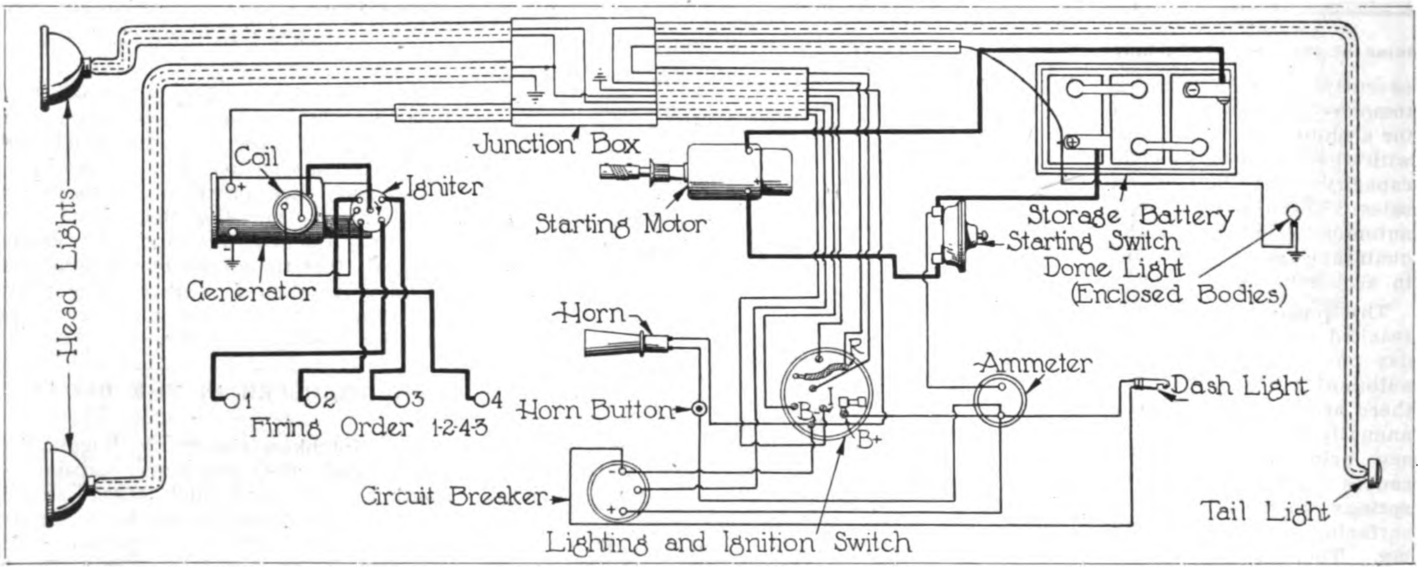

MACHINE TRAVEL
HEAD COMING UP READY TO RECEIVE HEATED PLATE.
TEMPERING OIL BATH.
ENDLESS CONVEYER BRINGING PLATES OUT OF OIL BATH.

Spring-Making Machine Installed in Jenkins Vulcan Factory.

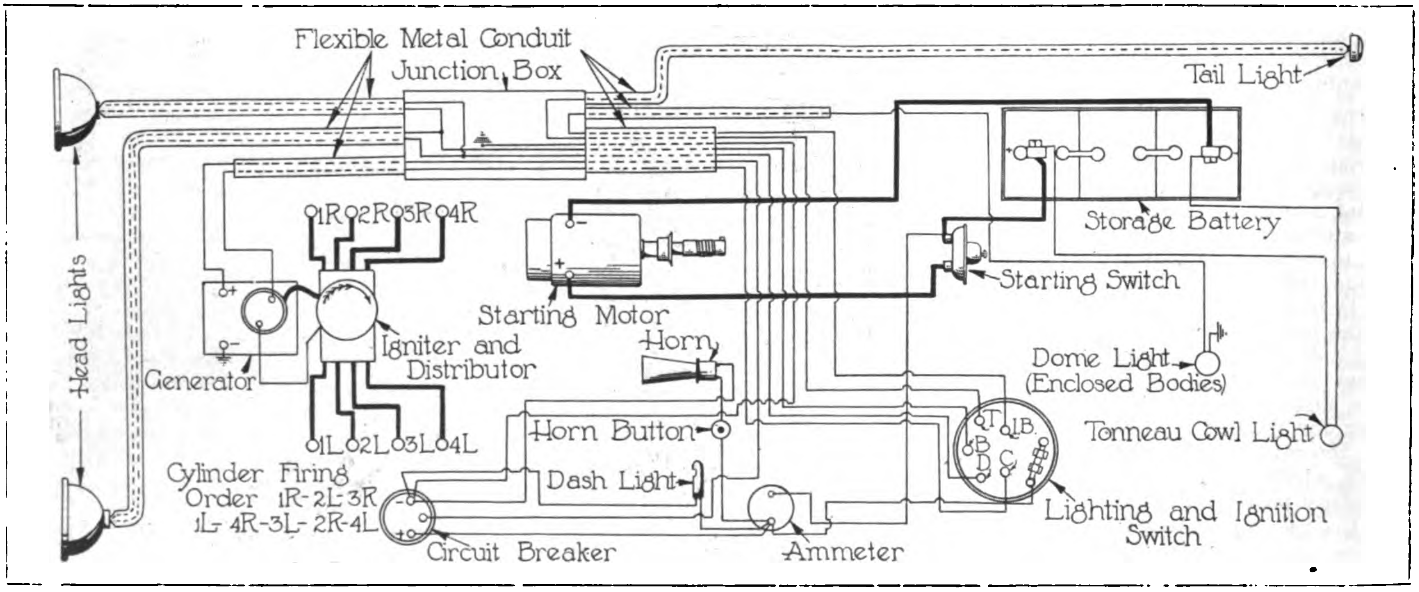
Monthly Wiring Diagram, No. 6


High Tension Wire
Starting Motor
Igniter
Ammeter
Generator
Starting Switch
Horn
Circuit Breaker
Ignition and Lighting Switch
Head Lights
1
2
3
4
Cylinder Firing Order 1-2-4-3
Storage Battery
Horn Button
Tail Light
Junction Box

Chevrolet 490, Four Cylinders, Auto-Lite Starting and Lighting, One-Wire System.


Junction Box
Coil
Igniter
Starting Motor
Storage Battery
Starting Switch
Dome Light (Enclosed Bodies)
Generator
Head Lights
Horn
R
J
B
B+
Ammeter
Dash Light
1
2
3
4
Firing Order 1-2-4-3
Horn Button
Circuit Breaker
Tail Light
Lighting and Ignition Switch

Chevrolet Model F, Four Cylinders, Auto-Lite Starting and Lighting, One-Wire System.


Flexible Metal Conduit
Junction Box
Tail Light
1R 2R 3R 4R
Storage Battery
Starting Switch
Starting Motor
Igniter and Distributor
Generator
Head Lights
Horn
Dome Light (Enclosed Bodies)
1L 2L 3L 4L
Horn Button
T
IB
B
D
C
Tonneau Cowl Light
Cylinder Firing Order 1R-2L-3R 1L-4R-3L-2R-4L
Dash Light
Lighting and Ignition Switch
Circuit Breaker
Ammeter

Chevrolet Model D, Eight Cylinders, Auto-Lite Starting and Lighting, One-Wire System.

Service the Keynote of Repair Shop Efficiency

(*By H. G. Fitch, Director of Service, Willys-Overland, Inc.)

SERVICE—A labor performed for the benefit of another, or at another's command. That's the way Noah Webster defines the most abused, misused and misunderstood term in the entire automobile lexicon. Not one word does he mention about service, meaning "getting something for nothing," yet that is the way too many car owners have interpreted it, with the result that service to many dealers has come to mean a large overhead expense from which there is little or no direct financial return. Yet no single factor of a dealer's business can be made to contribute as much towards his reputation and success as the proper administration of this vital department, besides being made to add to the profit side of his ledger.

No matter how good a car our respective companies build, if the buyer does not receive the value he anticipates—within the bounds of reason, of course—he will not consider another car of the same make when next he is in the market for an automobile. It is, in a great measure, up to the dealer's service department to assist the customer to get maximum efficiency out of his car at minimum expense.

But this does not involve the giving of something for nothing. On the contrary, the dealer only weakens his reputation when he gives something to which an owner is not justly entitled. He will create more respect for himself through business like, but firm methods, than through liberal, but loose dealings. There are times when a dealer may desire to make a policy adjustment, which may consist of free labor or parts, but the facts of the case should always warrant such action and should so be explained to the customer.

The dealer should never lose sight of the fact that his service department, like his sales department, has something to sell and fully as much care should be devoted to the proper disposal of its goods as is used in the merchandising of automobiles.

That care is "Repair Shop Efficiency," the subject imposed upon me by our service committee, under which, like Atlas lugging the world upon his shoulders, I am struggling, but which I am afraid is too big for my un-Atlaslike shoulders, with the result that what I am going to tell you is just what we at the Willys-Overland Co. have concluded to do about service problems and how we have endeavored to cooperate with our dealers in putting their service and repair departments on a paying basis.

It has been our experience that there are causes outside of the four walls of the repair shop itself, yet bearing on proper service which can make or unmake the best repair shop in the world. On one or two of these I would like to dwell briefly.

Unfortunately, we have found that the policy underlying the operation of a service department has never been as clearly defined as it might be.

We have printed service warranty after service warranty. In numerous instances these have been but bundles of legal verbiage, which have meant little or nothing to the dealer and less to our owner. In consequence, every dealer has had his own method of taking care of his service problems.

A Service Policy.

Quite recently we evolved a service policy, not only from our own actual experience with these dilemmas, but also from the experiences of hundreds of our dealers and distributors. This we have passed on to our field organization and we are glad to know that a good percentage of them follow our recommendation. This policy runs as follows:

1. The car should be thoroughly inspected before delivery to make sure that everything is in the best of order and complete as to equipment.
2. The purchaser should be carefully instructed as to the operation and maintenance of his car.
3. There should be available a well-assorted supply of repair parts.
4. Courteous and prompt attention should be given to every customer and capable mechanical attention should always be available, when required for a proper remuneration.

Adherence to such a policy, we are sure, will give complete and lasting satisfaction to owner and dealer alike.

Should Give Complete Instruction.

With a workable and satisfactory service policy in hand, the next step a dealer should take should be to follow the old adage about an ounce of prevention being worth a pound of cure. When a dealer sells a car to an owner he should give the purchaser complete instructions, not only how to drive his car, but also how to keep his car running properly.

To assist in this we publish owner's instruction books, which are included in the tool kit of every car shipped from the factory. The books we now send out are non-technical in every sense of the word, written, one might say, in words of one syllable; and in terse paragraphs that can be read and understood by the most inexperienced automobilist. It simply aims to tell the owner how to run his car and what to do to keep it running. We particularly stress the section on lubrication, telling him what will happen if he doesn't oil and grease his car at proper intervals. I am sure that you will agree with me that 90 per cent. of all automobile troubles are attributable to improper or total lack of lubrication.

Our campaign of education does not end here. We are trying to show the value of owner-education to our dealers at every step. We suggest circular letters from time to time on various service topics, such as proper driving methods, engine lubrication, anti-freeze solutions or motor drainage in cold weather.

If an owner drives up to a dealer's establishment with a cylinder missing fire and tells the dealer to overhaul the motor, when all that is required is a new spark plug, we want that dealer or his mechanic to show the owner what is wrong and how to replace that spark plug and thus save himself needless repair bills.

We have men touring the country, investigating and inspecting dealers' methods and systems and the result of our researches has been the formulation of a service organization and its underlying principles, so flexible that it can be compressed to suit the needs of a one-man garage, yet can be expanded to meet the requirements of the distributor with an annual turnover of millions of dollars.

In this organization we have specified the duties and responsibilities of the salient positions of a service department, which can be allotted to one, two, four, or as many men as the size of the business warrants.

First, the Service Manager.

First of all we must consider the service manager, or head of the service department. He should have charge of all work in connection with the management and direction of this department. He should be responsible for the employment, discipline and direction of all employees in his department and should see that they are familiar with the duties assigned to them. All questions of guarantee and policy should be submitted to the service manager for interpretation and settlement, as well as work done over, free of charge, to the owner.

He should watch with care the interpretation of the guarantee and policy, as these sources of expense will reflect greatly his ability as service manager. Complaints by customers which are serious enough to warrant his attention should be referred to him and he should personally meet and talk to the owners, getting necessary information at first hand.

Next, the Service Salesman.

Next in importance in a well-regulated repair shop is the order taker, or service salesman. In our experience we have found that this position is the keystone of the service department, as a majority of complaints on service rendered can be traced to the taking of the owner's order. Either the owner's word for the trouble may have been taken and the repair made as specified, when something else was at fault; or else the owner's directions may not have been specific enough and much work done that was not called for; or, as has often happened, an attempt has been made to correct imaginary troubles in the car merely because an owner thought his car was not running properly, no doubt, due to improper driving methods.

Customers should be waited upon

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*Read at Service Managers' convention at Indianapolis, Ind.

promptly, courteously and in turn as they enter the service station. The order taker must appreciate the value of a customer and his good will in the expansion of the dealer's business. The order taker should be competent to discuss with a customer the troubles which he has with his car, or if not, there should be available a competent mechanic or tester to diagnose the complaint. If the trouble has to be located, it is well to have the customer go out on the road with the order taker or tester, so that an intelligent order can be written up to correct the trouble complained of. Very frequently a small adjustment or instructions can be given to a customer on such a trip which will entirely overcome his difficulty.

Therefore, care should be exercised to fill this all-important position with a man or men qualified in every way to make correct mechanical diganoses, as inaccuracy means needless expense to the owner, with a resultant loss of confidence in the dealer's establishment.

Repair Order Should Be Clear.

The repair order should be written up clearly and distinctly. The first important step should be to get the customer's name, address and telephone number correctly. If he does not have a telephone, arrange to get in touch with him, should additional instructions with the repair job in process be required.

All questions of guarantee, policy, work done over, or other circumstances which involve the dealer's responsibility, should be settled when the order is written up. Exceptions, of course, are in order when the conditions complained of are subject to shop inspection upon disassembly of parts. Such conditions should be clearly indicated in the repair order. Then when the repair order is fully made out it should be signed by the customer, or confirmed in writing.

We have found it mighty convenient in our practise, to group repair items under proper headings, such as motor, clutch, steering, brakes, rear system, etc. Paint and trim work should be listed separately.

In writing up electrical work care should be used to state whether trouble is in ignition, starting motor, generator or lighting circuits.

Above all the order taker should avoid writing up such broad orders as "take knock out of motor" or "repair electrical system." Such an "R. O." can run up expense without limit and cause endless wrangle between owner and dealer.

When recommending repairs to an owner the order taker should try to save the customer all possible expense. Don't induce him to go into extensive repairs when they can be avoided. His interests should always be considered as though the order taker were spending his own money.

The order taker should always seek to avoid the necessity for additional orders, except when a customer is quoted a "lead" price for dismantling the car or parts to see the extent of repairs that will be necessary.

After an order is taken clearly and specifically, the next important step is the matter of price. Wherever feasible the customer should be quoted a price before the work is started, as this will avoid controversy when the bill is presented.

It is also the order taker who is expected to make delivery promises. By close contact with the repair shop foreman he should be able to promise with certainty the day and the hour when the car will be ready. When a promise is given to a customer this should be lived up to. The order taker should never promise the impossible, nor take a chance on the job being completed at a certain time. If he finds that a promise cannot be kept, due to unforeseen circumstances, the owner should be notified in advance. It is very bad business to promise delivery at a certain time to a customer and have him find, after making a special trip to the service station, that his car is not ready. It is just such instances that bring service stations into ill repute.

We have found it good practise, when a car is sent to the shop for overhauling or for extended repairs, to have the order taker make a complete check and remove all owner's equipment and tools. It is also important that he note scratches, dents or blemishes, as this avoids controversy with the customer, in case he claims damage has been done to the car while in the service station.

The Shop Foreman.

Third in importance in the service department is the shop foreman, whose duty it is to see that all work performed under his supervision is done properly, economically and promptly by competent mechanics; he should see that the shop equipment and tools are kept in order and repair; and should make necessary recommendations for improvement of repair shop equipment and methods from time to time.

He should be consulted at all times as to promises on work in progress, or work to be sent to the shop when a promise is desired.

When the volume of work is sufficient to justify such procedure, mechanical work in the shop should be divided and grouped, such as motor, clutch, steering, transmission, differential, electrical and other units. Better results can be obtained by thus arranging the men in gangs or units to specialize on various repair work.

Care of the Garage.

A vital factor in "Repair Shop Efficiency" is the care of the garage. It should be neat, clean and orderly. Cars should be grouped and placed in spaces assigned as far as practical, as follows:

Demonstrating and company cars, service trucks, customers' cars waiting for repairs, customers' cars, repaired and awaiting delivery.

All cars on which repairs and adjustments have been completed should be properly tested and inspected before being turned over to the customer. Upon completion of this inspection the tester should "O. K." the shop job card and sign it. The tester should also make it a point to see that the floor boards, running boards, upholstery, steering wheel, etc., are clean before the car is turned over to the customer. No matter how satisfactory the job that is performed by the repair man the customer is far from pleased when he receives a car soiled with oil and grease. Many of our dealers also have a commendable practise of cleaning the motor and washing each car that comes in for repairs, before delivering it to the customers. There is good psychology in this practise.

The customer who receives a car in the same muddy and dirty condition that he turned it in may get the impression that the repairs he specified were not performed; but if he receives a car that has been washed and cleaned, with a spick and span motor, as a rule he will be readier to pay the slight sum additional for cleaning, which can be included in the repair charge, than he would be to pay the price for the repair only, and receive his car covered with the same grime as when he turned it in. While this applies more particularly to cars that come in for extensive overhauling, yet such a practise on almost all cars that come into the service station can be pursued with success.

Simplified Service Forms.

Our recommended service organization for dealers also includes a series of service forms. Here again we have endeavored to simplify as far as possible. The list includes:

Repair order and invoice, on which the job is written up.

Work ticket, or time slip, for the man in the shop who does the actual work.

Repair shop requisition and repair shop credit requisition, for requisitioning parts from the stock room on repair jobs.

Repair order envelope, in which are filed repair order, work tickets and repair shop requisitions.

Customers' repair record, on which is entered the date and number of every repair order under each customer's name, enabling the dealer to keep an accurate record of every repair or adjustment performed for his customers, information which is handy in settling controversies.

Daily shop report, made out by the shop foreman and showing a summary of the day's work done by each mechanic.

Daily business report, showing the amount of work taken in and delivered each day, also estimates, actual cost of the job and the profit or loss.

Cash sales of gas and oil.

Cash sales of parts.

Identification tag, with space for the owner's name and address, repair order number and tester's O. K.

Contrary to the usual practise we do not print these forms and sell them to our dealers. Instead, they are reproduced in a book which we send to each dealer and the dealer is advised to have these forms made up by local printers.

Nor does our cooperation end here. Besides endeavoring to standardize shop practise among Willys-Overland dealers, we have also been trying to standardize actual repairs, but there is always one best way. With this in view we published last summer a repair manual on our new Overland car, containing a complete sequence of operations on practically every major operation on this car that a service department might have to tackle.

We are trying to standardize tool equipment. In our service department at the factory we maintain a tool division, whose sole duty it is to design and sell tools that will make possible better service on our cars. When a tool is designed, tested and found satisfactory a quantity is ordered and the dealers are notified that we have this tool in stock and that it is available for purchase.

Collect on Delivery.

Before I pass from the scene there is just one point on which I want to dwell, which can make or break a repair shop. And that is—Collect on delivery! I would like to see every repair shop in the land enforce a rule that the invoice should be ready for the customer the moment he calls for his car and that he should pay for the work done before he leaves the establishment.

How often has it happened that a car has been delivered to a customer in bang-up shape. He has had the work charged, drives out, meets with an unfortunate accident, or runs into some trouble for which the dealer is in no wise to blame. But the customer insists that the initial repairs were not properly made, or that in making repair the dealer or his mechanic loosened or broke some other thingumbob on the car! As a result he refuses to pay the first bill.

One of our most successful distributors, who has built his business from a modest 100-car trade to a point where his annual contract runs well into the millions, attributes his success solely to his "strictly cash" policy in his service department. Instances are related of intimate friends of his who call for their cars and want repair bills charged. This is diplomatically refused and the matter is referred to the distributor himself. He tells them the policy of the house, adds that he will gladly pay the bill himself and will consider the item a personal debt. Either the matter rests this way, or the customer, abashed but, nevertheless, respecting the distributor's adherence to a sound business principle, pays the bill without further ado and, in future, never fails to have the money on hand to pay for work on his car. And this distributor's circle of friends is one of the staunchest and biggest in his home town.

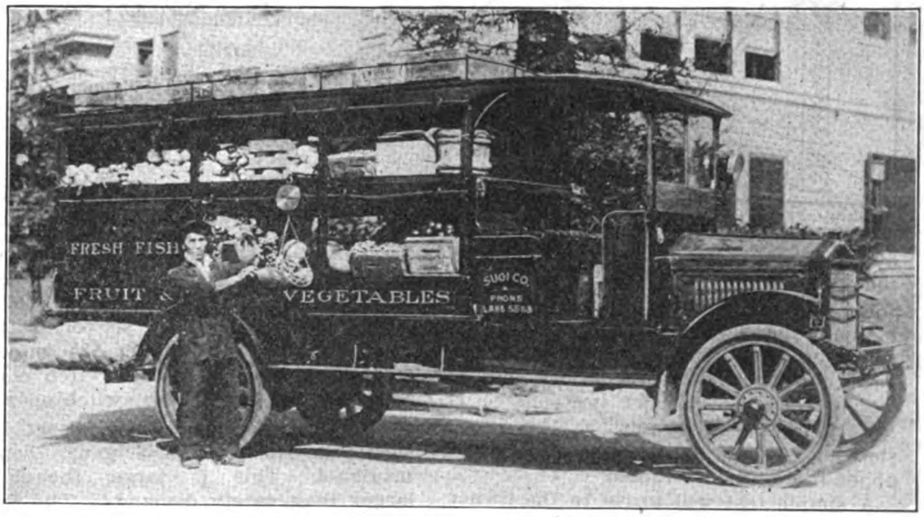
Summed up, to achieve repair shop efficiency a dealer should cooperate with the factory in educating the owner to properly use and maintain his car, in order that he get maximum service out of it at minimum cost; but when the owner requires the service of his repair department he should provide a capable organization, with each men's duties and responsibilities distinctly outlined, backed by a sound and constructive business policy, a clear record on paper of every transaction and, to top it all off, the slogan of "Rapid and Accurate Workmanship, Paid for on Delivery!"

LOCKWOOD CO., MAKER OF AUTO FABRIC ACCESSORIES.

The Lockwood Manufacturing Co., maker of the Lockwood line of automobile fabric accessories, through its managing director, Paul Lockwood, announces the removal of its eastern branch office and plant from Brooklyn to Buffalo, N. Y., and the opening of an export sales branch in the Grand Central Palace, New York City. The new Buffalo factory, at 368 Massachusetts street, gives the company additional space and larger equipment.

The western office and factory, which is the parent plant, remains at Seventh and Wyandotte streets, Kansas City, Mo., and the Chicago sales branch at 3021-3023 South Michigan avenue.

The Lockwood Manufacturing Co. recently bought and assumed complete charge of the automobile fabric accessories division of the Baker & Lockwood Manufacturing Co., taking over the entire line of accessories that formerly bore the name of "Baker."



The Unusually Attractive Garford Truck Equipped for the Sale of Fruit, Vegetables and Fish by a Japanese Vender in Berkeley, Oakland and Alameda, Cal.

FACTORY FOR GUARANTEE BATTERY CO.

The Guarantee Battery Co., Denver, Col., has started the manufacture of a battery with a two-year guarantee which, it is claimed, will eliminate automobile starting, lighting and ignition troubles. The company is capitalized at $100,000 and is located at 1826-1830 Blake street. It is two stories, of brick construction, and affords a floor space of 16,000 feet, all of which will be used in the making of batteries.

The Guarantee battery is stated to be compact in appearance and combines non-corroding, non-sulphating and foolproof qualities that render it practically indestructible. All of its parts, terminals, connectors and separators are of special design. The plates or grids are cast in proportion heavier than the average plate and contain eight per cent. more active metal filler.

DIVISION OF FRANKLIN CO. EXPENDITURE.

A statement just issued by H. H. Franklin, president of the Franklin Automobile Co., Syracuse, N. Y., will give an idea of the division of cost in the economical manufacture of the typical motor car of today. Of every dollar expended, Mr. Franklin avers, the cost of raw material, supplies and parts eats up 45 cents. Labor is paid 26 cents of every dollar in wages, this constituting the second largest item.

Income added to working capital takes eight cents. This represents the fund devoted to expansion purposes, which in turn gives employment to more labor with each succeeding year.

Administration and operating expenses of the factory uses up eight cents. The selling expense attached to merchandising the car is five cents, this latter item including the expenses of the sales, advertising, service and traffic departments. Taxes exacted by the federal and state governments takes four cents, and the depreciation in property value takes two cents more. Two cents on every dollar is paid in dividends on stock.

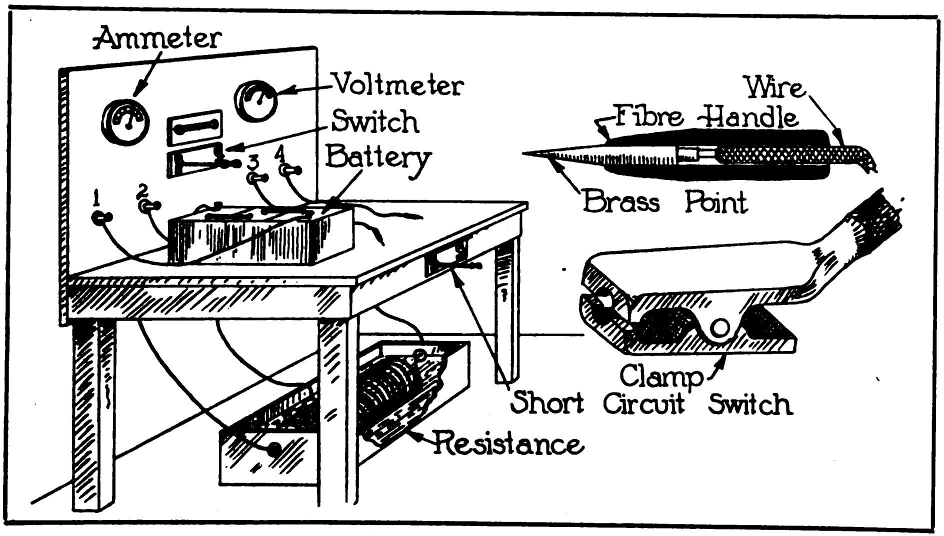
The Franklin Employees' Cooperative Store has been opened at Syracuse, N. Y., for the benefit of the 5000 workmen of the Franklin Manufacturing Co., maker of Franklin motor cars, where groceries of all kinds are on sale at prices about 20 per cent. under the current retail rates. It is expected to do a business of $10,000 weekly.

DETROIT GAS INDICATOR CO.

The Detroit Gas Indicator Co., of which C. C. Starkweather is president, has begun the manufacture, at Detroit, of a device which, it is claimed, holds in reserve a surplus of two gallons of gasoline after the engine indicator signals "No Gas." It is reported to be under production at the rate of 400 a day, at present exclusively for Buick and Dodge cars, but all other vacuum feed cars will be supplied eventually.

Testing Batteries by Short Circuit Method

IT IS the common practise among service station repairers to test a battery for an inoperative cell or cells by means of a portable volt-ammeter while the battery is in the car. While this method is quick and usually gives results, yet it does not always satisfy the owner of the battery. To please the customer it is the better policy to install some form of testing that will be permanent and will show at a glance the condition of the battery in volts and amperes. An outfit of this nature that is simple to assemble and inexpensive is shown in the diagrams, at the lower showing how the outfit is wired and the upper the outfit assembled.



Arrangement of Stand for Testing Storage Batteries.

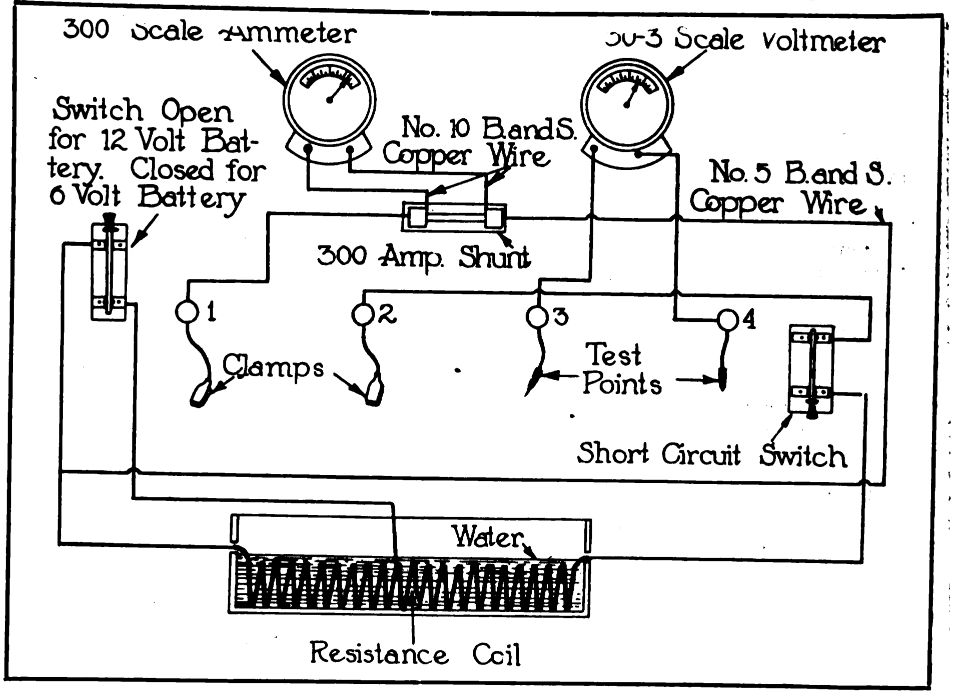
A simple test will prove to the owner whether one, two or three cells are inoperative, and whether charging, or tearing down and repair are necessary. The test, in brief, is to short-circuit the battery momentarily, and while it is short-circuited to take voltmeter readings of each cell. When not short-circuited each cell may show normal voltage. But when short-circuited the defective cell will show a low voltage, and it must be repaired.

To test the battery it is necessary to place it on the stand, to snap the clips to the battery terminals, leading from 1 and 2 and to close the circuit by closing the switch at the side of the table. The voltage of each cell is then taken by placing the test points on the poles of each cell in turn.

In constructing this set the following equipment is necessary: One 300-scale direct-current ammeter, with shunt; one 30-3 scale voltmeter; two single-throw, 150-ampere capacity knife switches; 90 feet quarter-inch soft annealed iron wire. In addition there should be a supply of No. 5 B. & S. gauge insulated copper wire, a small amount of No. 10 B. & S. insulated copper wire, two test points and two short-circuiting clamps.' The lumber for the bench may be gotten out by the repairer to suit his needs.

The iron wire is used as resistance and is arranged in three-inch coils, placed in a wooden box filled with water to keep the wire cool. Three leads are taken from the coil, one running direct to the battery, one from the center of the coil for six-volt cells, and one from the end for 12-volt cells. Make the first connections from the coil temporarily, changing them later to suit the battery; although the length of the coil is about 45 feet, this may be changed according to the grade of wire used. A six-volt battery in the circuit will register 125 amperes at the ammeter with the switch closed and 70 amperes with the switch open.

All wires carrying the direct load should be No. 5, B. & S. gauge, copper insulated. This is large, though no larger than safety demands. The leads from the shunt to the ammeter may be No. 10, B. & S. gauge, copper insulated, as are those from the voltmeter to the testing terminals three and four. Quick attachment to the battery terminals is made through snap clamps, connected through heavy woven cables to terminals one and two. These should be marked positive for the positive pole of the battery and negative for the negative. The test points are brass rods, sharpened and held in fiber handles, connected to terminals three and four by lamp cord wire. The sharp brass points, when placed on the battery terminals, assure a perfect contact for the voltmeter. The battery, once placed on the testing stand, is easily accessible for testing and it is claimed that two minutes time is sufficient to show the condition of each cell.


300 Scale Ammeter
30-3 Scale Voltmeter
Switch Open for 12 Volt Battery. Closed for 6 Volt Battery
No. 10 B and S. Copper Wire
No. 5 B. and S. Copper Wire
300 Amp. Shunt
1
2
3
4
Clamps
Test Points
Short Circuit Switch
Water
Resistance Coil

Wiring Diagram of Test Stand.

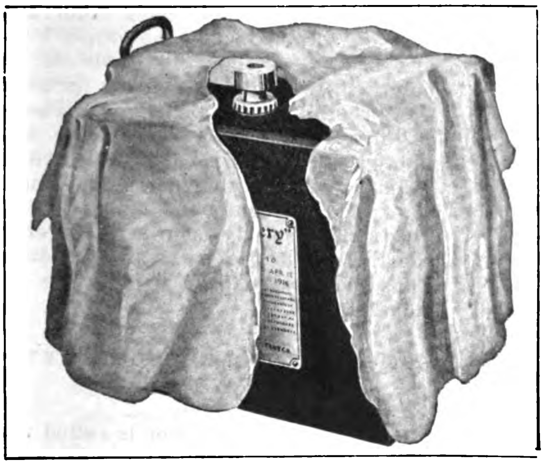
BRAKE LUBRICATION.

The bands of automobile service brakes too often receive little or no attention. Then, glazed surface of the lining does not act quickly, nor is it dependable. The first step is to go over the lining with a squirt gun full of kerosene; while this is soaking well into the lining, go over the opposite brake also with kerosene, cleaning as well the connections for inspection and adjustment if required. Allow the kerosene a half hour at least to soak well into each lining, then giving a second application of kerosene if necessary. After this treatment, fill the squirt gun with clean engine oil and inject this into the bands, leaving it to soak into the open pores over night. In the morning wipe off the surplus oil, start the car and apply the brakes several times to get rid of any excess oil between the bands and the drums. This attention once each month or two will keep the brakes dependable and silent in operation.

Keep tires fully inflated. Soft tires wear quickly and consume power.

REPAIRING HOLES IN BOILER SETTINGS.

A mortar that can be made from materials easily obtained and is particularly fitted for stopping leaks in chimneys, etc., is also good for stopping cracks in boiler settings and other brick structures, when not exposed to too high temperatures. Although of an improvised and primitive nature it answers the purpose very well, and has the merit of being made of material available almost anywhere.


Cover Battery with Wet Cloth to Prevent Explosion of Gas.

Mix hard wood ashes, three quarts; chimney soot, one quart; common salt, one quart, and sufficient water to make a stiff mortar. Apply at once as it hardens quickly.

TO PRESERVE SCREWS.

Most repair men and machinists save the small screws and nuts that are left over from jobs. The common practise is to place them in tin boxes or trays in the stock room where they soon become rusty and simply represent so much junk. A better method of storing them is to put screws and nuts of various sizes in large neck bottles, each size in a bottle by itself. Each bottle is provided with a cork and labeled if desired. In this way the repairer can see instantly just what sizes he has and how many of each and they will be kept free from rust.

MAKING SOCKET WRENCHES.

Herewith are a few suggestions as to methods of making a set of socket wrenches: The wrenches can be made from Ford radius rods that have been junked. As these rods taper, several sizes of wrenches can be made from a single rod. First, cut the length of the wrench desired from the rod, then heat the end of the tube to a cherry red and bend it to shape around a nut. The piece of radius rod must be large enough to fit over the nut and a hole drilled in the opposite end of the socket so that a punch or a small rod can be inserted and used as a handle.

Prevent blowouts by avoiding severe jolts and maintaining full pressure.

Lead Burning of Batteries

IN BATTERIES having burned connections, the joints are made by melting the parts to be joined and forming a solid weld. The process is called "lead burning," and is carried out by means of hydrogen gas and compressed air, illuminating gas or natural gas and oxygen, or by an electrically heated carbon.

In all lead burning, absolutely clean surfaces are essential to good workmanship. Lead is soft and very readily cleaned with a scraper or file. In the case of a battery that has had electrolyte in it, the surfaces to be burned should first be wiped with ammonia to neutralize the acid and then allowed to dry before scraping.

Before starting to burn the connector or terminal should first be lightly taped to a snug fit on the post. The top of the post should be one-eighth inch below the top of the connector to allow space for burning. If the post is too long, remove connector and trim off post. The top of the post should be melted first and then fused to the connector, after which lead from a piece of burning strip can be run in until the joint is flush.

In order to avoid the possibility of an explosion of the gaseous mixture contained in the upper part of a cell, when doing repair work with a gas flame or carbon burning outfit, the following precautions should be taken: The filling plugs should be in place and the entire battery, with the exception of the part on which the burning operation is to be performed, should be covered with a cloth thoroughly wet with water. The cloth should be pressed down upon the vents of the cells, or wet waste may be packed around and over the vents. A large piece of burlap or a towel thoroughly soaked with water is suitable.

The wet cloth is recommended for two reasons: First, it prevents the burning flame or arc from communicating to the interior of the cell and, second, if an explosion should occur, the cloth will prevent the solution and small parts from being thrown about.

The outfit consists of a special burning tip and mixing valve. Sufficient 5/16 inch hose should be provided, and the hose wired to the apparatus in making connections. The comparatively high air pressure renders this precaution advisable. A supply of compressed air is necessary, the proper pressure ranging from five to 10 pounds, depending upon the length of hose and the size of parts to be burned. When air from a compressor for inflating casings is used, a suitable reducing valve must be introduced. This outfit is designed for use with the ordinary city gas supply; ~~natural gas can~~ not be used with this equipment.

Connect the air hose to cock A, the gas hose to cock B. The leader hose, which should not be more than five or six feet long, is connected at C and to the burning tip at D.

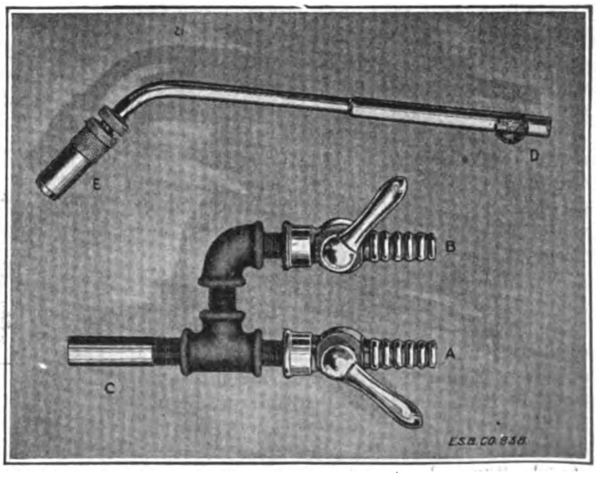
When the air pressure at the source is properly adjusted, close the air cock at A and turn the gas cock at B on full. Light the gas at the tip and then turn on the air. If the flame blows out the air pressure is too high and must be reduced, preferably at the scurce.

With the gas turned on full the flame will have a ragged appearance and show a waist about one-half inch from the end of the tip, the flame converging there and spreading out beyond. This flame is not suitable for burning. Slowly turn off the gas until the outer portion at the waist breaks and spreads, with an inner tongue of flame issuing through the outer ring. The flame will now have a greenish color, and is properly adjusted for burning. If the gas is turned off further, or too much air is turned on, the flame assumes a blue color, gradually becoming invisible, and is then deficient in heating power.

When properly adjusted the hottest part of the flame is just past the end of the inner point.

Do not hold the flame too close to the work when burning, as its heating effect is greatly reduced and the flame is spread so as to make control difficult. The burning tip is provided with an outer sleeve and lock nut E. The sleeve is removable and can be taken off in case any of the holes in the tip become clogged. The position of this sleeve is adjustable, varying with the flame, etc. The best position should be determined by experiment.

A still better method of burning is by use of illuminating gas, either artificial or natural, and oxygen in tanks for which suitable apparatus has been developed.



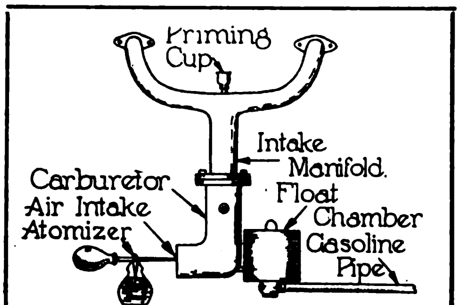
Lead Burning Tip and Connecting Tubes for Gas and Air, Provided with Shut-Off Cocks.

It may be taken as a sure sign that the crankshaft is not quite true when the crankshaft or connecting rod bearings are found to be worn a little more on the ends than in the middle.

Mechanical Hints for Garage and Repair Shop

Removing Carbon with Water

Much has been said in regard to using kerosene for removing carbon accumulations in the combustion chambers of an engine while the engine is operating. This method is good and does the work up to a certain point. The idea is to soften the carbon with kerosene, leaving it to the engine to work it out through the valves.



Simple Method of Removing Carbon

Another method that is proving popular with many motorists is that of using water. It is claimed that better results are obtained by delivering the water in small quantities, introducing it through a connection provided in the intake manifold, the bulk of the water being held in a tank of from one to two quarts capacity, either fastened to the dash or fitting the top of the engine. The water is led to the intake manifold fitting through a copper tube provided with a suitable shut-off which regulates the flowage of the water.

On cars not provided with equipment for supplying water in this manner it may be furnished to the engine by an atomizer, similar to those for spraying the nose and throat. This size of atomizer will deliver the water in about the right quantity so that the chance of the engine stalling will be reduced to a minimum. The water is supplied to the air intake of the carburetor and enters this tube in the form of a mist or spray, readily mixing with the gasoline and air.

It has been noted that engines treated with water for the removal of carbon show an increase of power almost immediately and its use does not seem to be detrimental to the engine.

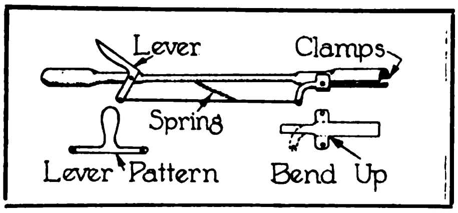
Engines of the stationary type, operating on kerosene or distillate, are provided with devices which supply water at stated periods, removing the carbon while it is in a softened state, thus preventing its forming into a scale.

To give the engine a water treatment for carbon it should be well warmed, as after a long run. The engine should be operated with the gears in neutral at a speed corresponding to about 15 miles an hour in high gear. The atomizer should be filled with water and sprayed into the carburetor air intake pipe, keeping up a steady flow. Do not be afraid of putting in too much water, as an atomizer will not supply more water than the average engine will take in without stopping. The atomizer should be filled several times; as much as a quart of water can be used to advantage. Allow the engine to operate for at least five minutes after the water supply has stopped.

On an engine equipped with a priming cup fitted into the Y of the intake manifold the water can be supplied through this cup instead of at the carburetor air intake. The cup should be opened so that it leaks just a little and the water is then fed in as fast as taken by the engine. If the priming cup is small a piece of rubber tubing can be slipped over it and the other end put in a jar of water. The suction of the engine pistons will draw the water from the jar and supply it, in the correct proportions, to the engine.

WELDING ROD HOLDER.

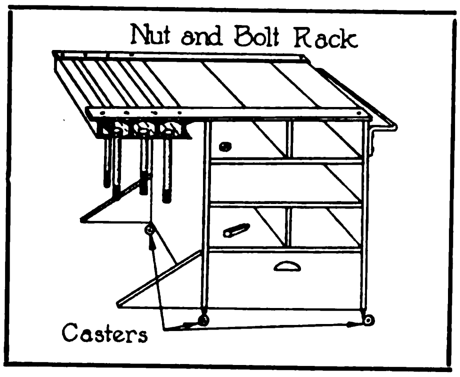
The frugal welder is many times undecided to know just how to use up the small pieces of welding rods that accumulate from welding jobs. The tool in the illustration shows how these odds and ends can be successfully used up without burning the fingers, at the same time using up what would otherwise be waste material.



The long rod to which the handle is fastened is made of 5/16-inch round stock, while the grips or jaws are made from ⅛ inch by 7/16-inch iron. The movable jaw and lever are cut from the flat stock and bent up as shown in the illustration. A coil spring maintains a constant pressure on the jaws, and it is necessary only to squeeze the lever on the handle to release or adjust the hold on the welding rod.

HANDY BOLT RACK FOR THE REPAIRER.

A handy bolt rack for the shop can be made from odds and ends around the shop and can be put together in spare time. The rack is made in such a manner that it can be rolled around the garage to any job and carries an assortment of bolts and nuts usually required on the job.

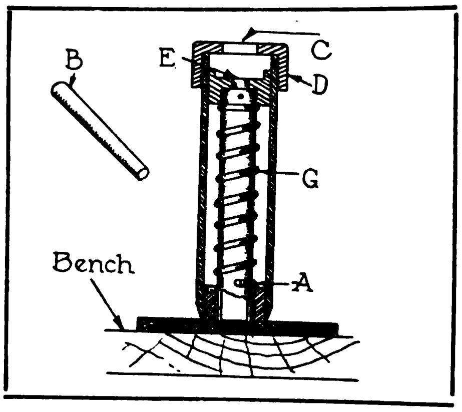


The principal feature of the rack is the overhang at the end, made from angle iron and girders, cut to the proper length and spaced so that the heads of long bolts will be held between the flanges of the girders and the angle iron. The top of the rack proves a very handy place to lay tools, while spaces or bins are provided below for other tools and smaller sizes of bolts, nuts and washers. The illustration clearly shows the general construction of the box, while the dimensions may be changed to suit the individual fancy.

HOME-MADE PUNCH FOR CUTTING FELT WASHERS

Many times the repairer is called upon to cut out felt washers or washers of other soft material and finds it next to impossible to get them perfectly round with a jack knife. A home-made cutter can be made with little trouble that will not only cut them round, but that will also take out the center hole as well.

Choose a piece of gas or water pipe about six or eight inches long and of a diameter that is most used. Grind one end to a cutting edge. The other end should be threaded and fitted with a pipe cap. Drill a hole C at the center of the cap to take the pin B; this pin is tapered and fits against the head of bushing E. The inside cutter is made similarly to the outer cutter, from a piece of smaller pipe ground to a cutting edge at the lower end, provided with a loose bushing A, which distances the inside cutter from the outer. A Spring G is provided which throws back the inner cutter after the center hole has been cut.



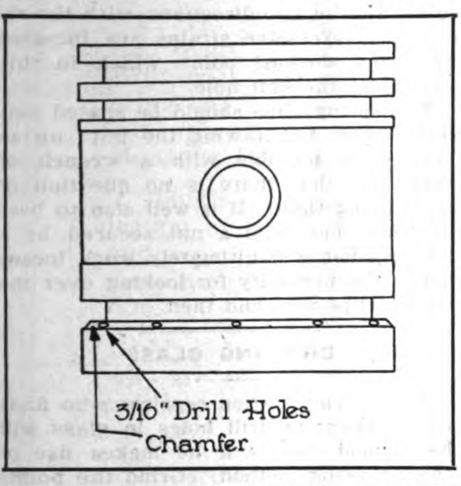
To use the tool, insert the wooden pin at C, strike the top with a hammer, driving down the inner cutter; the spring will return the cutter to position. Remove the pin and strike the cap D, cutting the washer with the outer cutter. The slugs of the inside cutter are pushed out by a rod worked down through hole E.

Exports of automobiles and parts, including tires and engines, have in 20 years, aggregated $1,000,000,000.

Mechanical Suggestions for Repair Shop and Garage

PREVENTING PISTON FROM PUMPING OIL.

Quite often the service station repairer is called upon to remedy an engine whose pistons, one or more, are pumping oil by the rings, fouling the plugs and forming carbon accumulations on the head of the pistons and the head of the combustion chamber. Many repairers suggest that new rings be fitted to the pistons to overcome this difficulty and many times this is done, but more often the evil is not cured. It takes time to wear in new rings, even if they are properly fitted by lapping, unless the work is carefully done.



Showing Chamfered Edge of Oil Groove with Drill Holes Spaced Equidistant.

Still other repairers adopt a newer method of curing the trouble and one that is inexpensive, by drilling a series of 10 or 12 holes 3/16 or 5/32 inch around the edge of the lower ring groove or the oilway found at that point.

Besides the fouling of the combustion chamber the waste of oil when this leakage is present is prodigious if allowed to continue. Drilling the holes in the skirt of the piston will tend, in connection with the scraping action of the piston and its rings, to return the oil through the drilled holes back and into the engine base, where it is used again by the lubricating system of the engine.

It may be necessary, if the ring is equipped with a fourth ring at the bottom, to chamfer the edge of the groove slightly with a file, bringing it more to a level; the holes are then drilled through the piston at the bevel. It will be found that where this is done most of the oil trouble will disappear, and the oil consumption of the engine will decrease materially.

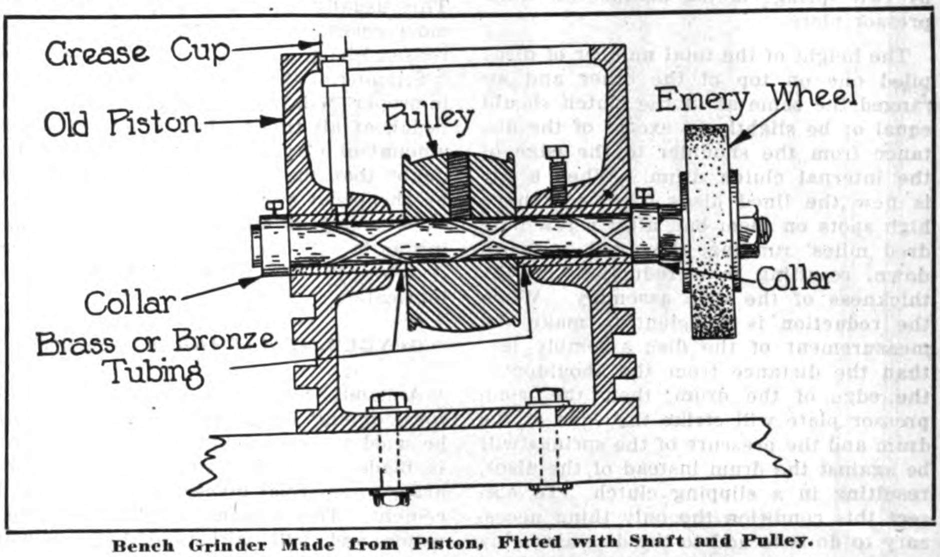
The width of the chamber will vary according to the size of the ring used; narrow rings will allow a smaller chamfer, while wider rings will allow more metal to be taken off, making a wider bevel.

TEMPERING COMPOUND FOR STEEL.

The following recipe has been found very useful as a tempering compound when it was impossible to procure a good grade of steel. This compound will be found especially good for cold chisels, center punches, lathe tools, drills, etc., and, in fact, almost any tool not having an irregular form or thin cutting edges. To six quarts of clean rain water add one ounce of corrosive sublimate and two pints common salt. Stir until thoroughly dissolved. This compound seems to both harden and toughen steel; the tools are dipped and drawn in the usual manner.

BENCH GRINDER OR POLISHING HEAD MADE FROM OLD PISTON.

There are many uses for discarded pistons, but probably one of the most unique is this: A badly worn piston from an old gasoline or automobile engine can easily be made into a bench grinder or polisher by fitting bushings of either brass or bronze to the piston bosses, or by filling them with babbitt after the shaft has been placed. The belt pulley is placed inside the piston and is surrounded by the skirt of the piston, forming a guard for the belt. The grease cup, mounted as shown, furnishes lubrication and the oil or grease should be distributed by means of grooves cut in the shaft, which is held in place by collars fitted with set screws. The piston may be either bolted to the work bench or to a special stand made on purpose for it. The stand should, however, be very stiff to withstand the high speeds at which these tools are run.



Bench Grinder Made from Piston, Fitted with Shaft and Pulley.

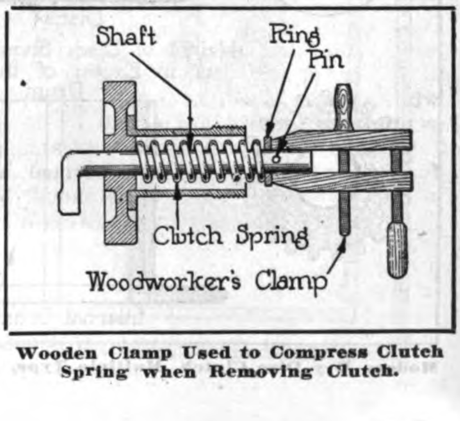
BELT GLUE FORMULA.

A glue for belts may be prepared as follows: Soak 50 parts of gelatin in water, pour off the excess fluid and heat till the water boils. Stir well and add first, by weight, five parts glycerine, 10 parts turpentine and five parts linseed oil varnish and thin with water as required. The ends of the belt to be glued are cut obliquely, the leather warmed and the hot glue applied. The ends should be placed in a press and compressed till the glue has a chance to dry thoroughly. To make the job still more secure punch holes at equal distances and fit copper rivets in them, heading over the rivets. The solid head of the rivets should come on the inside of the belt, or the side that travels over the face of the pulley.

COMPRESSING CLUTCH SPRINGS.

A woodworkers' clamp is a very handy tool to use when compressing clutch springs when removing the pin through the shaft, or replacing the pin in the shaft. To use the clamp, simply tighten the jaws on the shaft by turning up the wooden screws, having the jaws bearing against the ring or collar which retains the spring in position. The clamp is driven on with a hammer, compressing the spring until the retaining pin can be either removed or replaced, as desired. The advantage of the clamp method is its adaptability to different sizes of shafts. Awkward places are many times encountered in which springs are difficult to compress; with the clamp these are easily reached by the protruding jaws of the clamp.

An Indianapolis man is the inventor of a lathe for grinding valves in which centering is done automatically by placing valve stems in the machine.



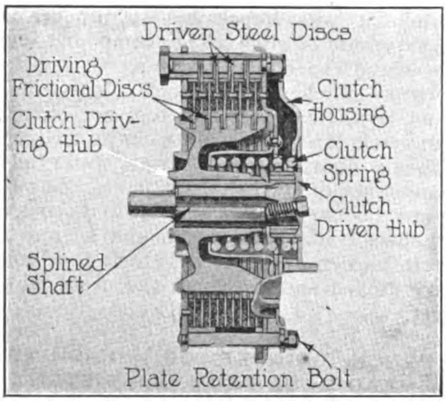
Wooden Clamp Used to Compress Clutch Spring when Removing Clutch.

The Proper Care of Dry-Disc Clutch

THE multiple and single plate disc clutch as used in the modern car, is not as difficult to adjust and care for as it seems to the uninitiated. The disc clutch is a mechanism of unusual qualities: Simple, easy to operate, efficient and lasting. In view of the severe work which it has to perform and the excellent manner in which it does it, without attention, it becomes a unit of almost 100 per cent. perfection. There are times, however, when one of these clutches, after a period, will begin to slip. This condition usually develops after the first two or three months' service if at all.

The clutch of the dry disc type is made up of a number of discs arranged alternately with a steel plate against one fabric-lined. The edges of the fabric-lined discs have a series of teeth cut around the outer circumference which mesh with corresponding grooves in the outer drum. The steel discs have keyways cut in the edges of holes in the discs which engage with keys in the internal drum. When the clutch is engaged, these discs are firmly compressed by two springs acting against the compressor plate.

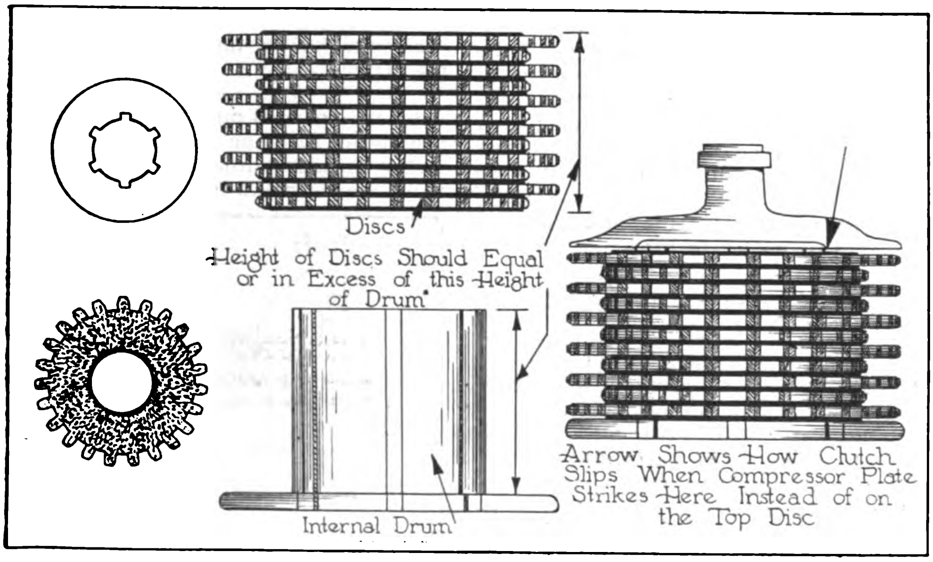
The height of the total number of discs piled one on top of the other and arranged the same as in the clutch should equal or be slightly in excess of the distance from the shoulder to the edge of the internal clutch drum. When a car is new the lined discs frequently have high spots on them but, after a few hundred miles' running, they will be worn down, resulting in a reduction in the thickness of the disc assembly. When the reduction is sufficient to make the measurement of the disc assembly less than the distance from the shoulder to the edge of the drum, then the compressor plate will strike the edge of the drum and the pressure of the springs will be against the drum instead of the discs, resulting in a slipping clutch. To correct this condition the only thing necessary to do is to add to the disc assembly in order to increase its thickness. This can be done by installing one extra steel disc and the best place to put it is against the shoulder of the drum. One disc is usually sufficient to make up the required amount. Do not put too many discs in as there would then be a possibility of the clutch not releasing properly. Very often, when one of these clutches starts to slip, the operator will pour on gasoline or tighten the springs. This usually does not help much as, in most cases, slipping is caused from the reason given.



Units of Multiple Dry-Disc Clutch.

Slipping of the clutch is also caused by improper pedal adjustment. The clutch pedal, at all times, should have a slight amount of play so that there may be no doubt that the clutch is being held out by the pedal stop.

Do not pour oil into the clutch housing as it will damage the lining, making it too soft. Keep the thrust bearing lubricated.


Discs
Height of Discs Should Equal or in Excess of this Height of Drum
Internal Drum
Arrow Shows How Clutch Slips When Compressor Plate Strikes Here Instead of on the Top Disc

Modern Dry-Disc Clutch, Multiple Type, Showing Construction and Cause of Slipping.

GLYCERINE LITHARGE CEMENT.

A handy cement to have in the shop for stopping leaks, etc., and which can be used for cementing glass, brass, etc., is made by mixing equal parts of litharge, commercial glycerine and Portland cement. This cement will harden under water and will withstand hydrocarbon vapors.

TIGHT SPRING CLIPS.

If any proof be required of the necessity of keeping spring clips tight, it may be found in the fact that neither dealers nor manufacturers will replace a spring that is broken through the center bolt hole—the place where most springs give way.

Breakage of this nature is taken as evidence that the springs clips were not kept tight. The spring clips are subject to bending in two directions, with the result that excessive strains are imposed upon the weakest point, which in this case is at the bolt hole.

The spring clips should be seated perfectly tight by drawing the nuts up as closely as possible with a wrench of such size that there is no question of their being tight. It is well also to bear in mind that even a nut secured by a lock washer will ultimately work loose; hence the necessity for looking over the spring clips now and then.

DRILLING GLASS.

The service station repairer who finds it necessary to drill holes in glass will have good results if he makes use of the following method: Grind the points from one corner of a small three-cornered file on the bias from the other. Fix this file in a bit brace such as is used for boring holes in wood work. Place the glass to be drilled on a smooth surface covered with a blanket or similar material, to cushion the glass. Start to drill the hole, in the exact spot you wish it. When a slight indentation has been made, surround this with a wall of putty and fill the dam thus made with turpentine to prevent the drill from heating. Light pressure on the drill while boring the hole is best, otherwise the glass is liable to crack.

WASH FOR WHITENING METAL.

Mix whiting and white lead with boiled linseed oil to a thick paste, add some Japan dryer and thin with benzine or gasoline. This makes a fine preparation for whitening sheet iron and other work previous to laying out, as any lines drawn on the surface show up very distinctly. It can also be used to advantage when stencilling or marking sheet metal.

PAINT FOR THE BATTERY BOX.

Black asphaltum paint is an excellent medium to use in repainting the battery box, as it prevents the eating away of the material of the box by solution that is spilled. The box should be given a heavy coat of this paint several times a year. Incidentally, washing soda or ammonia solution will neutralize the effect of battery acid while it is still wet.

TO KEEP HANDLES ON TOOLS.

Fill the handle with powdered rosin and a little rotten stone. Heat the tang of the tool hot and then push it down hard into the handle. When it cools it will be held firmly.

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THE assurance of dependability over all roads, in any weather, is the chief factor in Brunswick Tire popularity. Tire after tire, they bring unvarying quality and plus service. Each one upholds the high merit reputation of the House of Brunswick.

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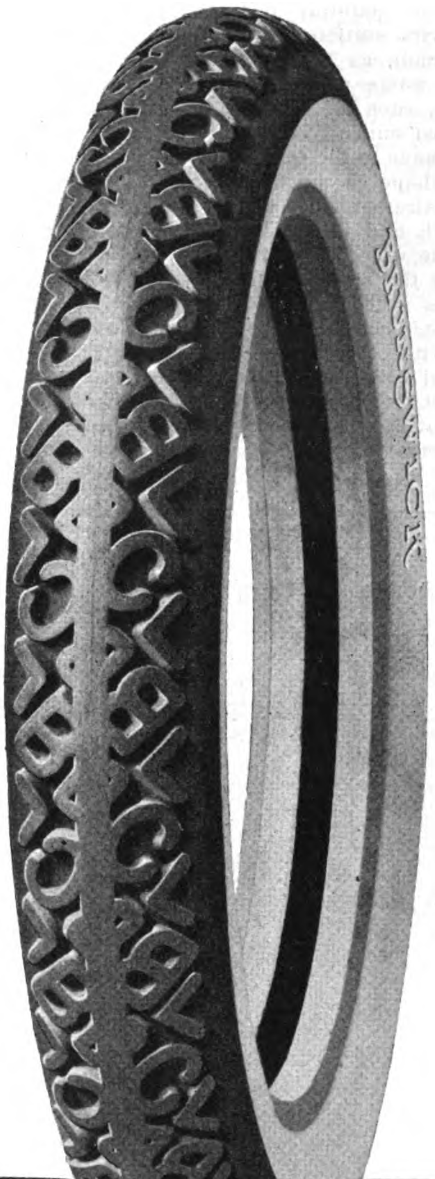
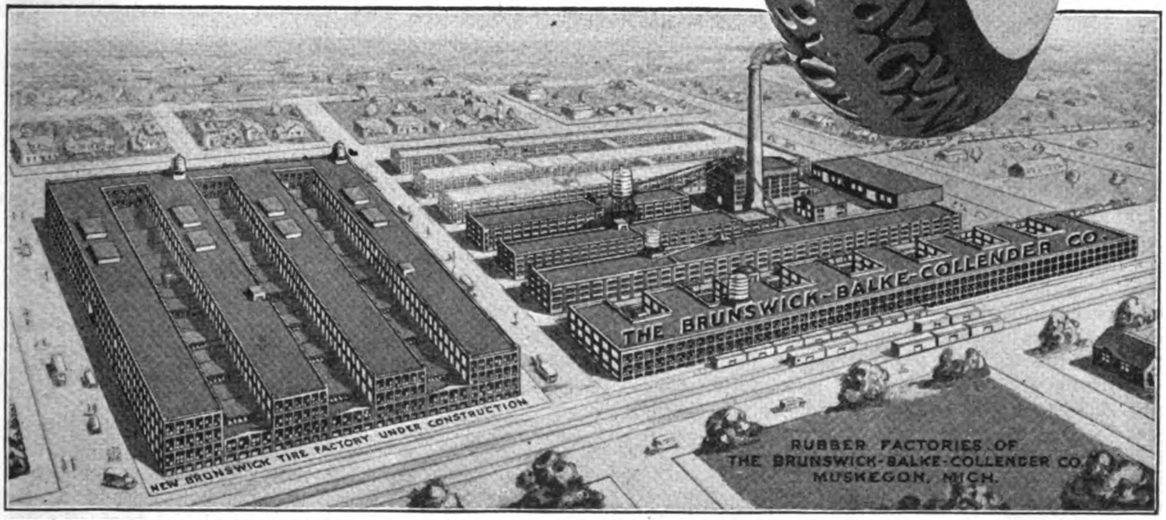


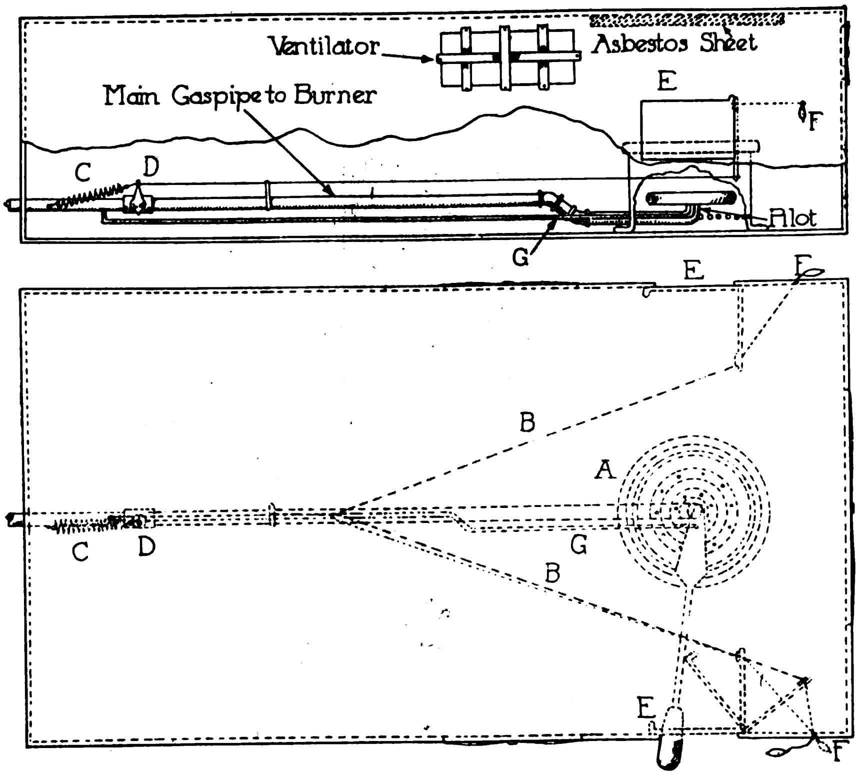
Brunswick
TIRES


THE BRUNSWICK-BALKE-COLLENDER CO.
NEW BRUNSWICK TIRE FACTORY UNDER CONSTRUCTION
RUBBER FACTORIES OF
THE BRUNSWICK-BALKE-COLLENDER CO.
MUSKEGON, MICH.

Gas Heater for Soldering Coppers

A satisfactory gas or stove for heating soldering coppers can be constructed at odd times from material picked up around the service station and the cost will be very small, as the fittings can be made from waste material and the few accessories, such as bolts, hinges, etc., will not cost much.

The stove is made in the form of a rectangle, which shape is much preferred by radiator repairers on account of the additional length and the fact that the box can be made wider. Ordinary sheet iron is used for the sides, top and ends of the heater, as well as the floor, while the sides are fastened to the ends, top and bottom with small angle pieces, drilled and fitted with stove bolts. Or if a more perfect job is desired, angle pieces can be cut and fitted that will extend the full height of the side and are riveted to the sides and ends. This type of construction adds greater strength to the heater and will tend to make it hold its shape.



The height of the heater may vary from six to eight inches, six inches being about the average desired by most radiator repairers, while the length should be about 16 inches and the width about 10 inches. Doors are cut about two inches from the front and hung in such a manner that they swing inward, one door at either side. The hinges can be fastened to the sides by drilling holes and riveting the hinges; ordinary strap hinges will answer the purpose. An arm is fastened to the upper front corner extending inward, and to this arm is secured the wire that opens and closes the gas valve when an iron is inserted through the door opening, and over the gas jet. Ventilation is provided by cutting a two by five-inch opening at either side and fitting a grating of metal strips riveted to the sides, as shown in the illustration.

The gas pipe enters through an opening cut in the rear end and is fitted with a shut-off valve and spring, which closes the valve automatically when either of the side doors are closed.

The gas pipe leads forward to a plate between the doors at the center, while a pilot light is provided which is tapped into the main gas pipe behind the automatic valve and is led forward to a point just below the main burner or gas plate. The opening from this pilot is very small, so that only a small amount of gas is allowed to pass, its object being to light the burner when either door is opened and a copper placed on for heating.

Outside of the heater box a regular valve is provided which shuts off the gas both to the main burner and the pilot light when the stove is not in use.

As will be noted from the illustration, A is the main gas burner; B, B, the wires connecting the automatic valve with either side door; C, the spring which automatically closes the gas valve when the door closes; D, the gas valve on the main line; E, E, side doors; F, F, wire pull which allows the iron to be removed from over the burner without the door pinching the handle of the iron; G, pilot pipe to main burner.

TO FILE CAST IRON.

Frequently it is necessary to file a piece of cast iron that has been subjected to friction and has acquired a glaze or skin. The best way to get through this skin is to use the edges of an old file. If a new file is used on this sort of surface it may be ruined.

BE CAREFUL TO ELIMINATE GRIT WHEN REPLACING CYLINDERS.

In fitting cylinders to the engine base after their removal for repair work, care should be taken to eliminate all chances of grit entering at the bottom and working up on to the cylinders walls, causing the pistons to score the cylinders. The better method is to wipe the interior walls of the cylinder with a clean cloth slightly coated with oil, which will remove any traces of grit. Do not allow the hands to come in contact with the walls of the cylinder, as they are oily and grit may unknowingly be deposited on them in this way. Small loose parts, after being cleaned with gasoline should be kept wrapped in clean cloths to prevent the entrance of grit and not jumbled together in a box, as is the usual custom. The chief destructive agent in an engine is grit and other abrasive matter, and though it is physically impossible to keep it out entirely, it will repay the trouble taken to keep it to a minimum by scrupulous care when replacing the part after handling.

CEMENT FOR FASTENING LEATHER OR PAPER TO PULLEYS.

Soak six pounds of carriage glue over night, then heat thoroughly till dissolved and add six pounds of white lead ground in oil. Reduce the mixture with oil until it is of a free working consistency. Add one ounce of nitric acid and stir till thoroughly mixed. The pulley surface should be made thoroughly clean and should be warmed to about 125 degrees Fahrenheit. Then apply the cement and clamp on the leather and let stand 12 hours before using. If the job is done right, it is claimed the leather will have to be turned off in a lathe in order to remove it.

LIQUID METAL POLISH.

A good liquid metal polish for cold smooth surfaces, either iron or brass, may be made from the following ingredients: To three quarts of benzine add two ounces of oxalic acid and 1½ pounds of silicate acid powder. This polish may be made in large quantities and set aside for further use provided it is kept in tightly closed bottles. Shake well before using. Apply the solution with a piece of cloth. When dry, polish with a soft, clean cloth.

COMPRESSION TESTER.

The shell of an old spark plug, in conjunction with a tire gauge, makes a very handy compression tester. The porcelain of the plug is removed and a washer is fitted at the bottom. The gauge is next inserted and the packing tamped in around it. The packing nut forces the packing down around the base of the gauge until a perfectly tight joint is made. This instrument is screwed into the spark plug opening and when the engine is turned over by hand the compression is registered in pounds on the gauge.

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Where our own formula is carefully watched to obtain a tough gray iron, a few points softer than the proper quality of cylinder metal.

"More Than a Million a Month"

THE Piston RING COMPANY
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Development of O. K. Giant Battery.

Paul B. Rabe of Chicago, a business man with a mechanical turn of mind, is credited with being responsible for revolutionizing the battery business in a way for the development of a dry rechargeable battery that is claimed to put an end to much of the battery expense and many of the troubles of the motorist. This is now being manufactured at the plant of the O. K. Giant Battery Corporation, Gary, Ind., of which Mr. Rabe is the president. This battery will not freeze and illuminates the service station problem. It has been subjected to the most severe tests that could be given a battery and has always functioned properly. Its development was the result of a chance visit made by Mr. Rabe to Bert H. Krafft, the inventor of the O. K. dry rechargeable battery.

Mr. Rabe was out in his wife's electric. He had had considerable trouble with his batteries. Being of a mechanical turn of mind he began to think that a dry rechargeable battery ought to be within the bounds of possibility. He knew Mr. Krafft was an electrical engineer. He was only a short distance from Mr. Krafft's house when these thoughts passed through his mind. He called and suggested the feasibility of such an invention.

"Why, I've been working on that for 20 years," was the reply of Mr. Krafft. "There is just one thing I don't seem able to get right."

"Don't stop," was the rejoinder of Mr. Rabe. "If you have got that far, give it another whirl, I'll help you."

Mr. Krafft took the advice of Mr. Rabe and in three years he perfected the invention which is now being turned out at the plant of the O. K. Giant Battery Corporation at Gary.

One of the most severe tests to which this battery has been subjected was freezing in a discharged condition, in a cake of ice for three days and letting it stand outside for 12 hours with the temperature at 11 degrees below zero. That treatment never fazed the O. K. It lived up to its name.

The O. K. Giant Battery Corporation has new buildings in course of construction for the equipment of which special standard machinery is being made at an expense approximating $500,000.

Two buildings are now in use, and contracts call for the completion of 12 more by Dec. 31 of the present year. The corporation has a tract of 40 acres, and the eventual development plans call for the erection of a total of 40 buildings on this plat.

More than 2000 skilled and unskilled men will be employed by the time the eighth unit is completed this fall. To convey an idea of the scale on which the operations of the O. K. Giant Battery Corporation are going forward, it may be stated that, in No. 2 unit, there have been installed $72,000 worth of electrical charging boards of the most modern type, having a capacity for 200,000 dry rechargeable batteries of all types a day.

Paul B. Rabe, President of O. K. Giant Battery Corporation, Gary, Ind.

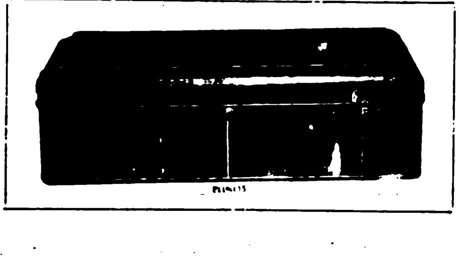
SECURITY AFFORDED BY PEERLESS TOOL BOX.

There has, of recent years, been a notable increase in the theft of tires, tools, chains and accessories of all kinds that are left insecure in parked automobiles, and this points out the necessity of some means of curbing these depredations. Motorists should be careful to see that all tools and equipment are out of sight and deposited in some safe receptacle. To serve this purpose the Corcoran Manufacturing Co., Cincinnati, O., makes the No. 30 Peerless tool box for Ford cars, which is shown herewith.

This box is of a convenient size, 22 inches long, nine inches wide and seven inches deep. It is scientifically constructed with a full finished steel body, corrugated, which permits of great strength and durability, but is not handicapped with the excess weight ordinarily necessary to incorporate strength into a box of this size. The lock, which is rust proof and guaranteed for the life of the box, is concealed. The hinges are riveted, not welded, making it impossible to break them off. The lid, which has a crown top and a reenforced beading along the edge, will not dent, and the corrugation on the bottom of the box allows air to circulate, preventing the formation of rust.

The Peerless tool box was primarily designed for the carrying of tools, but its usefulness is increased by the motorist who carries his chains and other valuable equipment in it.

An inquiry to department F will bring detailed description of the Peerless tool box, as well as information on the Corcoran company's complete line of Peerless products for Ford cars: Radiators, radiator and hood combinations, hoods and fenders.



NEW BOOKS.

Starting and Lighting Troubles, Remedies and Repairs, by Harold P. Manly. Published by Frederick J. Drake & Co., Chicago, Ill.

This book is designed for use in electrical service stations, battery stations, repair shops and garages in general; also for the car owner who makes his own repairs.

Systematic methods are given for quickly locating the exact form of trouble that may be present. These are supplemented by instructions for either the remedy or repair called for, these being in such a form that it is possible to perform the operation in a proper manner and with the least possible effort and time.

The volume is divided into three distinct parts:

First, trouble location charts which, when the condition of the lights and starter is observed, tell of the steps necessary for finding the fault and correcting it.

Second, detailed instructions for making the correct tests to determine the kind of fault that may exist in any of the several parts of the electrical equipment, including an explanation of the construction and use of electrical equipment.

Third, diagrams of the wiring, both internal and external, are given, including equipment used from 1912 to 1920 inclusive.

It is assumed that the reader has some knowledge of the principles of electric lighting and starting such as given in a previous volume by the same author under the heading of "Automobile Starting and Lighting." However, if one is acquainted with electrical work of a general nature such knowledge is not essential.

Automobile Battery Care and Repair, by Harold P. Manly. Published by Frederick J. Drake & Co., Chicago, Ill.

Automobile Battery Care and Repair is intended as a manual of storage battery work performed in battery stations, in shops handling starting, lighting and ignition repairs, in general garage work and in the service of car owners handling their own upkeep problems.

The text is confined strictly to the automotive field; that is, to the lead-acid battery of the pasted plate type. Treatment of the subject is from the practical and commercial standpoint as affected by the problems met with in every day work.

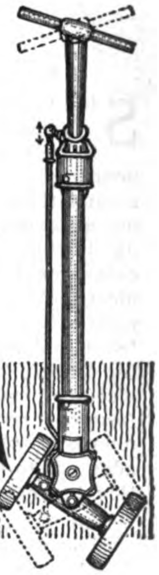
Especial attention has been given to the subjects of charging, repairing and the remedy of battery troubles, as these are matters that directly concern the worker in this line. Systematic rules have been developed and all necessary reference information has been included.

"The Wheels Pivot--

—that's why I can get your car out quickest with a WEAVER New-Way Jack

The Sign of Good Service

WE USE
WEAVER
GARAGE
AND SHOP
EQUIPMENT
FOR
SERVICE



"BY being able to steer this Jack by pivoting the wheels, I can place it in position JUST where I want it the first shot out of the box. I don't have to pull and push it back and forth a half dozen times to get it located just right under the axle or differential—a simple twist of the handle guides this Weaver Jack to just the proper spot while I am rolling it under the car.

"You can't imagine how much time that saves in the course of a day, Mr. Car Owner—and it keeps busy men like you from getting peeved and impatient while you are waiting for me to get your car out of a "pocket".

"Then it is of great advantage in getting a car out of a close corner like this one, where I can't conveniently operate the Jack from either front or rear end of the car.

"I can shoot Mr. Jack into place under the differential in this way—then by cutting the wheels of the Jack into line with the axle of the car I can pull the car straight to the side without having to raise the car high enough to permit the near end of the Jack Frame to pass directly under the car wheel. I only raise the car high enough to free the tires from contact with the floor. One notch on the ratchet is often sufficient.

"It's so easy to operate too! It has the same leverage principle as the ordinary little single standard Jack which you operate with one hand—while this long lever handle supplies enough leverage to enable me to raise or lower the heaviest passenger car with perfect ease.

"Notice particularly when I release the ratchet to lower your car it requires but little effort to resist the weight of the car, on account of the enormous leverage I have in this handle. ....You need never be afraid of the handle of a Weaver New-Way Jack being slammed against your fender or radiator in letting the car down.

"Yes, it rolls very easy, because it is equipped with roller and ball-bearings in the wheels and castor. Then another thing—the hardened steel ratchet and the two ratchet dogs make it mighty safe and durable. ....But you're not interested in that of course.

* * * * * *

"You're welcome. I could have done it in one-fourth the time if I hadn't talked so much—but I sure am strong for this NEW-WAY JACK.

NOTE:--This Coupon is for your garage man. He will appreciate your calling his attention to it if he has not already received one of our handsome Window Transfer Signs, and our CATALOGUE.

WEAVER GARAGE AND SH... EQU...

WEAVER WINDOW TRANSFER COUPON

Check Weaver items you NOW have in service, attach to your letter head and mail to

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Auto Ambulance
Auto Twin Jacks
Wire Wheel Stand
Rear Axle Attachment

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SPRINGFIELD, ILLINOIS, U.S.A.

Care of Electrical Measuring Instruments

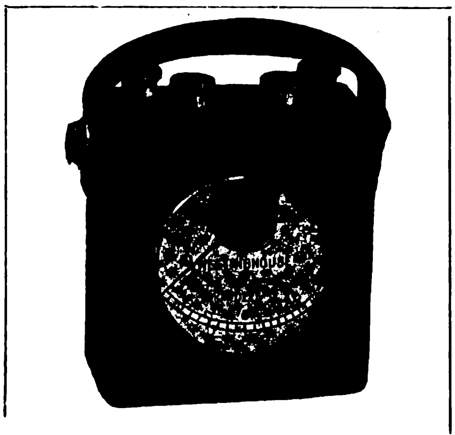
SINCE electrical equipment of some type for starting and lighting, as well as for ignition, is found on nearly every make of motor car, this means that the repair man, besides being an expert on gas engines, as well as on the general mechanics of the machine, must also have a knowledge of the electrical equipment, and the methods used to determine the source of any trouble that exists. All logical methods for finding trouble require the use of an electrical measuring instrument in the form of an ammeter or voltmeter, or modifications of these two, especially adapted to starting, lighting and ignition troubles.

The motor, generator and storage battery are all articles that are built to stand more or less rough usage and their care and upkeep are familiar subjects to the average garage man. The ammeter and voltmeter, however, are the tools that are given him for locating trouble, but not much has been said of their care, or how they should be handled. The object of this article is to point out a few of the major points regarding the construction and care of the general types of measuring instruments.

The best known form of portable instrument used for direct current testing is known as the D'Arsonval type. It consists of a permanent magnet of the horse shoe form and between its pole pieces swings a pivoted moving coil. This coil consists of a few turns of fine copper wire wound on an aluminum frame. The current is led to and from the coil by two flat spiral springs which also restrain the movement of the coil. The action of the meter can be compared to that of a motor. The magnetic flux passes across between the poles of the permanent magnet, the same as between the field poles of the motor. The current in the coil reacts against the flux in the same manner that the armature current in the motor reacts against the field flux, causing rotation. As the coil rotates the springs are wound up and the coil comes to rest when the backward torque of the springs equals the forward torque of the coil. Attached to this coil is a pointer which passes over a calibrated scale. As the forward torque of the coil is proportional to the amount of current in the coil winding, and as the backward torque of the springs is proportional to the angle through which they are turned, the position of the coil and also the pointer would be a measurement of the current in the coil.

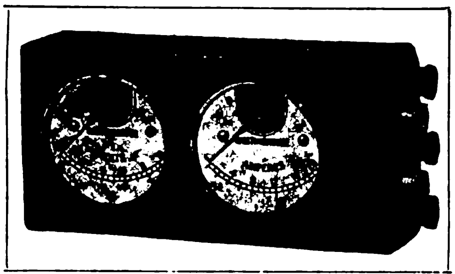
If a constant resistance is connected across a source of voltage, such as across the terminals of a storage battery, the amount of current that will flow through that resistance is directly proportional to the voltage. Consequently, if a resistance is connected in series with the moving coil of the instrument, the amount of current flowing through the coil is a measure of the voltage of the source, and the instrument is known as a voltmeter.

Since the current must be carried to and from the coil by the two spiral springs, it must be kept at a low value. When the current of a circuit is to be measured it is necessary to pass only a small part of that current through the instrument coil. This is done by passing the current through a constant resistance called a shunt, and connecting the moving coil of the instrument in parallel with it. The current will divide between the shunt and the coil inversely as their resistances, and as these resistances are practically constant the current through the instrument coil is directly proportional to the main line current and the instrument is an ammeter.



Westinghouse Voltmeter.

The full scale torque of one well known type of instrument, or that force working through the lever arm of one inch is 0.0031 of an ounce. When working with such small forces all friction must be reduced to a minimum. Therefore, the coil is supported by very highly polished steel pivots turning on sapphire jewel bearings. These pivots are V shaped and the points are ground to a radius of about .0005 of an inch. The sapphire jewels are also V shaped, but are a little larger than the pivots, having a larger angle and also a radius at the tip of about 3/10,000 of an inch. The weight of the movement of this instrument is 0.0308 of an ounce, so that the pressure on the small bearing surface of the pivot is approximately 200,000 pounds a square inch. When one remembers that a sudden jar is liable to increase this value to two or three times this amount, it is very easy to see why an instrument is fairly easily damaged. Instruments are made rugged, to be sure, but the degree of ruggedness is much less than with the other parts of the car equipment. However, they will stand the usual run of usage and will last years if they are properly handled.



Westinghouse Combination Instrument: Voltmeter on Left; Ammeter on Right.

If instruments get off zero they can readily be adjusted by using a screw driver, and turning the screw just below the dial on the front of the case. This screw should be turned carefully for it only takes a fraction of a turn to get the desired results, and if turned too far the screw comes out of the adjusting slot and cannot be adjusted further.

If the instrument becomes damaged so that excessive friction exists, or the coils are burned out by a severe overload, it should be returned to the factory because of the possibility of further damaging the instrument, for repairs on such work as this require an expert and should never be attempted by one not fully familiar with it.

WILL MANUFACTURE SHERIDAN CAR AT MUNCIE, IND.

Announcement is made that the Sheridan Motor Car Co., a newly created division of the General Motors Corporation, will manufacture the Sheridan car at Muncie, Ind.

D. A. Burke, formerly in charge of the Buick Motor Co.'s business in Chicago, and who previous to that had held several other official positions with the Buick organization, is president of the new General Motors division.

The latter has purchased and greatly improved the plant at Muncie, formerly used by the Inter-State Automobile Co. This plant, now one of the best arranged and equipped in the country, has a possible output of 300 cars a day, with sufficient vacant property around it to permit the growth that is anticipated.

The new Sheridan, production of which is expected to begin in August, will be made in two sizes, four and eight cylinders. Each will be manufactured in roadster, touring, coupe and sedan models. Further announcements with respect to the details of the car will be made in the near future.

Mr. Burke's long contact with the automobile trade and car buying public gave him definite ideas and ideals which he has incorporated in the Sheridan, the new car being his creation, working with the General Motor's engineers, and is said to be a masterpiece in design, stability and completeness.

WICHITA GOODRICH BRANCH.

The Wichita, Kan., branch of the B. F. Goodrich Rubber Co. is in a new location at 318 South Lawrence avenue, where it will have triple its former floor space and will be able to increase its stock of tires from $50,000 to $250,0000.

ACE HARD TIRE MOVES.

The Ace Hard Tire & Service Co., Kansas City, Mo., has moved from 1924 Grand avenue to 2740 McGee Traffic way.

$150,000.00 Sales Power Back of this Accessory

Dealers! You have a virgin field. Every Ford car owner is a prospective buyer.

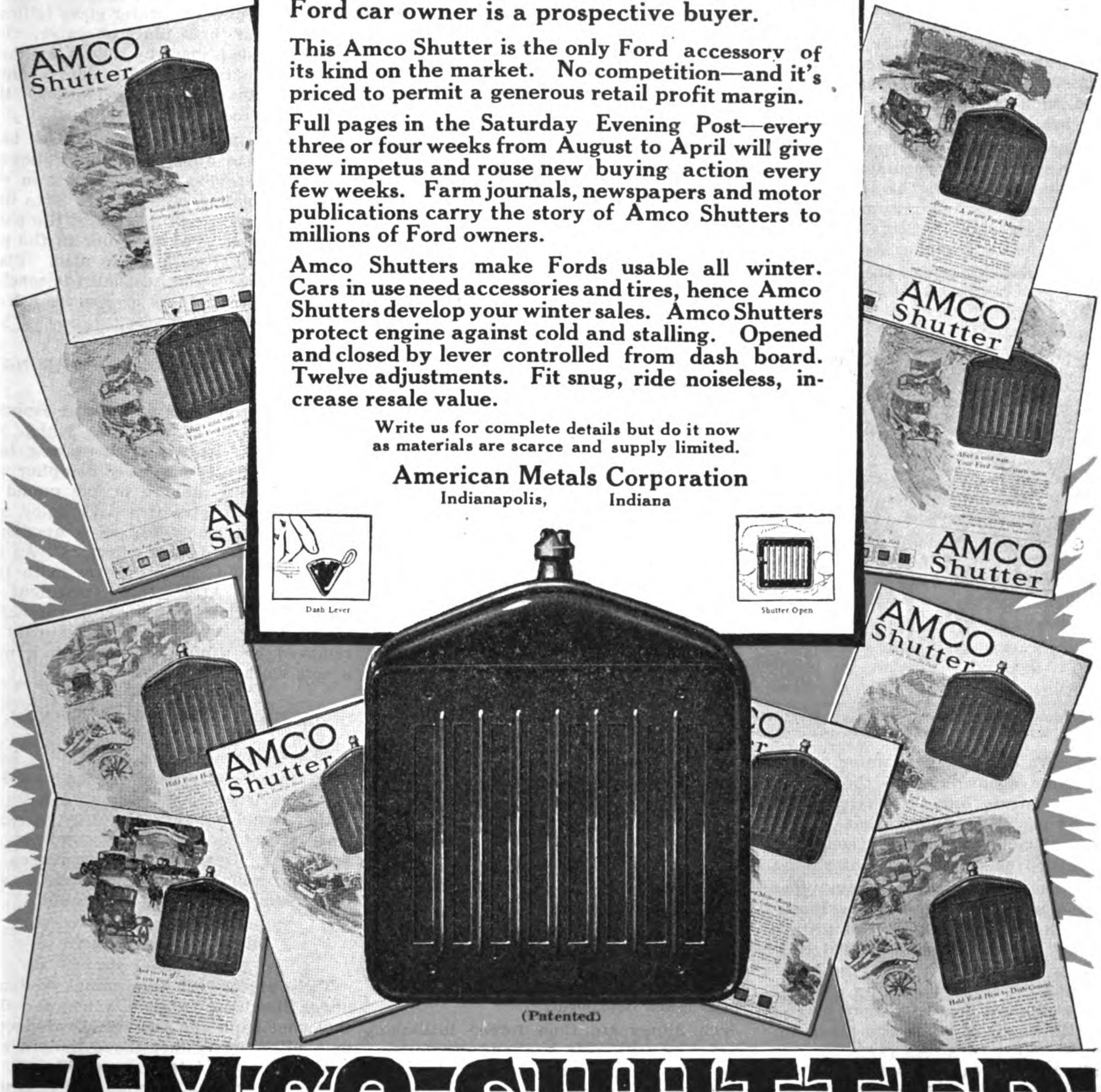
This Amco Shutter is the only Ford accessory of its kind on the market. No competition—and it's priced to permit a generous retail profit margin.

Full pages in the Saturday Evening Post—every three or four weeks from August to April will give new impetus and rouse new buying action every few weeks. Farm journals, newspapers and motor publications carry the story of Amco Shutters to millions of Ford owners.

Amco Shutters make Fords usable all winter. Cars in use need accessories and tires, hence Amco Shutters develop your winter sales. Amco Shutters protect engine against cold and stalling. Opened and closed by lever controlled from dash board. Twelve adjustments. Fit snug, ride noiseless, increase resale value.

Write us for complete details but do it now as materials are scarce and supply limited.

American Metals Corporation
Indianapolis, Indiana



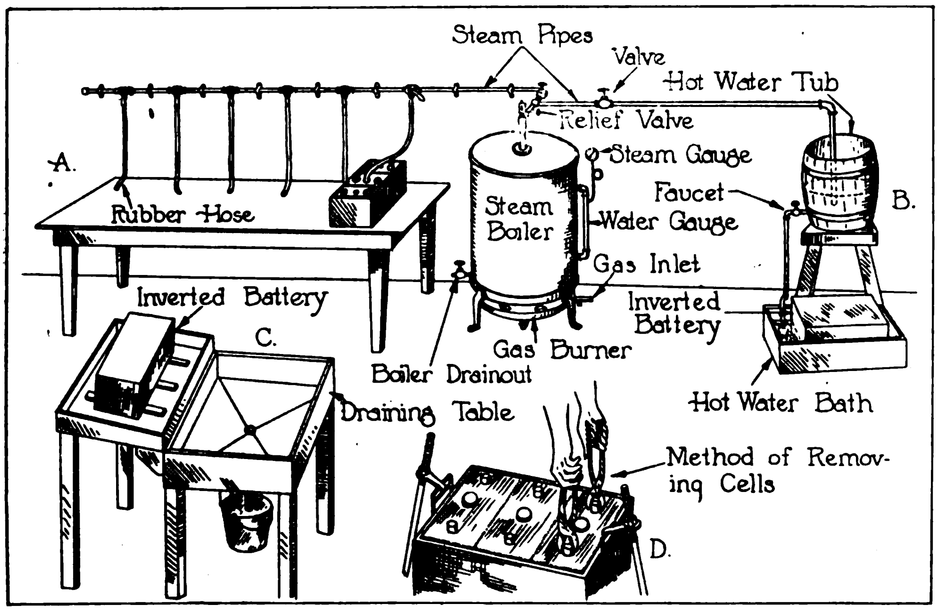
(Patented)

AMCO SHUTTER

Use of Steam for Separating Battery Cells

STEAM for loosening the individual cells of a battery is a method that is now in use among battery repairers. The process previously employed has been either the gas flame, scraping or heated tools, and this has proved tedious, requiring considerable time and has not given satisfaction to the customer in all cases. The new method, employing steam, requires a boiler either coal burning or gas for generating the steam. A brief description of a small installation of this type will be given:

The illustration shows the arrangement of the units, which is self-explanatory. In this case a small boiler was used, such as is found in a house or shop for heating water.



Arrangement of Units for Steaming Batteries: A, Steaming Bench; B, Heating Battery Cells with Hot Water; C, Draining Bench; D, Removing Steamed Cells by Pliers.

A gas burner supplies the heat beneath the boiler and may be regulated at the will of the operator. The boiler is equipped with steam gauge, water glass, with suitable connections to the water main, and a steam line. It was claimed by the owner of the outfit that steam pressure sufficient for the work could be generated in from 10 to 15 minutes.

Valves are placed on the steam pipe at convenient points and from these short lengths of rubber hose lead to the bench. For unsealing an individual cell the vent in the cell is removed, the hose inserted and the steam turned on. When the cell is properly heated it may be removed with a pair of pliers and taken to the bench. Most repairers prefer to remove all the cells in the battery and in that case the cells steamed should be covered with a cloth, to prevent them from cooling too rapidly before removing.

Still another method employs hot water instead of the live steam. In this case the steam is connected to a tank filled with water and the steam is allowed to heat the water to the proper temperature, the battery is placed in the water inverted and with the vent plugs removed. After a few minutes the battery is removed, given a shake and the cells will drop out. For this outfit a much larger boiler is required, as a larger amount of steam is used in the operation.

At the left of the steaming table is the draining table and here the battery is left in the inverted position to drain or to be separated into its component parts. Some repairers prefer to take apart and inspect every cell of the battery on the assumption that if one cell is inoperative there may be more or less defects in them all.

REPAIRING WATER JACKET.

A small leak in the water jacket of the engine may be repaired, without the cost of welding, by a simple rust method. While this is not considered as good as welding, it costs practically nothing and will often be found a handy makeshift in cases where it is found impossible to get to a repair shop to be welded before using the car.

The part of the jacket which has been injured is exposed and filed bright. If the leak is the result of freezing, the two ends of the crack are determined and two small holes drilled through at these points. A soft iron or copper rod is then driven into the hole and the ends filed off flush. This checks any tendency of the crack continuing.

Iron filings are then forced into the crack if it is a wide one, and a solution made of a quarter-pound of sal ammoniac in one quart of water. A small cup of putty is then built onto the side of the jacket, which, when filled with the solution, completely immerses the crack. The mixture rapidly rusts the iron, and soon the crack will have been completely filled with rust.

The whole cooling system should be washed out thoroughly after the crack is filled, to check excessive rusting of other iron parts.

HARDENING HIGH SPEED STEEL.

A hardening paste made according to the following formula has been used on high speed steel with success, enabling it to be hardened by heating in an ordinary gas oven, and thus making unnecessary the very high heat usually called for in hardening such steels: Mix two pounds rye meal, one pound common salt, ¼ pound pulverized borax, ¼ pound pulverized charcoal, 1/3 pint (or ¼ pound) liquid cyanide of potassium, ½ gill or two ounces of water glass (silicate of soda) and three pints of water. The liquid cyanide is made by dissolving three ounces of pulverized potassium cyanide in one pint of boiling water. Mix thoroughly to form a paste.

When using the paste it has been found best to apply it in the following manner: Provide a small cast iron vessel or a crucible of the shape of a drip pan and spread a thin layer of the paste on the bottom. Put the work in the pan and cover that with paste also. Place in the gas oven and heat until it reaches a nice full red. Dip in sperm, fish or kerosene oil.

PREVENTING RUST FORMING.

To keep iron of any kind, and especially those parts of machines which are made of steel or iron, from rusting, take one-half ounce of powdered camphor and melt it before the fire in one pound of good lard. To give it a dark color, add as much fine black lead as is necessary to produce the desired effect. Clean the iron work and smear it over with this preparation. After this treatment it should be allowed to remain untouched for 24 hours, when the grease should be removed by wiping the iron work with a soft cloth.

TO CASE HARDEN CAST IRON.

The following recipe is said to have been successfully used in case hardening cast iron: Pulverize and mix together equal weights of saltpeter, prussiate of potash and a half ounce of sal ammoniac. Heat the cast iron pieces till red hot, roll them in the powder and then plunge them into the liquid.

BETTER COOLING.

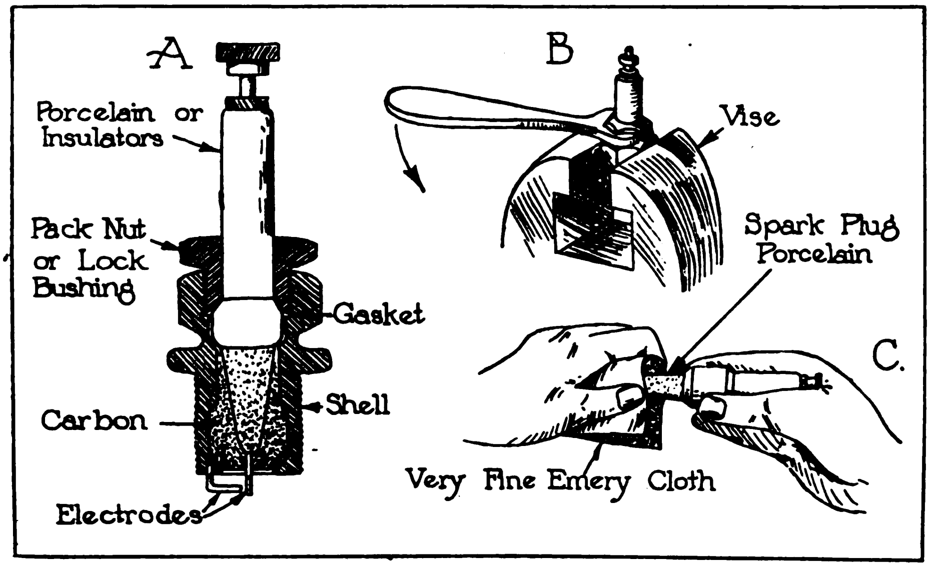
Two pieces of thin metal fastened under the hood in such a manner that the wind from the fan will be deflected more directly against the cylinders and away from the intake manifold will increase the cooling function and also protect the ingoing gasoline mixture.

It is possible to prevent the formation of scale in fine jewelers' dies and similar tools and still retain the finished brilliancy of the surface, by applying a mixture of powdered ivory black and sperm oil, mixed to the consistency of paste. It is only necessary to apply a thin coating.

Cleaning and Care of Spark Plugs

SPARK plugs, as used at the present time, are of several different types. A few seem to have the preference among manufacturers, dealers and motorists and only those that have proved popular will be described herewith.

One type of plug employs mica for the insulator. The mica being in the form of discs which are strung on the center electrode and held securely by a nut at the top. The insulator and electrode are held tightly in a shell of steel or other metal, which fits into the spark plug opening in the end of the cylinders, by means of a threaded bushing which extends down into the shell and over a shoulder formed on the mica insulation.



A, Sectional View of Separable Spark Plug; B, Correct Method of Loosening Porcelain; C, Correct Way to Clean Carbon Deposit from Porcelain.

A second type is the plug with a porcelain insulator. This is made in two forms, one being separable, in which the porcelain may be removed from the shell for cleaning carbon, renewing the porcelain, etc., while the second is of one-piece construction, in which the porcelain cannot be removed.

Method of Cleaning.

The mica plug is usually of two-piece construction, so that the mica can be removed for cleaning and renewal. The placing of the plug in a vise and setting the jaws up against the shell allows the repairer to loosen and remove the bushing, after which the mica insulator is taken out.

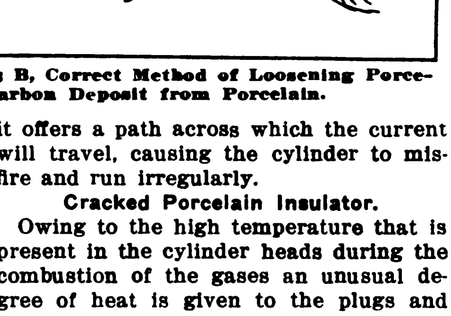
The two-piece porcelain plug is disassembled in the same manner, and is cleaned similarly. After the insulator and the electrode have been taken from the shell the carbon accumulation may be removed by scraping lightly with a knife, or with a strip of emery cloth. In the porcelain insulator care must be taken not to cut through the glazing of the porcelain as carbon will collect much more quickly where this is marred. Oil and fine carbon dust can be removed by dipping the plug parts in gasoline, leaving the parts in the pail for a few moments while a second plug is being disassembled and cleaned with emery cloth.

The one-piece plug cannot be disassembled and can only be cleaned with a thin-bladed knife, a piece of tin or some other thin instrument, by scraping the carbon accumulation from the inside of the shell and the side of the porcelain insulator.

It should be borne in mind that an accumulation of carbon inside the shell and covering the porcelain insulator will tend to short-circuit the plug at its points, as it offers a path across which the current will travel, causing the cylinder to misfire and run irregularly.

Cracked Porcelain Insulator.

Owing to the high temperature that is present in the cylinder heads during the combustion of the gases an unusual degree of heat is given to the plugs and especially to the insulators. Occasionally plugs will be heated to a point considerably above that which they are designed to stand with the result that the porcelain will crack inside the shell. This may be caused by shortage of water in the cooling system, operating the engine on too rich a mixture, failure of the water pump to operate, driving with a retarded spark, dragging brakes, etc. Still another cause of cracked porcelains may be traced to screwing the threaded bushing too tightly against the gasket of the shell, forcing unnecessary pressure upon the insulator and causing liability of cracking the porcelain.



A, Threaded Bushing; B, Porcelain Insulator and Center Electrode; C, Spark Plug Shell and Fixed Electrode.

When cleaning the plug, after disassembling, examine the porcelain for cracks and if noted with the eye, supply a new porcelain in the two-piece type or purchase a new plug if of one-piece construction.

A good plan, after assembling the plug and before screwing it into the engine cylinder, is to test it with a battery and coil or by connecting the plug terminal wire to the plug, allowing the shell of plug to lay on the top of the cylinder. Switch on the ignition and turn the engine over either by hand or with the starter, noting how the plug fires. If battery ignition is used allow the plug to fire steadily for a few moments to observe if the spark jumps the points properly. If not, adjust the points; they should be set about 1/32 inch apart for battery ignition and slightly closer for magneto ignition. One can also note whether the porcelain is leaking at this time as the spark will not jump the points, although set properly, but will instead, jump from the electrode through the crack in the porcelain to the shell, cutting out the points entirely.

It should be remembered that a battery spark differs from a magneto spark and that a plug that fires perfectly on a battery may not work on the magneto. This is especially true of the Ford magneto. To test this point, switch over on to the magneto, after the engine is started, and with the plug still resting on the top of the cylinder, with the shell touching the head, note how the plug fires from the magneto. If irregular, bend the points closer till the plug fires steadily.

Compression Leaks at the Plugs.

After the plugs have been cleaned and tested for cracked porcelains, etc., and replaced in the cylinders, they should be tested while the engine is running for compression leaks. Many times an engine will fail to develop its power simply because the plugs are not fitted tightly enough.

Take an oil cup filled with engine oil and squirt a small quantity around the threads of the plugs where they are screwed into the cylinders. Leaks will be shown by bubbles working their way up through the oil. Plugs denoting this should be tightened till the bubbles cease to rise.

Two-piece plugs should have the threaded bushing turned down against the gasket which is between the seat in the plug shell and the shoulder on the porcelain, so that compression leaks will not occur. They should not, however, be screwed down so tightly that the porcelain will be cracked when the engine heats up.

Plugs using mica insulators can be drawn down as tightly as possible without danger of doing harm to the insulator, the tighter the better in this case, as the mica discs closely compressed will prevent the passage of the current and the possible chance of short-circuiting the points.

PLATE XXXII.

GENERAL TRUCK AND CAR GARAGE

A Structure Designed for Enclosure on Three Sides, to Utilize Fully All Floor Space and Have a Maximum Main Floor for Vehicle Storage.

Designed by the Architectural Department of the Automobile Department.

HERE is a real novelty and yet a very practical one, for a general garage for motor trucks and pleasure cars. It is in the shape of an octagon. Many will ask what advantage this type, or shape, has over the square, or rectangular figures. First of all, a car may be driven in, circuiting around until its proper place has been found, and then a direct reverse into position. Cars may also be placed directly to their stands from the turntable at the center of the floor, thus eliminating unnecessary manouvering. A large number of cars may be stored, owing to the fact that there are no "dead" ends. Again, cars may be placed two deep, as all that is necessary is the freedom of the turntable, as shown.

The accompanying illustration is for a structure one-story high, size 100 by 100, general dimensions, or the area of land could be the same. At the rear and at the left will be found a repair shop, ample in size and fully equipped to handle work of any nature. A large pit is shown, this being advantageous on numerous occasions. There is shown a large closet for storage of movable articles, such as tools. Work benches of ample size are also provided.

A stairway leads from this department to the boiler room, situated beneath it. Light and ventilation are afforded by a huge skylight, forming the entire roof of the shop.

At the right of the repair shop and also in the rear of the building, will be found the machine shop. A passage way runs between the machine shop and the repair shop, affording direct communication without having to pass through the general garage each time one desires to visit either one of these departments.

The machine shop is designed to have sufficient area for essential machine tool equipment, and for practical work of all kinds this should include lathes, a milling machine, a shaper, a drill press, a radial drill, and in addition a power saw will be found to serve a very useful purpose. The arrangement of the equipment will be planned by the owner or the shop foreman to best serve requirements, but suggestions are included in the plan that may be a basis for judgment. There is a work bench at the rear, and in connection with the shop is a spacious hand tool closet, which will have a distinct value, for with this responsibility can be established with reference to station property and the tools protected against loss or damage by unauthorized use.

Attention is directed to the lighting of this shop and the repair shop, which are both lighted and ventilated by large metal skylights nearly the size of the floors. This construction was adopted because the building may be surrounded on all three sides, and wall lighting may not be possible. The ventilators are constructed in the frames of the skylights and can be controlled perfectly. The ventilators and skylights should be made of first class galvanized metal and built by a reliable maker.

In the forward compartments there is an office on one side, while opposite is located the stock and oil room; also there are toilets for the men in the shop. The office is amply large for a garage of this size, being well lighted and having an entrance from the street leading off the porch. In connection with the office there is a toilet and wash room for the office help. The stock and oil room is equipped for handling accessories and parts of all kinds; also various qualities and kinds of oils, as this item is one of very great importance and should receive due consideration. This department also has a separate entrance from the street. A gas pump is located on the sidewalk, so transit trade may be accommodated with as little inconvenience as possible.

Construction is of a slow burning nature; in fact, it is fireproof outside of the planking in the roof and wood fittings around the different shops. Brick has been used throughout for general construction with a sub-structure of concrete. Light steel trusses with steel purlins comprise the general frame up of the roof. Plank is used for a covering on which is laid a standard form of roofing, there being several that can be used with entire satisfaction. Windows are of a standard make, steel sash type, double hung, as shown. A large door of an electrically operated type slides to the sides on opening, one-half going to either side.

Heating is by steam wall radiation, using pipe system, or wall radiators if owner prefers to expend money for them.

The cost of such a building would be between $10,000 and $15,000, owing to the manner in which it is fitted and equipped and the grade of materials used.

Any information regarding this structure can be had at request made to the Architectural Department, and the requests should specify the precise character of the detail desired, so that facts and not generalities can be stated, and the inquirers can be the better served.

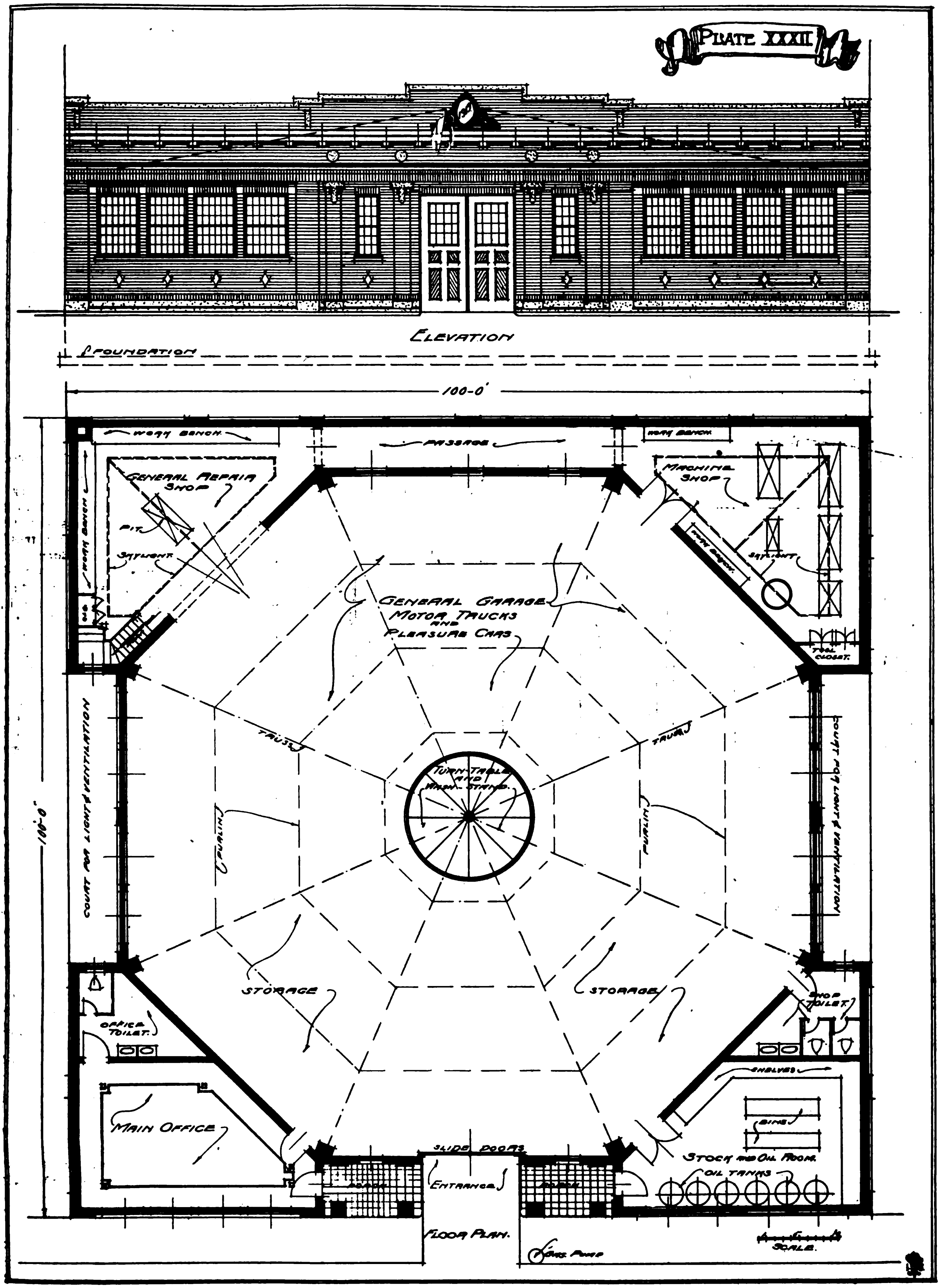


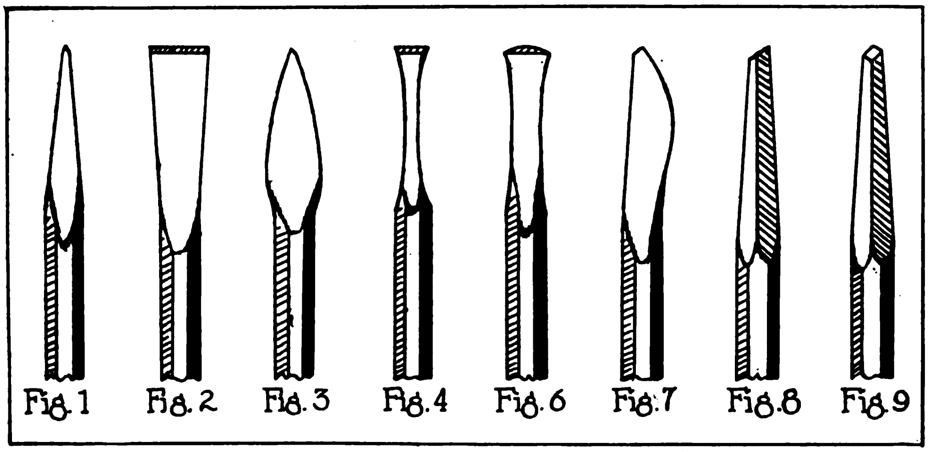
PLATE XXXII

ELEVATION
℄ FOUNDATION
100-0'
WORK BENCH
PASSAGE
WORK BENCH
GENERAL REPAIR SHOP
MACHINE SHOP
PIT
SKYLIGHT
WORK BENCH
WORK BENCH
SKYLIGHT
TOOL CLOSET
GENERAL GARAGE MOTOR TRUCKS AND PLEASURE CARS
COURT FOR LIGHT & VENTILATION
COURT FOR LIGHT & VENTILATION
TRUSS
TRUSS
TURN-TABLE AND WASH-STAND
PURLIN
PURLIN
100'-0"
STORAGE
STORAGE
SHOP TOILET
OFFICE TOILET
SHELVES
BINS
MAIN OFFICE
SLIDE DOORS
STOCK AND OIL ROOM
OIL TANKS
PORCH
ENTRANCE
PORCH
FLOOR PLAN
GAS PUMP
SCALE

Making Special Tools for the Repair Shop

AMONG the many branches in which the up-to-date automobile repair man should show proficiency, that of making special tools to do special work occupies a field by itself. Many times when a special chisel, drift, punch or cutting tool is needed to complete a job it is found that it has been broken or is missing. If the shop is equipped with a forge and the necessary concomitant tools, and the repair man has a knowledge of blacksmith work, he will be able to make the tools that he needs from bar stock.

It may be well to give a brief idea of how the various hand cutting tools are made for the benefit of those who, perhaps, are not well acquainted with this branch of work. The ability to make such tools as chisels, punches, drills, and even taps and dies if needful. considerably increases a workman's power of dealing with any repair that may present itself. Tools that are bought may always be excellent, but tools that are made in the shop always seem better, and the skill acquired in making them is of service in many other ways.



Types of Steel Cutting and Grooving Chisels That May Be Made During Spare Time in the Shop.

Small chisels and punches are made of octagonal tool steel, which is sold by the pound. Small drills are usually of silver steel rod, sold in 13-inch lengths in all sizes. The heat necessary for forging may be obtained from a brazing hearth, or in the forge, as tool steel is forged at a low red heat. A heat approaching white would burn the steel. If an anvil be not at hand any sufficiently solid block of metal will serve.

Perhaps the easiest tool to begin with is a flat chisel, Figures 1 and 2 of 5/16-inch octagonal tool steel. The method in detail is as follows: Heat the bar to a low red and draw down to shape on the anvil, remembering to discontinue the forging and reheat the work when it reaches a blue heat, or it will forge hollow and be liable to crack. In any case the end will probably split a little, so allowance must be made for this, and the flat drawn down longer than is required in the finished chisel. There is a little knack in drawing down that deserves a few words of explanation. The blow of the hammer must not be delivered in a direction vertical to the anvil face, but somewhat towards the operator, and the end of the bar held in the hand must be higher than that which is resting on the anvil. How much towards the operator the blow should be delivered and how much higher the end held should be than the other, depends upon the angle of taper it is desired to produce. Figure 5 will make this clear. The practical tip when learning to draw down is that when the blow is struck the wrist must be higher than the hammer head.

The work should be turned over frequently in order that it may be hammered equally on each side, and the sides of the flat should be kept square by occasional light blows, the bar in this case, of course, being horizontal, and the hammer blow vertical. The hammering during forging serves not only to shape the metal, but to pack it. A good smith would probably forge so small a chisel in one heat, but the beginner may find it necessary to reheat the work several times.

The forging being completed the end where it is split may be trimmed off on the anvil chisel, and the chisel itself may be cut off the bar.

Cape a Cross-Cut Chisel.

A cape or cross-cut chisel, Figures 3 and 4 after a little drawing down is forged on the beak of the anvil, and the inward curve of the sides thus formed gives clearance for the edge of the tool in deep grooves. A chisel for cutting oil grooves, Figures 6 and 7, is forged in a similar manner. A diamond point chisel, Figures 8 and 9, is drawn down square, while a punch is drawn round, the bar being rotated a little between each blow.

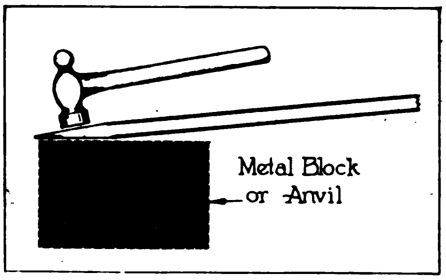


Fig. 5—Metal Block or Anvil Used to Shape Up the Chisel.

The taper in these should be about the same as for the flat of a flat chisel—that is, five degrees or a little more.

To forge a flat drill, Figures 10 and 11, a rod of silver steel is taken, half the diameter of the hole the finished drill is intended to make. It is heated to a cherry red and the end flattened and spread out to a fan shape, the blows being delivered evenly and equally on either side in order to keep the blade true and its fan shape symmetrical. The edges of the fan are not hammered.

Tools after forging are ground or filed to their finished shape, hardening and tempering being the final process. Either an emery wheel or a grindstone can be used for grinding, and it is desirable that the wheel should revolve away from the operator, especially in grinding drills.

Grinding.

In grinding flat chisels the hammer marks are ground out of the flats, and the sides ground square and reduced a little at the back, leaving the flat widest at the cutting edge, which may be ground for general purposes at an angle of 60 degrees. A cape or cross-cut chisel is ground on the sides and flats, care being taken to get them symmetrical, especially the curve of the sides; this will be found to present some difficulty until one has had practise in grinding. The edge of the cross-cut chisel may be ground at 60 degrees. The sides of a grooving chisel may also be given clearance, and the face ground at an angle at the top flat, the back being rounded rather sharply to meet the curve of the back, Figure 7. A diamond point chisel is ground on the four flats, and the end ground diagonally about 45 degrees. Punches may be filed in the vise, but preferably in the lathe, which is indeed necessary in the case of a center punch, the point of which should be filed to 60 degrees. All these tools used with a hammer should have the heads chamfered.

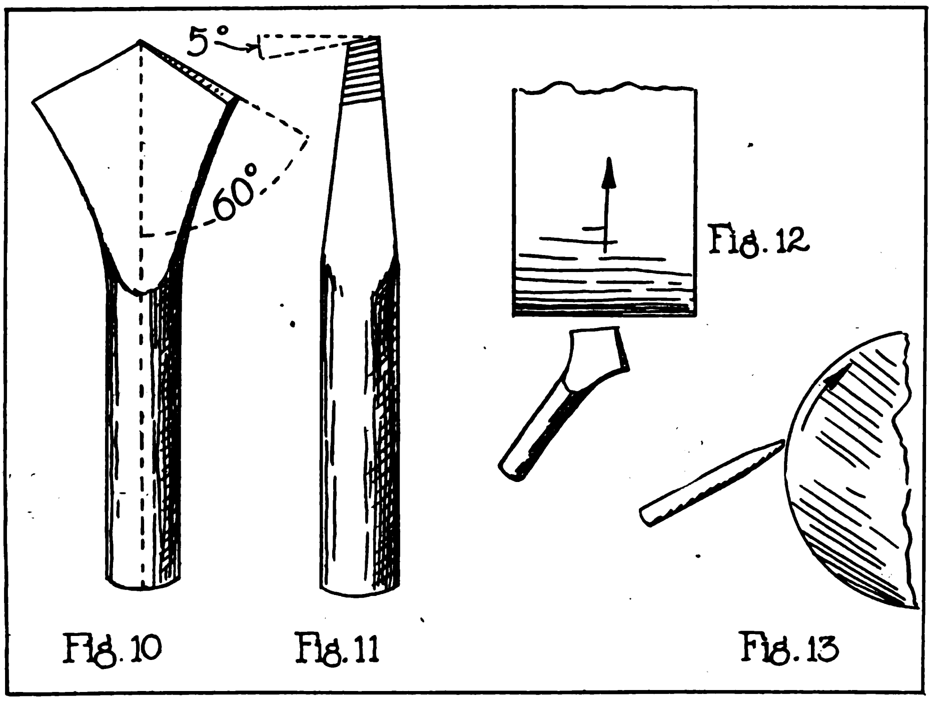
The grinding of drills requires a little practise. The flats should be ground bright and the fan edges, which are rounded after forging, may be ground flat a little way up. The lips must be of equal length and at an equal angle, 60 degrees with the axis of the shank.

The cutting edges should have a clearance of three degrees to five degrees. Figures 10 and 11. The drill should be presented to the wheel as in Figures 12 and 13, which gives a right hand cutting drill.

Hardening and Tempering.

The last part of the process is the hardening and tempering. If tool steel be heated to redness and suddenly cooled by quenching in cold water, it becomes extremely hard, the degree of hardness depending upon the quality of the steel and the temperature to which it was heated. When hardened it cannot be filed or worked in any way except by grinding, and it is too brittle for the metal working tools which are now being described. It is accordingly subjected to a further process known as tempering, which renders it less brittle and, although less hard, still hard enough to retain its cutting edges in use. Tempering consists of slowly heating the steel, after hardening, to a temperature between 430 degrees and 610 degrees Fahrenheit, according to the degree of hardness required in the finished tool; the higher the temperature reached the softer will be the cutting edge of the tool.

The method used in tempering a small tool, such as a chisel, punch or drill, after hardening, is to polish it bright with emery cloth at the part where it is to be tempered—the blade of the chisel or the taper of the punch—and then to heat the shank slowly. Soon a light yellow tinge will be seen to creep from the shank up the polished part. This will deepen to straw yellow, brown yellow, light purple, dark purple, clear blue, pale blue, as the temperature rises. These "temper" colors, as they are termed, are due to oxidation, and as each of them corresponds with sufficient accuracy to a definite temperature, the actual temperatures attained in working may be disregarded and the operator may be guided solely by the temper colors. When the blade or end of the tool shows the desired color the tool is quenched as, otherwise, the heat in the shank, passing by conduction up the shank of the tool, would lower the temper of the blade more than required. It is desirable to heat tools slowly when tempering, firstly, because the colors then run up slowly and the tempering can readily be stopped at any desired point; secondly, because the temper will more likely be gradual all the way up. A punch, for example, will have a blue on the taper near the shank, fading evenly through the purples and brown yellow to straw color at the point. A well tempered tool should have the temper colors fading imperceptibly one into the next; at any point where a sharp difference of temper occurs a breakage is likely to result.



Types of Drills That May Be Made from Steel in the Shop.

A temper color for punches is a straw yellow, and for drills, lathe tools and chipping chisels, a little deeper yellow. Chisels for rough work may be "let down," as it is termed, to a light purple; springs are let down to a blue and quenched in oil.

It must not be forgotten that the temper colors are merely indications of the temperature to which the steel has been raised when tempering it; the actual hardness of the tool after tempering depends upon its hardness after hardening, as well as upon the temperature when tempering.

All that now remains to be done is to clean and polish the tool. The sides of the octagonal part of chisels, etc., may be left rough and oiled, but the bright part should be polished with smooth emery cloth to get as good a finish as possible, for well finished tools are a credit to the maker and pleasant to handle.

TO RECUT OLD FILES.

Old files that have seen considerable use can be put in shape for further service by the following method of treatment: Brush the files with a wire brush to remove loose material sticking to the surfaces, put them in a tub, cover with water and add six ounces of caustic soda for each 100 files. In about two hours remove them from the solution and give them a brushing, to free them from any grease and metal. Place in a lead lined box, fitted with a wire shelf, laying the files in such a manner that they will not touch one another. Cover them with a solution of nitric acid and water, one pint of acid to each gallon of water. Allow them to remain for 25 minutes, then remove and wash in running water, afterwards brushing with an ordinary hair brush, after which put them back into the liquid to which is added one more pint of nitric acid to the water already in the solution. In about 50 minutes remove again, brush, after washing in water, and put back in to the liquid, to which has been added one-half pint sulphuric acid for each gallon of water. In 15 minutes remove the files, wash first in water, then in concentrated lime water till all trace of the acid has disappeared. When dry the files will have the appearance and cutting qualities of new ones.

In handling the files that have been immersed in acid, either nitric or sulphuric, rubber gloves should be worn, otherwise the acid will injure the hands.

TO PREVENT HOT LEAD STICKING TO WORK.

Mix common whiting or cold water paint with wood alcohol and paint the part that is to be annealed. The hot lead, from the bath used in annealing, will not stick to the metal that is thus painted, no matter how long the piece is held in the pot. The work should be lowered quickly into the hot lead and removed as soon as possible, in order to prevent drawing the temper of the hard end, and then the whole should be plunged in a pail of cold water. Water will do as well as alcohol to mix the paint, but alcohol is the most convenient inasmuch as it can be used without waiting for the paint to dry. If water is used the paint must be thoroughly dry, as otherwise the moisture will cause the lead to fly.

BALL CHECK REPAIR.

In engines having pressure feed oiling there is generally a regulator with a ball check valve in a housing. If this ball gets stuck or lacks sphericity, it is difficult to remove it for replacement. A good way of getting it out is to take an L shaped tube or rod of a diameter slightly smaller than the sphere. On the end of this rod or tube stick a small lump of grease. Putting the rod through the opening carefully the grease on the end will usually pick up the ball and bring it out.

REMOVING A BROKEN MACHINE SCREW.

To remove a small machine screw when the head is broken off, take a small soldering copper, tin the broken part of the screw, being careful not to get solder on the other parts. Take a machine screw that is a trifle larger than the broken one, file the end bright and tin it. Sweat the two screws together with solder and when it cools a screw driver will turn out the broken screw.

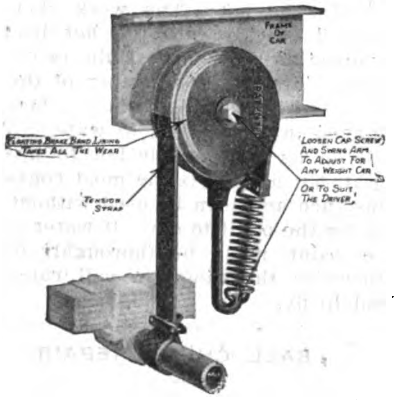
TO PRESERVE REFERENCE TABLES.

Reference tables are very convenient to use, but soon get dirty and torn. To prevent this, pour some lacquer in a shallow tray and dip the paper into it and hang up to dry. This not only makes the paper dirt proof, but toughens it as well.

ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

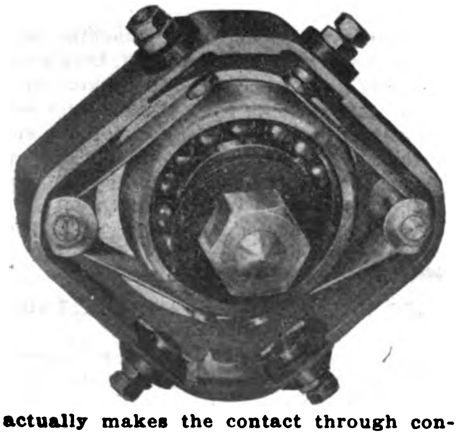
Bull Dog Bounce Absorbers are designed to be attached to any make of car and can be adjusted to suit the requirements of the operator. They do not prevent the downward action of the springs, but snub the rebound, checking it gradually till it is absorbed without the danger of breaking the springs or injuring the tires.

It is stated that Bull Dog Bounce Absorbers can be easily applied with the usual tools found in the car, that they are made from the best of material and that, once in place, they not only check the rebound, but also sidesway of the car. It is recommended that a car be fitted with the full set of four, as the benefit to be gained is greater when four are used than when only two are fitted.


Frame Of Car
Floating Brake Band Lining Takes All The Wear
Tension Strap
Loosen Cap Screw And Swing Arm To Adjust For Any Weight Car
Or To Suit The Driver

Manufactured by the Channon-Hughson Co., 220-233 West Erie Street, Chicago, Ill. Price, per set of four, $24; per set of two, either front or rear, $12.

The Wayne Ball Bearing Timer for Ford Cars is designed for replacement purposes and embodies new and novel features, chief among which is the eccentric motion imparted by the camshaft, through the ball bearings, to the steel ring which actually makes the contact through contact springs. Due to the wiping action of the ball bearing and the eccentric motion, imparted by the camshaft, the large contact points are definitely closed by the power of the engine itself through the medium of the ball bearing.

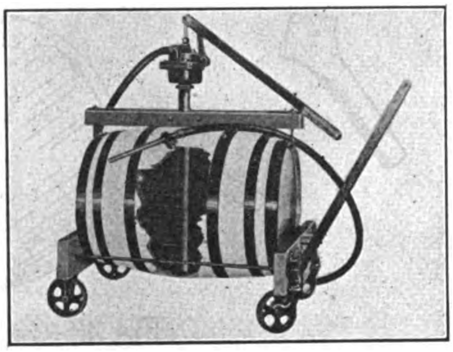


The bearing is packed at long intervals with heavy lubricant and requires very little attention. The bearings are large enough, it is stated, to stand a load of 480 pounds and, as the load on them is less than one pound, they should last almost indefinitely.

The contact points are of large size, the wiping action keeps the contacts clean and avoids pitting, it is claimed.

Manufactured by the Wayne Engineering Co., Honesdale, Pa. Prices and literature on application.

The Woods Grease Injector is a device that may be used by garage and service station repairers to supply grease direct from the original barrel to the units of the car, such as the differential and gear-set, by simply wheeling the barrel to the car, connecting the hose from the pump to the car unit and pumping in the grease with the pump. It is stated that the pump will deliver exactly one-quarter of a pound of grease a stroke. A special non-drip nozzle instantly stops the flow of grease when through pumping. The pump is quickly and easily attached to any grease barrel, which is carried on a special truck to any part of the garage or factory.

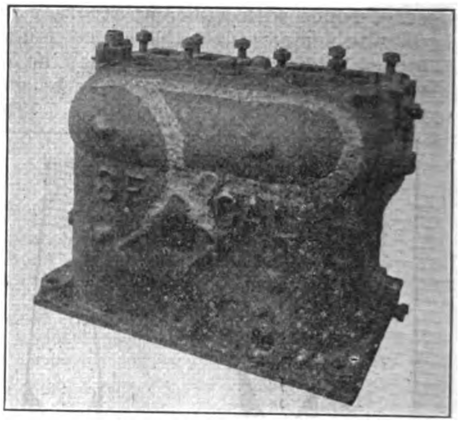


It is stated that at the present time more than 12,000 of these pumps are in daily operation in all parts of the country, and in each instance the Wood's injector has proved itself a very necessary labor saving device.

Manufactured by the Bennett Injector Co., Muskegon, Mich. Prices and literature on application.

Hard Silverine Solder a New Repair Metal, which consists of a semi-hard solder suited to use with a soldering iron and makes, it is stated, a strong bond with all common metals. It readily adheres to even hard, dense cast iron, making a permanent, non-corrosible union.

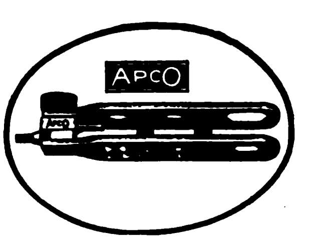
Hard Silverine Solder is an alloy of non-ferous metals of widely differing specific gravity and melting point, presenting such difficulties of mixing that previously they have not been used together. It is stated that this alloy is harder and stronger than soft solder, has a higher melting point and does not disintegrate. Its union with ferrous metals is so perfect, it is claimed, that four years of use in the presence of salt water and heat has failed to break it down either by direct corrosion or through the action of local electrolysis.



Hard Silverine solder may be used for such purposes as filling cracks in engine cylinders, breaks in engine casting, etc. Silverine aluminum solder can also be obtained for mending aluminum sections that have become broken or damaged.

Manufactured by McKenzie-Waterhouse Co., Inc., 717 East Pike Street, Seattle, Wash. Prices, Silverine hard solder, $3.50 a pound in 1½ pound bars; aluminum solder, $7 a pound in one pound bars.

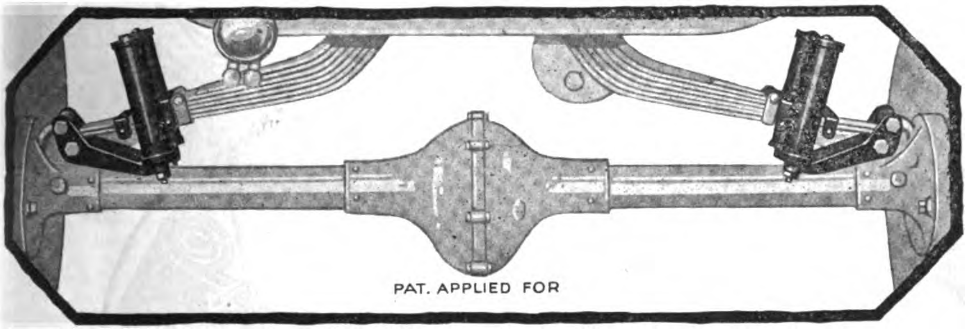
The Apco Tire Valve Tool is designed for the garage repairman and car owner and combines in one tool a tap for the inside of the valve, a die for the outside where the cap fits, a die for the outside where the dust cap and lock nut is attached, and a wrench for the nut holding the valve in the tube; also a wrench for the lock nut which holds the valve to the rim. The tap is made tapering, so that a badly bent valve stem can be easily repaired, while both dies are provided with guides to prevent cross threading. The tool is made of the best steel obtainable for the purpose and is hardened.



Manufactured by the Apco Manufacturing Co., Providence, R. I. Price on request.

Universal Shock Absorbers for Ford Cars, it is stated, do three things: Absorb the road shocks, snub the rebound and prevent side sway. In the Universal shock absorber there are two sets of springs. The upper set absorbs the shock, and then, on the rebound, the lower set comes into action and the rebound is snubbed. Side sway is prevented by the combined action of the two sets of springs. The suspension of the Ford car is such, it is stated, that there is a tendency for the body to sway sideways on the axles and lower part of the chassis. When the car is equipped with Universals, it is claimed that this tendency is checked by a compression of the shock absorbing springs on one side and the snubbing springs on the other, all of which makes for much easier riding and holds the car to the road.

The springs are encased in a steel cylinder, which prevents the accumulation of road dirt, at the same time giving the absorber a very neat and attractive appearance. Universal shock absorbers are made entirely of steel and have no working joints to wear loose. They are very easily applied to a Ford car, as all that is required to be done is to remove the spring shackles and replace with the shock absorber levers which take their place. It is not necessary to change the original construction of the Ford car in any way. The fitting can be done by anyone handy with tools in a few hours time.



Distributed by the Universal Sales Co., 507 Odd Fellows' building, Indianapolis, Ind. Distributors' proposition and prices furnished upon application.

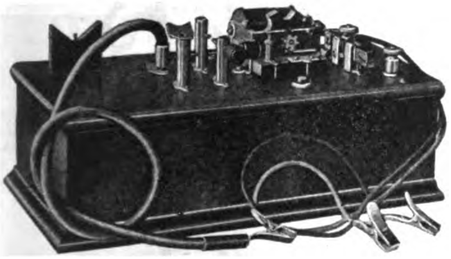
The Red Devil Pin Punch Set No. 483 consists of six tools nine inches long packed in a neat khaki carrying case, pocket size, and includes the following in point sizes: ⅛ inch, 3/32 inch, 3/16 inch, 7/32 inch, ¼ inch and 9/32 inch. These tools are in constant use by machinists and service station repairers throughout the country, the manufacturer claims, and find a ready sale. They are made from 80-point carbon steel, Swedish analysis, octagonal stock.

Manufactured by the Smith & Hemingway Co., Inc., Irvington, N. J. Prices and literature on application.

The Igni-Test unit is designed for the garage and service station and by its use it is claimed that faults can be located in high-tension magnetos and armatures, inductor magnetos, high-tension spark coils, condensers, low-tension magnetos and coils, insulation, wiring, fuses, etc.

Tests can be carried out equally well on cars equipped with battery ignition and starting and lighting units, equipped with low-tension apparatus.

The device is self-contained, the unit being fully equipped with all necessary appliances for carrying out the test, with the exception of a battery, either storage or dry cells, to supply the source of current.



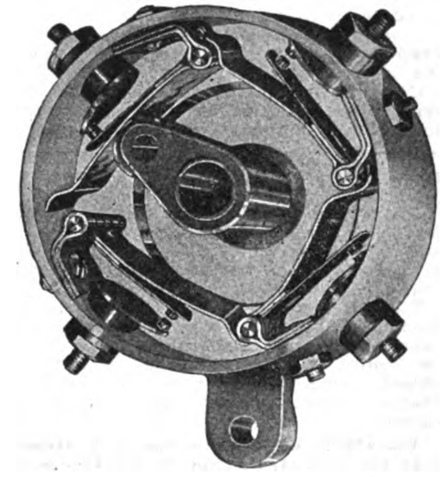
Full instructions and diagrams accompany each unit, so that the repairer will have no difficulty in making the tests and locating the troube.

Manufactured by the Testall Electric Manufacturing Co., San Antonio, Tex. Price of outfit, complete, including full instructions, $35, cash with order or C. O. D.

The K-L Timer for Ford Cars has many new features not usually found in timers of this type, chief among which is that the contact points are spring supported, are made from a special alloy which is said to equal aluminum in conductivity and will make a better contact.

The inner contact points are riveted to a spring which acts as a cushion when contact is made, thus preventing burning of the points and also obviating misfiring in case of a worn camshaft bearing. The cushion spring is, in turn, riveted to the hinge support made of cold rolled steel having a phosphor bronze bearing fitted at the hinge.

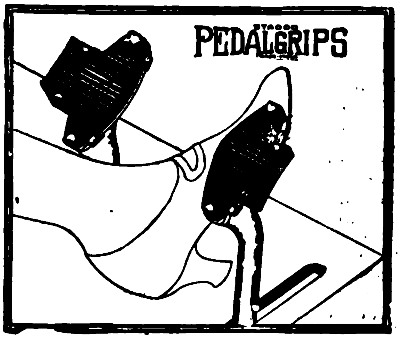
A brass roller frame carries a fiber roller which has a ¼-inch bearing and shaft and presses the cushion spring support, making a soft, positive contact, as shown in the illustration. The terminal bolts are insulated inside and out with large fiber washers; also with special insulation between the shell and bolt which makes it capable of resisting 500 volts.



The K-L timer is guaranteed for 20,000 miles; the prices will be refunded if the buyer is not satisfied with it at the end of 15 days.

Manufactured by the M-R Co., Lincoln, Neb. Price, $7. Distributors, salesmen and dealers' proposition on application.

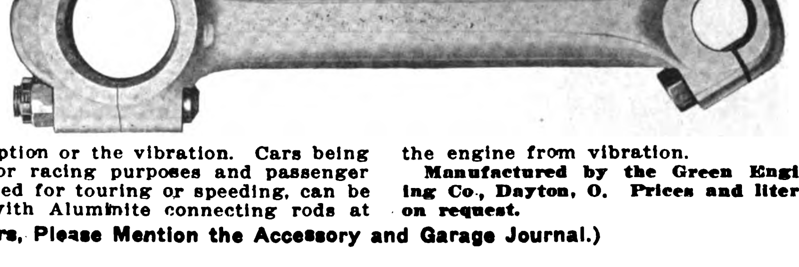
Pedalgrips for the Ford Car are designed to be attached to the Ford transmission brake, slow speed and reverse pedals. They are held to the pedals by small metal clips which fit over the edge and bend under forming a perfect fastening, which is claimed not to loosen in use. Pedalgrips are faced with rubber pads to prevent the foot from slipping and are made of a suitable width and provided with a guard at the side, which prevents the foot from slipping sideways.



Pedalgrips are attached to the pedals without the use of screws or bolts and may be fitted by anyone in a few minutes time.

Manufactured by the Stadeker Metal Specialty Co., 300 South Canal Street, Chicago, Ill. Retail price, $1 a set.

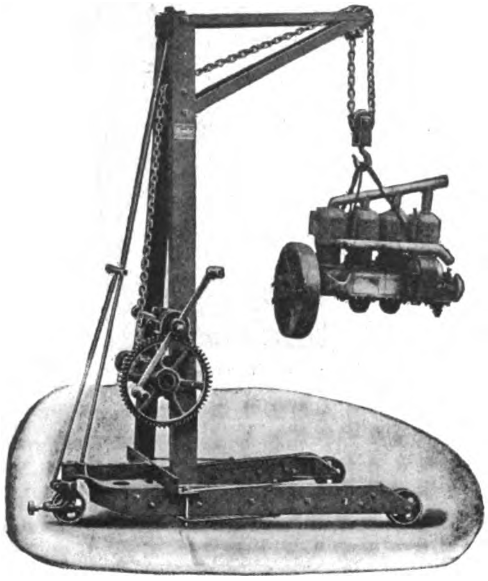
Aluminite Connecting Rods are designed for cars in which it is desired to increase the speed and power of the engine, without increasing the gasoline consumption or the vibration. Cars being fitted for racing purposes and passenger cars, used for touring or speeding, can be fitted with Aluminite connecting rods at small expense by any mechanic.



Aluminite connecting rods are composed of an aluminum alloy, making them light in weight and, it is stated, their use frees the engine from vibration.

Manufactured by the Green Engineering Co., Dayton, O. Prices and literature on request.

The Manley Portable Floor Crane is designed for such heavy lifting jobs about the service station as raising engines from car frames, bodies from the chassis, gearsets, etc. The superstructure is made of structural steel, cantilever bridge design, giving the necessary lightness and great strength. The base is of heavy cast iron and I beam construction, bringing down the center of gravity and preventing the crane from being top heavy.



It is stated that the three cardinal points in a crane of this type for automobile work are incorporated in the Manley Portable Crane, that is, high lift, deep overhang and light weight. It is claimed that one man, with this device, is able to raise a load of full capacity and to move the crane to any point desired in the service station.

The ½-ton crane is particularly adapted to handling lighter cars, such as Ford, Maxwell, etc., while the one-ton model covers practically the whole range of passenger car and light truck work. The two-ton crane is fitted for the heavier passenger cars and trucks.

The device is operated by a hand crank and winch, securely bolted to the uprights of the crane, while the lifting cable consists of a heavy chain which passes over pulleys at the top of the uprights and the end of the boom, through a block which is hooked to the unit to be lifted.

Heavy roller casters provide a means of moving the crane about the service station.

Manufactured by the Manley Manufacturing Co., York, Pa. Prices, ½ ton, $70; one ton, three sizes, $100, $105 and $110; two ton, two sizes, $140 and $147.

The Dilso System of Spring Lubrication embodies many features that will recommend themselves to truck and passenger car owners, chief among which is that of supplying oil direct to spring leaves, equipped to receive oil in this manner, through ducts and wells stamped in the end of the leaves. A felt pad is fitted to the well, which retains the oil, feeding it to the leaf as needed by the action of the spring.

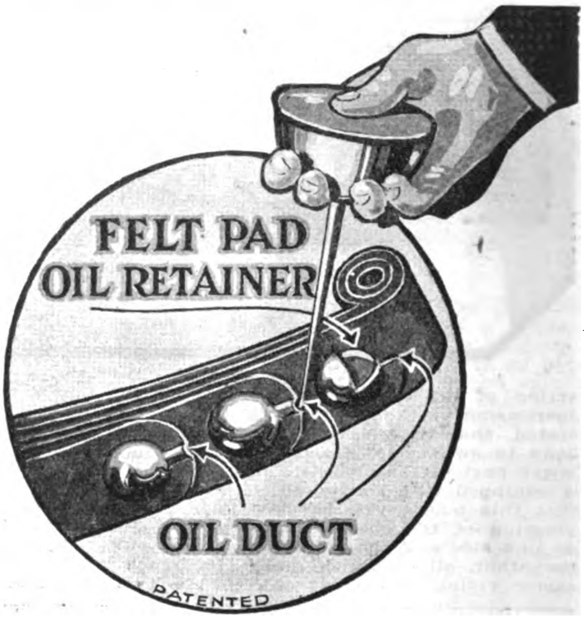
When the spring is assembled this piece of absorbent felt, saturated with free-flowing oil, is placed in each cup or reservoir. The felt is cut thicker than is necessary to fill the cup so that it is under constant pressure. As soon as the spring goes into action a gentle kneading process takes place, which tends to force the oil out of the felt on to the spring leaves.

The leaves of a spring are slightly concave and there exists a continuous capillary attraction which draws the oil towards the center bolt, thus covering all parts of each spring with a film of oil.

The maker of the system claims that it costs the spring manufacturer but a trifle to stamp into his spring leaves the Dilso self-oiling cups and ducts, and that the saving effected in doing away with the coating of the springs with graphite and grease practically defrays the expense of the extra operation.

Cars and trucks equipped with the Dilso system are said to be much freer from spring trouble than those not so equipped, and it is claimed that the trouble of leaves sticking or freezing is eliminated when this system is used.

It is reported that recently a decision was made in the courts which establishes the validity of the Dilley patents. The license for its use by car or truck manufacturers is based on a very small royalty on the total tonnage of spring steel used in yearly production.



Sold by Buxton & Owen, 30 North La Salle Street, Chicago, Ill., exclusive licensors under the Dilley patents to manufacturers. Prices and literature on request.

The Red Devil Chisel and Punch Set No. 169 is designed for service station and machine shop repairers. The tools are made of octagonal stock, Swedish analysis, 80-point, carbon steel, and are packed in a neat pocket size khaki case.

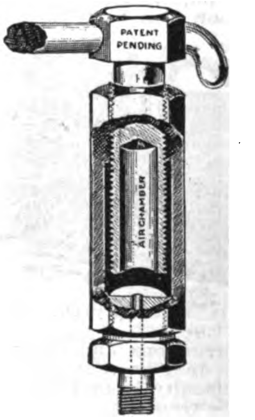
"RED DEVIL"
CHISEL AND PUNCH
AUTO KIT
SMITH & HEMENWAY CO.
EVERY TOOL GUARANTEED

An almost constant use may be found for these tools for such purposes as removing valves and piston rings in cylinders, cotter pins in crankshafts, relining brakes, etc.

The outfit consists of 12 tools five inches long as follows: Two cold chisels, two cape chisels, two machinist's pin punches, two solid punches, one half-round cape chisel, one round-nose chisel, one diamond-point chisel and one center punch.

Manufactured by the Smith & Hemenway Co., Inc., Irvington, N. J. Prices and literature on application.

The High Pressure Grease and Oil Gun is designed for use on passenger cars, motor trucks and motor boats. It consists of a hexagon steel barrel chambered internally and threaded for a heat treated steel plunger which is provided with an air chamber. The lower end of the hexagon barrel is internally threaded to receive nozzles which, are threaded on their outer end to screw into grease cup openings. These nozzles are interchangeable and are made in standard sizes, both male and female, to fit all standard openings. Special nozzles can be furnished at small additional cost to fit any car. All guns are provided with ⅛ inch pipe thread nozzle, which takes care of grease cup openings on over 90 per cent. of all cars.



The grease gun is easily filled for use by removing the plunger and packing the barrel with grease. The plunger is replaced and the gun fitted to the cup opening after the cap has been removed. Apply moderate pressure to the pump plunger, then move the bearing slightly, till grease shows. Repeat the process, applying pressure to the plunger till the bearing is filled with grease.

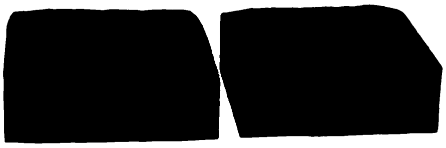
It is stated that with this grease gun a pressure of 900 pounds can be exerted upon the grease when necessary, forcing out any old grease that may be in the bearing or spindle, replacing it with new, clean grease in a few minutes tme.

Extra nozzles are obtainable in sets consisting of 17 pieces, including one extra ⅛-inch nozzle and one elbow in a neat hardwood case.

Manufactured by T. H. Strickler, 4231 Wilcox Street, Chicago, Ill. Price of gun, $2.50; set of extra nozzles, $9.75.

The Kant Sag Seat Cushion for the Ford Car fills a long felt want among Ford owners, as it not alone offers a seat which will not sag after months of use, but is also fitted with pleated upholstery, which adds much to the appearance of the car.

The cushions are made in two sections for the front seat and in one section for the rear seat; they are built throughout of the best of material and consist of 48 steel coils specially treated and tested, covered with a woven wire top. The whole is built on a steel frame and covered with a high grade covering material.



It is stated that on account of the depth of the coil springs and the construction of the cushions, shock absorbers are unnecessary; the deep Turkish seat cushion in cathedral pipe pattern will absorb the road shocks perfectly.

Manufactured by the Kant Sag Corporation, 9-13 Abbott Street, Detroit, Mich. Prices, single seats, front or rear, $10; divided front seats, $12.50.

Easyon Tire Chains are traction chains intended primarily to prevent the wheels from spinning around without driving the car. Many motorists at the present time are using non-skid tires and do not feel that they require chains to prevent skidding. Many others realize that they are liable, at times, to get into bad places where the wheels will spin. Easyon chains are designed for such conditions. They consist of eight single chains packed in a small bag which can be easily carried under the car seat. These chains can be fastened to the spokes of the driving wheel even when in mud up to the hubs. They are equipped with an especially designed gripping member which takes a very strong hold in deep mud or snow and yet, it is claimed, causes no bumping.

Easyon Chains

Easyon chains are also made for solid tires, but much heavier and stronger.

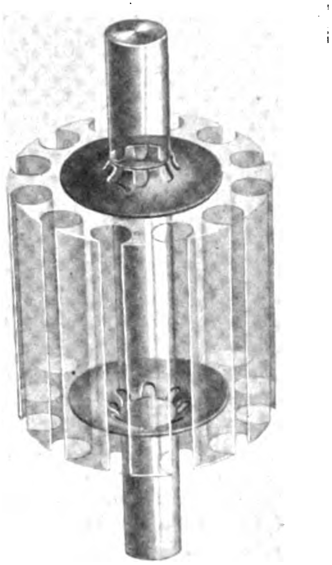
Manufactured by the Woodworth Manufacturing Corporation, Niagara Falls, N. Y. Prices, small size for three and three and one-half-inch tires, $4 a set; medium size for four and four and one-half-inch tires, $5 a set; large size for five and five and one-half-inch tires, $6 a set.

The Hold Tite Lamination Lock is a patented device consisting of a cupped and toothed metal disc. When slipped over a spindle containing a groove the toothed edges may be snapped into this groove, thereby forming an abutment. The laminations may then be applied, a lock slipped over the other end of the spindle and by compressing the whole the second lock is snapped into position, as illustrated herewith, thereby securely holding the laminations in place. The use of this lock does away with expensive machine work on spindles, besides the necessary key or other locking devices commonly used.

The Hold Tite products are used to take the place of jam nuts, castellated nut and cotter where it is necessary to secure a nut on a bolt. The Hold Tite nut lock is applied as follows.

First, set the nut up on its bolt in the proper position; then drop the nut lock over the bolt, teeth toward the nut, touching its outside face. If there is working end enough on the bolt, a second nut may be screwed down upon the nut lock to flatten it. In the event of there not being sufficient working end to permit of using a second nut, a hollow set, piece of pipe, or other convenient device sufficiently large to slip over the bolt may be used as a set and the nut lock flattened into place by a vigorous blow with a hammer.

It will be seen that the projections on the inner side of the Hold Tite nut lock have a tendency to cross the threads on the bolt, some of the projections striking the point of the thread, others striking the root above this point and still others striking the root below, each projection being partially crimped by the pressure in flattening, thereby wedging the nut lock into position.



The Hold Tite nut lock has been tried out for efficiency under severe conditions and it has been found that it sticks to the job. It may be removed by the use of a file, hack saw or cold chisel to cut through the outside rim of the lock.

The standard Hold Tite nut lock is made of cold rolled, annealed steel and is furnished in polished or sheradized finish. Standard sizes range from 3/16 inch to 1½ inches, advancing by 1/16 inch to the one-inch size and by ⅛ inch above that size.

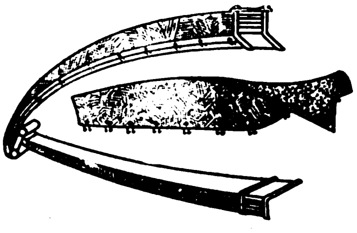
The Hold Tite nut lock is used on ignition timers for securing the terminal posts in position without the necessity of using an extra nut. Its use in securing machine screws and other devices of this kind in electrical work is also recommended.

Made by the Nutlock Corporation, 166 Montague Street, Brooklyn, N. Y. Prices and literature on request.

The Woodworth Lubricating Spring Cover consists of a covering for the spring leaves of automobiles and is made of oil and water-proof material, having a felt wicking on the inside which is saturated with oil before the covers are fitted to the spring. The covers enclose the spring from the U-bolt clamps at the thick part entirely to the thin end. The covers not only, it is claimed, keep the spring perfectly lubricated but they also keep out all moisture and dirt.

The felt lining in the Woodworth lubricating spring covers will hold sufficient oil to lubricate the springs for a year or more and can be re-oiled, it is stated, without removing the covers from the car, although it is recommended that the covers be removed about once a year and thoroughly re-oiled. The covers are adjustable in width so that only seven sizes are necessary to fit all cars except Fords, for which special sets are made.

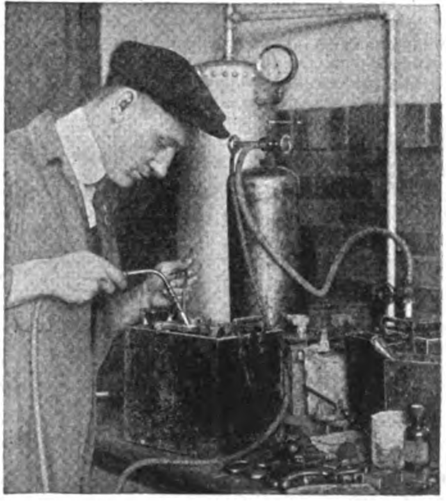
The covers are black in color, the best quality being of genuine leather, and the cheaper of imitation leather. The covers may be easily fitted to the springs by anyone handy with tools as the edges are held together by means of steel hook fasteners.



Manufactured by the Woodworth Manufacturing Corporation, Niagara Falls, N.Y. Prices range from $3.50 a set for Ford cars to $17 a set for the Pierce-Arrow covers. Sold by all first-class jobbers, or can be obtained direct from the manufacturer.

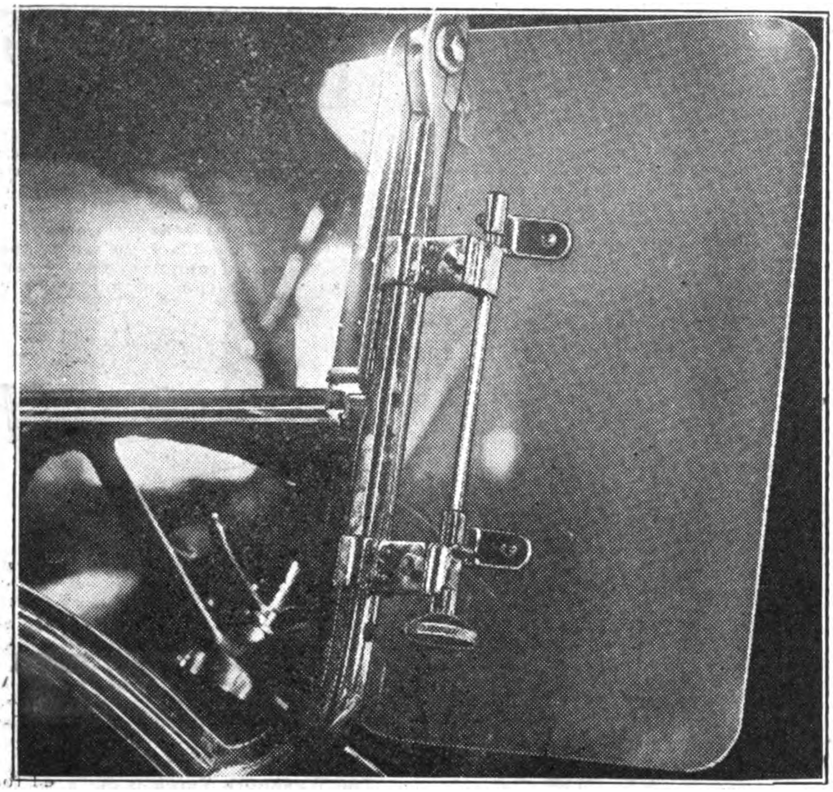
The Washburn Torch is designed for use in garages and service stations, especially those located at a distance from a supply of oxygen, where it is necessary to depend on acetylene gas for a hot flame. In the Washburn torch a patented mixing valve supplies air in correct proportions to the car, affording a flame which gives intense heat from the size of a needle point to the full length of the flame.

It is especially valuable to radiator repairers, metal workers, acetylene welders and all repairers requiring a small, intense flame for close work. This torch is especially suited for lead burning in battery service stations and brazing in the shop. All metal parts of the Washburn torch or mixer are guaranteed for one year. Any part showing a defect in any way will be replaced upon return of the faulty part.



Manufactured by the Washburn Burner Corporation, Kokomo, Ind. Price, $25.

The "Shureloc" Windshield Wings are designed for use as wind deflectors with the regular type of windshield, being attached to the side members of the shield by clamps. The wings are adjustable as to angularity by means of a knurled nut and notched collars at the bottom of a rod, which is fastened to the wings by brackets, and to the windshield clamps by hinged joints.



Loosening the knurled nut allows the wings to be adjusted to deflect the wind at the desired angle, while the notched collar prevent them from working loose after the adjustment has been tightened.

It is stated that the wings, besides deflecting the cross-wind currents, prevent dust and rain from striking the face of the operator, and provides ventilation to the interior of the car during sultry days.

All metal parts of the wings or guards are of brass and bronze highly nickel finished, while the glass is of the highest grade obtainable. The angularity of the wings can be easily changed by the operator without leaving the seat.

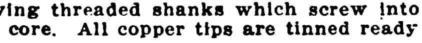
Manufactured by the Automotive Accessories, Inc., Kokomo, Ind. Prices and literature on request.

The Dover Electric Soldering Iron is designed for the radiator repairer, sheet metal worker, and all repairers in garages and service stations who have need of an iron for soldering.

The Dover iron is manufactured in several sizes, each being equipped with special tips besides the regular tip, making it possible for the repairer to handle the average run of work with the one iron equipped with the special tips.

The heating unit is mounted on a special pure nickel core which fits snugly inside the heating unit and is surrounded by a casing of blued steel.

The electric current is conducted to the heating unit through a fiber terminal block where the lead wires are soldered to the cord wires, screwed connections not being used. Dover tips are cut from bars of pure drawn copper and are replaceable, having threaded shanks which screw into the core. All copper tips are tinned ready for use.

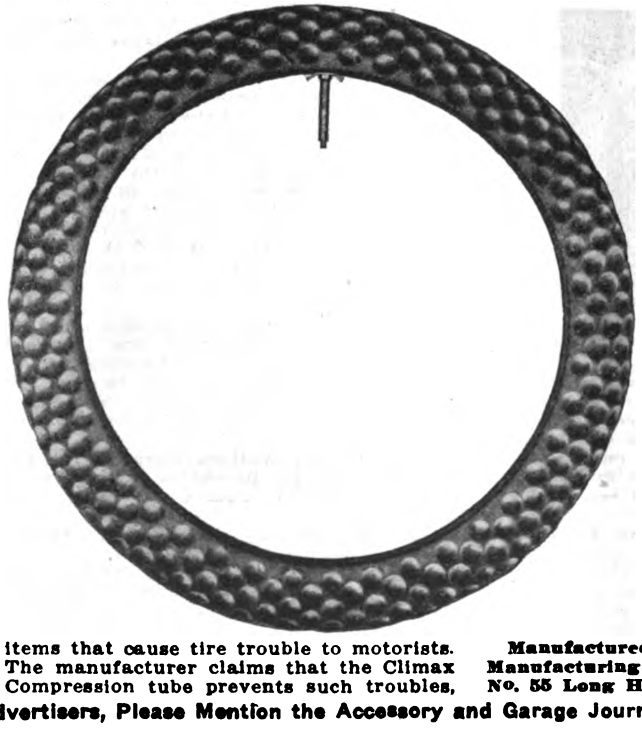


Dover electric soldering irons are guaranteed against mechanical and electrical defects, the factory agreeing to replace faulty parts free of charge within one year from date of purchase.

The outfit is complete with the necessary tips for the weight of iron desired, connection cord and plug, to fit any electric light socket.

Manufactured by the Dover Manufacturing Co., Dover, O. Prices and literature upon application.

The Climax Compression Inner Tube has been designed with the idea of supplying a tube that cannot pinch, creep, heat or leak through puncturing, the four chief items that cause tire trouble to motorists. The manufacturer claims that the Climax Compression tube prevents such troubles, due to its peculiar cup-like construction, by which air spaces are formed between the tube and tire when the tube is inserted in the tire, these depressions smoothing out when the tube is fully inflated with a cushion of air imprisoned between the tube and the wall of the time. The inner portion of the tube, which comes in contact with the rim, is made unusually heavy, so that this contact will not affect the wear of the tube. The reinforcement at this point also acts to prevent the valve stem from creeping and causing a leak where the stem is fastened to the tube.



The manufacturer guarantees the fulfillment of the many claims of superiority made for this tube and calls attention to the fact that they have been in use for some time and have been thoroughly tried out in service.

Manufactured by the Climax Rubber Co., 27 West Gay Street, Columbus, O. Prices and literature on request.

Long Henry Spark Plugs for Ford Engines were designed, it is stated, to give the Ford car owner the most durable and efficient spark plug that money can buy. The insulator and porcelain are extra heavy. The shell is much longer and heavier than standard equipment, while the hex is extra long, allowing the plug to be easily removed with almost any type wrench. The extra long shell raises the porcelain further up inside the hex, away from the oil and heat, which has a tendency to make the Long Henry spark plug, the manufacturer states, as near carbon proof as a spark plug can be built.

The extension below the threaded portion of the hex carries the spark deep into the heart of the mixture, below the dead gas, making the engine easier to start, giving more power and a smoother running engine.

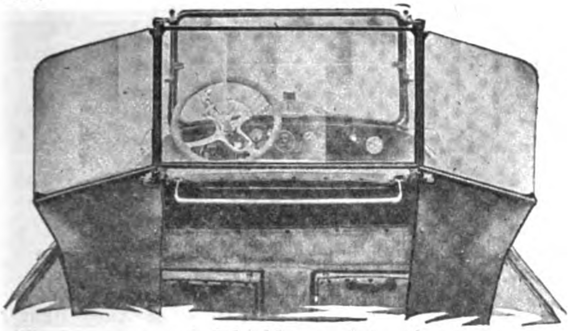
This company also manufactures the Blazer No. 775 stone insulator plug for automobiles, tractors, air planes and trucks, which offers many features not usually found in spark plug construction. The insulator, being constructed of stone, is claimed to be unbreakable, while the hex is unusually large and strong. The electrodes are made heavy to withstand the high temperatures of the combustion chambers, and are guaranteed not to melt while in use.

The mica used in their construction is specially selected and will not break, oil soak or short circuit.

LONG HENRY
AIM
REG. U.S. PAT

Manufactured by the Auburn Ignition Manufacturing Co., Richmond, Ind. Price, No. 55 Long Henry, 90 cents.

The Perfection-Hartford Tonneau Windshield is designed for the protection of the occupants of the rear seat from wind, rain, dust and dirt. This appeals particularly to women motorists and the Perfection-Hartford tonneau windshield gives them the same service as the regular windshield and side wings on the front seat.



The tonneau windshield consists of a front glass panel which is securely fastened to the back of the front seat. This panel is constructed either of one piece of plate glass, or or two stationary sections on the sides and one movable center panel which may be opened to permit of conversation between the occupants of the front seat and those in the tonneau. A folding side wing on either side breaks the side and back draughts of air. They may be folded back out of the way when the occupants of the tonneau wish to leave the car.

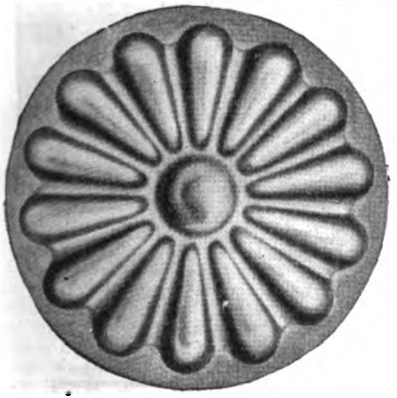
It is stated that the Perfection-Hartford tonneau windshield makes an absolutely rigid, rattle-proof assembly on the back of the front seat. All of the metal parts are of heavy steel stampings with bronze friction points. The glass is the best quality thick plate. The assembly is bolted to the back of the front seat and held firmly in place by means of two heavy iron rods, beneath the upholstery.

Manufactured by the Perfection Windshield Co., 2411 North Illinois Street, Indianapolis, Ind. Prices and literature on application.

The Filmolens is a new device by which the rays of light from the head lights are diffused in such a manner that the glaring rays are dissipated before they strike the road. It is stated that with the Filmolens it is possible to throw the diffused light 200 feet ahead and 40 feet on each side of the car and that the road is clearly visible and free from shadows.

Filmolenses are not made from glass, but from special light diffusing pyralin, .010 inch thick and are, therefore, non-breakable.

The ideal light is claimed to be the one which, without materially reducing the illumination, will so diffuse the rays that no glare results from any angle, and not only the road ahead, but all sides, are so lighted up that road bed, ditches and obstacles of every nature are clearly visible. This the Filmolens is claimed to do perfectly.



Manufactured by the Sales Co., 1001 Penobscot building, Detroit, Mich. Price $1.75 a pair.

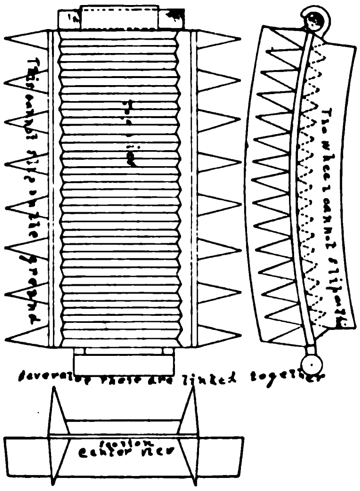
Ford's Automobile Polish, after many years of careful experimenting, has been developed to a high state of perfection, the manufacturer states, and today is being used by such concerns as the Packard Motor Car Co. of New York and many others handling high priced cars.

TRE FORD PARA AUTOMÓV
FORD'S AUTO POLISH
EXCLUSIVAMENTE PARA AUTOMÓVILES
PRIMEROS Y ÚNICOS FABRICANTES
AUTO POLISH COMPANY
INSTRUCCIONES

A feature of Ford's auto polish that is worthy of mention is that very little rubbing is required to obtain a high finish. It is stated that the polish does not leave a greasy surface and that dust will not cling to it. Wherever the polish is used a fine permanent luster is produced, which lasts for some time. Many other claims are made for this polish which recommend it strongly to motorists desiring a high-grade polish that will not injure the finest car finish.

Manufactured by Ford's Auto Polish Co., Inc., 815 Flatiron Building, New York City. Price, 12-ounce bottles, 75 cents each; 32-ounce bottles, $1.50 each.

The Leslie Track Tractor consists of a fluted band which conforms to the shape of a truck or passenger car tire and provided with grips or flanges at the sides and underside which grip the ground in case the vehicle becomes mired. Several sections may be joined together by means of hook and bar joints, forming a continuous section that will fit around the circumference of the wheel, making an endless traction for the wheel while passing over soft or miry ground.

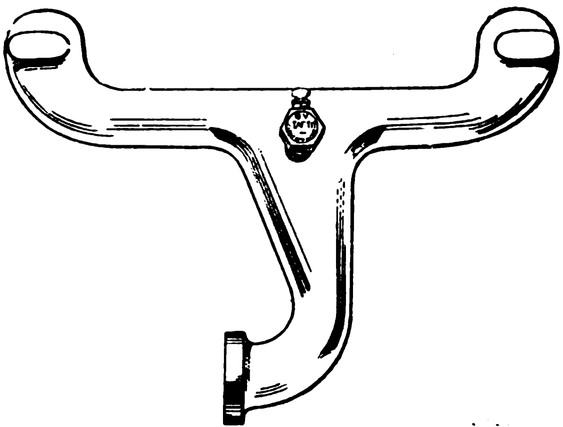

This cannot slip on the ground
The wheel cannot slip on it
Several of these are linked together
Section center view

The device is strongly made throughout of the best of material and with ordinary care will last indefinitely, the maker claims. The Track Tractor is easily attached to the wheel of the vehicle in a few minutes time and is stated to be guaranteed to pull the vehicle out of mud, sand or snow.

Manufactured by A. M. Leslie, 833 Asbury Avenue, Evanston, Ill. Prices and literature on application.

The "Startit" Manifold Electric Heater and Vaporizer consists of an electrical heating unit which is fitted at the Y of the intake manifold, heating the gas mixture as it passes on its way to the combustion chamber.

The device is easily fitted by removing the manifold and drilling a 15/32-inch hole in the center of the Y of the manifold and tapping it with a ¼-inch pipe tap.



A suitable connection is provided on the end of the device to which a wire, from the battery, through a switch located on the dash and to the connection, leads the curent for the heating unit, the current from the unit passing back to the battery through a ground.

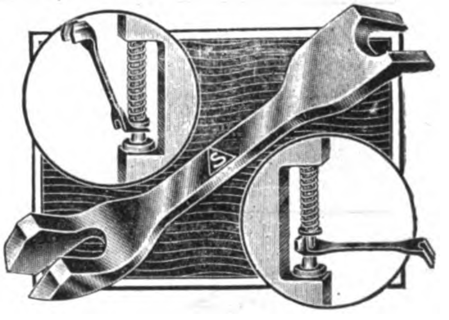
The unit is built to operate on a three-cell or six-volt battery and, in case of 12 volts being supplied by the battery, it is necessary to halve the voltage, taking it from three cells instead of the six.

It is stated that Startit will facilitate starting the engine and cause it to work to better advantage under adverse conditions than is possible with any other method, as the gas is not warmed till it passes through the manifold, and that it may be used on any car.

Manufactured by the Startit Sales Co., 521 South Wabash avenue, Chicago, Ill. Prices and literature on application. Special proposition now open to dealers and jobbers.

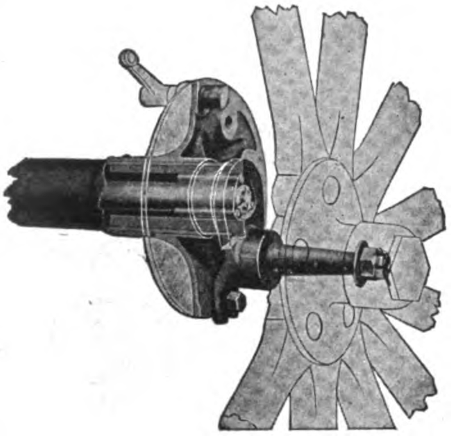
The Stevens Valve Lifter for Fords consists of a single casting provided with a wedge end for lifting and holding the valve spring and cap while the pin is being removed, and it may be left in the lifted position while the valve is being ground, facilitating the assembly of the valve spring and cap after the valve is ground.

The opposite end of the casting is provided with a hammer claw which instantly raises the spring from the push rod guide then, with a quick upward thrust, the spring is lifted past the pin hole. By means of these two cleverly shaped ends it is possible for the service station repairer to dissemble or assemble a valve complete in a fraction of the time usually required and, it is stated, it is not necessary to remove the carburetor or any other part of the engine to perform the work.



Manufactured and sold by Stevens & Co., 375 Broadway, New York City. Price, 35 cents each.

The Slipon Emergency Repair Axle for Ford Cars and Trucks has been designed with the idea in mind of making it possible for Ford owners or service station repairers to drive cars to the nearest service station when an axle shaft breaks. In case of a broken axle, the emergency repair arm is fitted to the brake disc by slipping the large hub into the axle housing after the roller bearing has been removed and over the broken axle. The device is fastened to the disc by a bolt, which passes through a slot at the bottom and the bolt hole in the disc. Serrated rolls are provided which fit around the broken axle shaft between it and the hub of the repair arm, preventing the broken axle from turning. The wheel is fitted to the arm in the usual manner and the car may then be driven to the service station under power from the engine driving through the undamaged wheel.

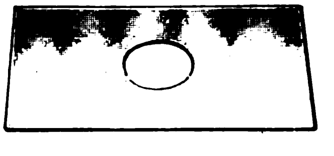


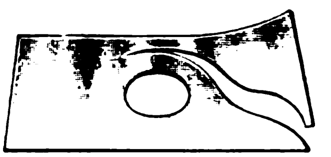
The Slipon emergency axle repair arm is small enough to be carried in the tool box and could be included to advantage in the list of tools carried by service stations, as its use simplifies moving a car with a broken axle, shortening the time required and effecting a considerable saving to the owner of the car.

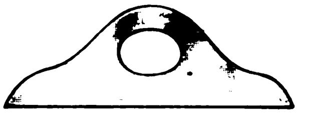
Manufactured by the Slipon Co., Milwaukee, Wis. Price, $6.

Universal Shim Blanks are designed to supply repair men with shim blanks having center holes punched accurately and without burrs, on the same principle that washers are furnished, having the center hole punched and ready for use.

Universal shim blanks have holes accurately centered, are made from the best grade of shim brass and can be easily fitted to any bearing by simply trimming the edge with a knife or tinner's shears.







They are put up in a neat box containing the following sizes and assorted thicknesses as follows:

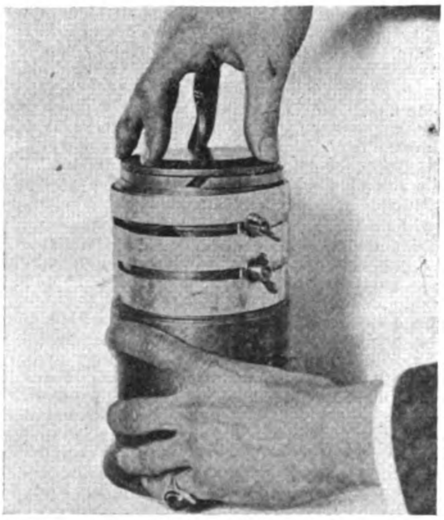
Size 2½ by 1⅛ inches (100 shims to a box): 40 shims, .002 inch; 40 shims, .003 inch; 10 shims, .005 inch; 10 shims, .010 inch.

Assortments are also put up with 100 13/32-inch blanks for ⅜-inch bolts, or 100 17/32-inch blanks for 7/16-inch and ½-inch bolts.

100
Universal Shim Blanks
PRICE $1.25

Manufactured by the Utility Products Co., Waterbury, Conn. Price, per box, $1.50.

The Cloud Piston Inserter consists of three strips of flexible 22-gauge nickel plated, cold rolled steel, joined to a cross member at one end. Two bolts, provided with wing nuts, are spaced equidistant in the cross member and are provided with washers. To use the device the three strips of flexible steel are passed around the piston and rings, giving the piston about ¼-inch leeway into the cylinder. the steel strips are drawn tight and fastened with the two wing nuts, forcing the piston rings into their grooves. The piston is then lowered into the cylinder without difficulty.



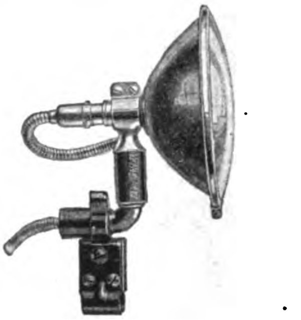
It is stated that the piston inserter can be adapted to any size piston or rings, and can be changed from one size to another in a few minutes time. And that it is also adapted for inserting pistons in the cylinders through the base by opening the inserter at one side and passing it around the connecting rod.

Manufactured by the Cloud Accessories Corporation, Chicago, Ill. Price, $2.

The Howe No. 17 Spot Lamp is a somewhat lighter type than that usually made by this company, and is designed for high-grade cars where fittings of unusual merit are desired.

Like other Howe models, the No. 17 has the Howe flexible control, a feature which is patented. The construction of the patented swivel joints is such that they always remain flexible. The lamp is easily movable, it is stated, yet is held firmly in any position in which it may be placed, unaffected by the vibration of the car when driving over uneven pavements. The spring tension of the swivel joints automatically overcomes the effect of wear and also eliminates the danger of stiffness which might otherwise result from exposure to rain and weather.

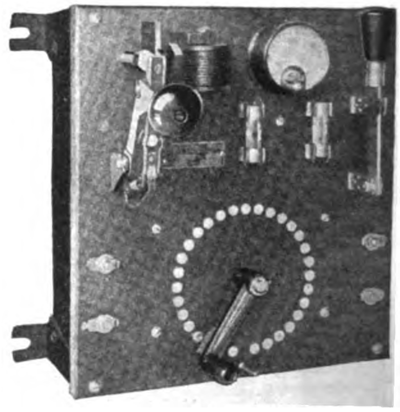
The No. 17 spot lamp is made entirely of brass with the exception of the bracket and clamp. The lamp is equipped with a large convex lens, while all trimmings are nickel and the body of the lamp is enameled. The parabolic reflector, the conduit cable and other fittings are finished in triple nickel plate. The lamp is equipped with a focussing device which permits the concentration of the light into a long, piercing beam for spotting objects at a distance. All wires and the control switch are of water proof construction.



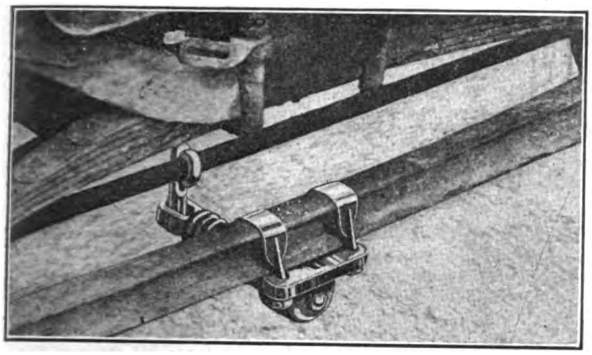
Manufactured by the Howe Lamp & Manufacturing Co., Chicago, Ill. Price, $10; with plate mirror, $11.50.

A New Charging Panel for Lighting, Starting and Ignition Batteries has been developed for charging secondary batteries used for electric lighting, starting and ignition on gasoline cars. The new charging equipment, shown in the illustration, which is to be used with a direct current source of supply, consists of a slate panel mounted on a wall type frame and carrying a low current cut-out, single-pole main line knife switch and fuses, ammeter and 30-step rheostat, and is capable of charging any number of cells in series from three up to 42 or the maximum number that can be charged on the voltage of the circuit. The resister is mounted in the frame back of the panel. The ammeter and knife switch may be omitted if desired, or the 30-step rheostat may be furnished alone or with an ammeter and double-pole fused knife switch.

The line lugs are on one side of the panel and the battery lugs on the other side. After line and battery connections are made for charging the knife switch and low current cut-out are closed in succession, making sure first that the rheostat handle is in the position of "all resistance in." Resistance is then gradually cut out of circuit until the charging current is brought up to the right valve, as indicated by the ammeter. Should the line voltage drop to a low enough value to cause the battery to discharge back into the line, the low current cut-out will automatically release, disconnecting the battery from the line. The charge is terminated by opening the knife switch, which causes the low current cut-out to open, and interrupts both sides of the charging circuit.

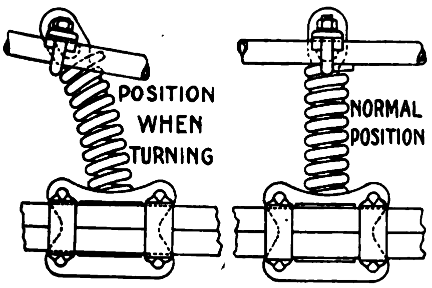


Manufactured by the Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Prices and literature on request.



The D. & O. Safety Steering Control for Ford Cars is a unique device, which is fastened to the front axle of the Ford car and also to the steering tie rod between the front wheels. Its object is to assist the driver in keeping the front wheels running straight ahead and at the same time to prevent the wheels from turning sideways abruptly when small obstructions are met in the roadway.

The device consists of a heavy coiled spring fastened at one end to the large plate and clamp which fits around the axle and, at the other end, to a steel member provided with an opening in the end through which fits loosely the plate and clamp that is attached to the tie rod. In turning the steering gear the spring swings to the side, following the movement of the tie rod, but if the car is traveling straight away the tendency of the spring is to hold the tie rod in that position.

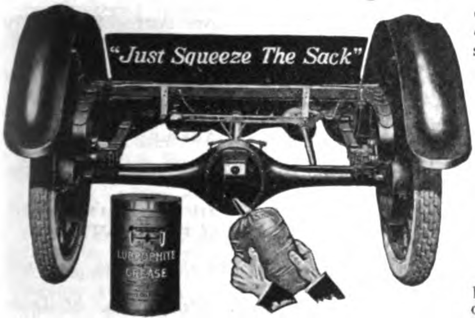


It is stated that a great many benefits are gained by the use of the safety steering control, inasmuch as many steering troubles are overcome.

The device is easily attached by anyone familiar with the use of tools.

Manufactured by the Green Sales Corporation, 99 State Street, Boston, Mass. Price, $5; in Canada, $7.50.

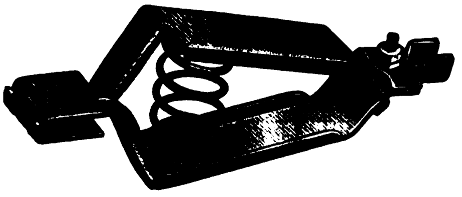
Lubrophite Transmission and Differential Grease is compounded for the discriminating motorist who desires to use the best lubricant in his car differential and gearset that the market affords. This is a fibrous lubricant manufactured from pure mineral oils, particularly designed for lubricating differential and gearset gears. It cushions the gear teeth meshes thoroughly, it is stated, and is of the proper consistency to reach and lubricate all shaft bearings.



The product is contained in an original package arranged so as to protect the hands and clothing from becoming soiled with grease. The package itself is covered with a flexible, moisture proof bag, protected on the outside by a cotton sack. The neck of the bag is fastened to a metal funnel or spout, four inches in length, which tapers down to a half inch hole. The capacity of the grease gun is six pounds. To operate the spout is inserted in the oil hole of the gearset or differential case and the bag squeezed.

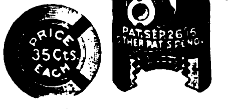
Manufactured by the Lubrophite Oil Products Co., 1515-17 West Sixth Street, Cincinnati, O. Price, $1.75 a package.

The Universal Battery Clamp, No. 33-A, has been designed for battery service stations where a heavy charge or discharge is to be handled. The capacity of the clip is 200 amperes, although it is stated that it will handle 400 to 500 amperes for short tests without overheating. The clips are made of pure copper with just enough alloy to prevent its melting under extreme load. Reinforcing flanges are provided at the sides, and angles to prevent bending under the tension of the spring. The jaws are smooth, while the spring is of heavy tension, making a firm contact with the battery terminals. The jaws open to a width of two inches while a copper shunt is provided at the hinged joint, preventing the springs transmitting current or possibly overheating.

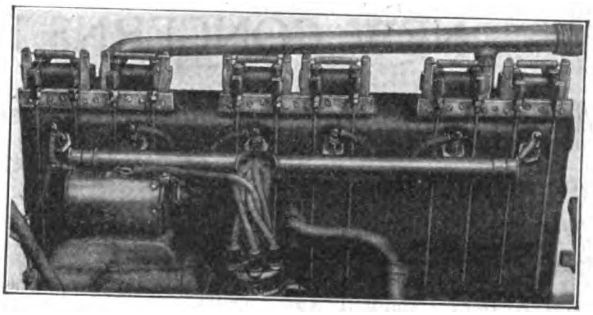


Manufactured by the Mueller Electric Co., 2131 Fairmount road, Cleveland, O. Price, 33-A, $1.35 each; in lots of 10, $1.20 each.

Schrader Universal Five-in-One Valve Repair Tool No. 3263 is designed for the tire and tube service station, motorist and repair shops in general, combining as it does in thoroughly practical unit all of the single tools required to rethread the valve stems, either on the inside or outside, to remove the inner plunger or replace it in the stem and to run threads over damaged threads on the outer part of the stem. The tool occupies but little space and will in a short time earn its purchase price many times over. Valve caps are usually fitted for removing or replacing plungers in the stems, but many times they become lost and much time is lost in locating tools to do the work. The Five-in-One Tool can be carried in the pocket or tool box and is always ready for use.


SCHRADER REG.U.S.PAT.OFF. VALVE REPAIR
UNIVERSAL REG.U.S.PAT.OFF. TOOL No.3263
PRICE 35Cts. EACH
PAT.SEP.26'16 OTHER PAT'S PEND.

Manufactured by A. Schrader's Son, Inc., Brooklyn, N. Y. Price, 35 cents each.



A Valve Silencer for Overhead Valve Engine has been perfected and patented, which is claimed to silence the valve mechanism to such a point that noise and side motion of the valves, when operating, are practically eliminated, doing away with excessive wear and constant oiling of the valve mechanism.

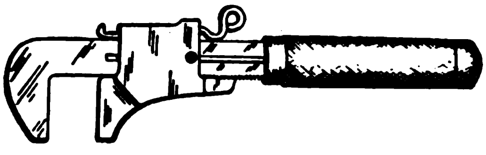
The device consists of two vertical arms, supported by a plate at the bottom which rests on the cylinder head. The lower end of the arms is riveted to this plate, while cups midway of the arms, slip over the end of the rocker arm pins, outside of the cotter pins. A spring is fitted across the top of each two uprights, over the rocker arm, supplying sufficient tension to hold the side members tightly against the rocker arm, preventing it from working sideways and causing unnecessary noise.

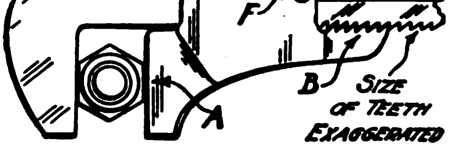
The device is easily attached in a few minutes' time, and, in use, it is stated, will give much the same effect as though the valves were operating enclosed.

Manufactured by the Newton Manufacturing Co., Plainville, Conn. Price, four cylinder, $7.50; six-cylinder, $10.

The Lightning Adjustable Wrench is a patented device that is designed for general use by motorists and at general service stations. The wrench is claimed to be the quickest adjusting tool on the market and is extremely simple in construction, control being by the thumb while the wrench is held in one hand. It is made throughout of high grade steel, is well finished and case hardened.

To operate the wrench to open the jaws, simply pull with the thumb at D. Fit the jaws to the nut and the spring in the handle closes them on it. The nut can then be turned without locking the jaws as they will not open except by a pull at D. The pressure of the nut at A brings the teeth of the movable jaw at B into mesh with the stationary teeth of the handle and the jaw cannot open farther. To lock the movable jaw at any position requires but a push of the thumb at C. To release requires only a pull with the thumb against D. The spring in the handle always exerts pressure at F, it is stated, closing the jaws by means of a rod G on either side.





Made in six, eight and 10-inch sizes, with jaw openings one, 1¾ and 2½ inch.

Manufactured by the Lightning Wrench Co., Denver, Col. Prices and literature on request.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

Texarkana, Ark.; State Line Motor Co.; $50,000; A. B. Clark, president; Ben Anthony, vice president; W. C. Kuhl, secretary and treasurer.

Dover, Del.; Campbell Auto Truck & Service Co.; $100,000; Loudoun L. Campbell, James Coulter, Loudoun L. Campbell, Jr., Pittsburgh, Pa.

Dover, Del.; Carnation Automobile Co.; $1,100,000; M. L. Horty, J. D. Frock, S. L. Mackey, Wilmington.

Dover, Del.; Cole Motor Co. of St. Louis; $100,000; Arthur K. Kingsbury, L. B. Phillips, D. D. Wharton.

Dover, Del.; Eastern Motors Corporation; $75,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland, Philadelphia, Pa.

Dover, Del.; Garfield Motor Corporation; $1,000,000; Wilber McCoy, Pittsburgh, Pa.; W. I. N. Lofland, Frank Jackson.

Dover, Del.; Globe Motors Co.; $15,000,000; C. H. Blaske, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Heracline Motors Corporation; $100,000; H. W. Neidich, J. E. Heinemann, R. H. Dickinson, Chicago, Ill.

Dover, Del.; Ideal Truck Equipment Co.; $500,000; T. L. Croteau, M. A. Bruce. S. E. Dill, Wilmington.

Dover, Del.; National Motors Corporation; $100,000; M. L. Horty, M. C. Kelly, S. L. Mackey, Wilmington.

Dover, Del.; Nutractor Motor Co.; $5,000,000; Robert K. Thistle, A. Roy Myers, Raymond J. Gorman, New York, N. Y.

Dover, Del.; Oakland Motor Sales Co.; $100,000; George G. Steigler, E. E. Aberle, T. L. Croteau, Wilmington.

Dover, Del.; Overland Sales Co.; $60,000; Joel Cohen, Fannie Cohen, Alice M. Smith, Wilmington.

Dover, Del.; Sterling Sales Corporation, general automobile business; $150,000.

Dover, Del.; Sun Motors Corporation; $5,000,000; L. E. Gowan, A. E. Manheimer, P. Zak, Chicago, Ill.

Dover, Del.; United Motors Corporation: $500,000; M. L. Horty, M. C. Kelly, S. L. Mackey, Wilmington.

Dover, Del.; William Motors; $50,000,000; Arthur S. Alexander, Paul N. Turner, Harry S. Houpe, New Rochelle, N. Y.

Wilmington, Del.; Fulton National Truck Co., to deal in automobiles, trucks, etc.; $250,000.

Arkansas City, Kan.; Kinslow Motor Co.; $30,000.

Salina, Kan.; Cravens Motor Co.; $75,000; R. R. Cravens, H. E. Rose, L. R. Jenkins, Kansas City, Mo.

Hagerstown, Md.; Hagerstown Motor Co.; $100,000; Edwin French, V. M. Cushwa, William B. French.

Boston, Mass.; Alliance Top, Body & Trimming Co.; automobiles and other vehicles; $50,000; Henry W. Pickford, Clinton; Joseph W. Paradis and Earle R. Pickford, West Somerville.

Boston, Mass.; Walts Motor Co.; motor vehicles; $25,000; Arthur E. Wales, Brookline.

Kansas City, Mo.; DeBusman Motor Co.; $30,000; Stubenrruch & Hartz, attorneys, New York Life building.

Kansas City, Mo.; Ellington, McCarthy Motor Co.; $50,000; R. M. Sheppard, attorney, Lathrop building.

Helena, Mont.; Automobile Warehouse & Service Co. of Montana; $750,000.

Millvale, N. J.; Motor Sales & Service Co.; $105,000; W. F. Stechle, Philadelphia, Pa.; M. R. Potts, H. E. Potts.

Newark, N. J.; Automobile Reconstruction Corporation, 790 Broad street, deal in automobiles; $1,000,000.

Newark, N. J.; Smith-McCourt Co., 895 Clinton avenue, automobile business; $100,000; James J. Smith, Thomas A. McCourt, Catherine Smith.

Newark, N. J.; Wright Garage Corporation, 747 Broad street, general automobile and garage business; $125,000.

North Arlington, N. J.; Kesse Motor Car Co., Inc., 9 Argyle place, general automobile business; $100,000.

Brookhaven, N. Y.; Wells, Robert F., automobile business; $5000; R. F., C. B. and L. O. Wells, Stony Brook.

Brooklyn, N. Y.; Fisher, Harry D., motor vehicles; $50,000; F. E. Forsbrey, R. G. Knorpp, H. D. Fisher, 1767 Bedford avenue.

Brooklyn, N. Y.; Letmont Co., automobiles; $20,000; R. C. Montgomery, J. R. Letrenbesger E. Owen, 85 Argyle road.

Brooklyn, N. Y.; Lohse Body Corporation, automobiles; $50,000; L. F. Lohse, C. W. Philliper, F. Lohse, 111 Kent avenue.

Brooklyn, N. Y.; Palmer-Herring Auto Renting Corporation; $5000; C. H. and E. G. Alegood, J. G. Meyer, 1573 Union street.

Brooklyn, N. Y.; United G. & T. Co., automobile business; $50,000; P. A. Brown, J. Daly, A. J. Ensign, 23 Henry street.

Buffalo, N. Y.; Bauer, Resch & Bauer, automobile and air plane business; $25,000; W. Bauer, E. Resch, C. McNeil.

Buffalo, N. Y.; Millard, D. H. & Co., tractors and farm implements; $50,000; U. S. Thomas, W. B. May, O. H. Millard.

Buffalo, N. Y.; Oliver Motor Truck Corporation; $50,000; F. W. Herson, H. K. and F. J. Oliver.

Chateaugay, N. Y.; Franklin Co.; Sprague Motor Co.; $10,000; A. W. Duckett, R. C. and C. W. Sprague.

Hornell, N. Y.; Luthy Service Co., automobiles; $10,000; R. J. Coogan, F. S. and L. J. Woodbury.

Kingston, N. Y.; Van Motor Co.; $50,000; J. B. Marian, J. Van Benschoten, J. D. Schenck.

Monroe, Orange County, N. Y.; Burgunder & Smyth, automobile business; $20,000; C. J. Heemance, W. J. Smyth, H. J. Burgender.

Monticello, N. Y.; Burtis-Dailey Auto Sales; $15,000; W. H. Dailey; M. Burtis, E. L. Milkinson, Liberty.

New Rochelle, N. Y.; Economy Service, automobile business; $10,000; C. H. and R. S. Paul, V. Greenbaum.

New York, N. Y.; B. H. K. Garage Corporation, Manhattan borough automobile business; $10,000; B. and J. Badner, I. Siegel, 51 Chambers street.

New York, N. Y.; Boyer-Brown, Manhattan borough, automobile business; $20,000; C. V. Backer, E. M. Brown, J. F. Boyer, 4966 Broadway.

New York, N. Y.; Collins, P., Manhattan borough, automobile business; $10,000; M. A. and P. S. Collins, A. Kaden, 49 East 10[illegible]th street.

New York, N. Y.; Jenson, J. A., Auto Sales, Bronx borough; $25,000; M. Hart, S. Peterson, J. A. Jensen, 1236 Grand Concourse.

New York, N. Y.; Kenemac Co. of New York, Manhattan borough, automobile business; $25,000; A. H McDowell, J. L. Neice, L. N. Keley, 209 West 97th street.

New York, N. Y.; Ohio Trailer Co., Manhattan borough, automobile business; $20,000; R. Houston, J. E. Oberrieth, G. S. Morow, 1761 Broadway.

New York, N. Y.; Ryan, Thomas P., Motor Car Co. of America, Manhattan borough; $1,000,000.

New York, N. Y.; Stutz Motor Car Co. of America, Manhattan borough; $1,000,000.

New York, N. Y.; Whiting, C. L., Inc., Manhattan borough, to deal in automobiles, trucks, tractors, air craft and do general farming; $400,000; Marie A. Chappelle, Pittsford.

Potsdam, N. Y.; Hall-McCarthy Motor Sales Co.; $20,000; W. L. and M. L. Hall, J. M. McCarthy.

Rochester, N. Y.; Whiting, C. L; automobiles and air craft; $400,000; M. A. Chapelle, F. B. and C. L. Whiting, Avon.

Yonkers, N. Y.; McMillan Motors Corporation, automobile business; $150,000; R. E. J. Corcoran, 328 Union street, Brooklyn; D. J. Burns, D. P. Smelzer, A. G. McMillan, 416 Broome street.

Greensboro, N. C.; National Motor Co.; $100,000.

Akron, O.; Alexander Automobile Co.; $200,000.

Akron, O.; Ashtabula Automobile Co.; $105,000.

Lorain, O.; Lorain Machine & Auto Co.; $230,000.

Fairfax, Okla.; Spurgin Motor Co.; $25,000; W. C. Spurgin, W. J. Moore, Mabel Spurgin.

Madill, Okla.; Raborn Motor Co.; $15,000; F. L. Raborn, E. J. McKinney, J. J. Raborn.

Muskogee, Okla.; Rike, Richardson Motor Co.; $25,000; G. C. Rake, Ray Richardson, Rufina Richardson.

Nowata, Okla.; Greenwood Auto Co.; $25,000; Harvey Greenwood, Della Greenwood, George B. Schwabe.

Oklahoma City, Okla.; Briscoe Motor Sales Co.; $100,000; W. M. Briscoe, Muskogee; C. W. Johnson, R. F. Fasken.

Boswell, Pa.; Sann Auto Co.; $30,000; Herbert E. Sann, Holsopple.

Philadelphia, Pa.; Fidelity Motors, Inc., to buy, sell, distribute, repair and deal generally in motor vehicles of all kinds, and all materials, devices, supplies and articles used in connection therewith; J. Howard Patterson, solicitor, 133 South 12th street.

Philadelphia, Pa.; Inter City Auto Association, to buy, sell, distribute, repair and generally deal in motor vehicles, and all materials, devices, supplies and articles in connection therewith; Shoyer & Aaronson, solicitor, 1432 Commercial Trust building.

Scranton, Pa.; Universal Motor Car Co. to buy, sell, lease and otherwise deal in motor trucks, automobiles and automotive equipment and supplies, either at wholesale or retail, and the maintaining and operating of garages for the storage and repairing of motor vehicles; J. F. Weber, Hugh B. Andrews solicitor.

Aberdeen, S. D.; Judy, E. R., Motor Co.; $100,000.

Sioux Falls, S. D.; Dakota Nash Co.; $100,000.

Chattanooga, Tenn.; Commercial Car Corporation; $100,000.

Dallas, Tex.; Diamond Motor Co.; $60,000; Gus Diamond, Cyril Epstein, M. R. Johnson.

Eastland, Tex.; Texas Motor Co.; $100,000; J. C. Harrell, Tiff Harrell, W. M. Brown.

Houston, Tex.; Moon Auto Sales Co.; $50,000; W. H. Collins, F. L. Young, H. F. Pardonner.

San Antonio, Tex.; Bexar Motor Sales Co.; $15,000; Theo Dabner, Jr., E. H. Gottschalk, John H. Cunningham.

Seattle, Wash.; Adams Motor Co.; $200,000.

Sheboygan, Wis.; Black Auto Co; $50,000.

MANUFACTURERS OF AUTOMOBILES, TRUCKS, TRACTORS, ETC.

San Francisco, Cal.; California Automobile Works; $100,000.

Dover, Del.; Ford Motor Co. of Delaware, all manner of vehicles, including air craft; $100,000; Henry Ford, Edsel B. Ford, Mrs. Henry Ford, Detroit, Mich.

Dover, Del.; Garfield Motor Corporation, to manufacture automobiles, etc.; $1,000,000.

Wilmington, Del.; Cole Motor Co. of St. Louis, to manufacture automobiles, etc.; $100,000.

Wilmington, Del.; Heaoline Motors Corporation, to manufacture automobiles, etc.; $100,000.

Wilmington, Del.; Nojar Flexible Wheel Co., to manufacture automobiles, trucks, etc.; $1,500,000.

Wilmington, Del.; Peugeot Co. of America, Inc., to manufacture automobiles, etc.; $5,000,000.

Wilmington, Del.; United States Corporation, to manufacture automobiles, etc.; $500,000.

Wilmington, Del.; Williams Motors, Inc., the manufacture and sale of three-wheel delivery vehicles, etc.; $50,000,000.

Jacksonville, Fla.; Kwickturn Tractor Co.; $500,000.

Kittery, Me.; Yuba Tractor Co., manufacture and deal in tractors, motor vehicles, engines, pumps, machinery tools, etc.; $5,000,000.

Albany, N. Y.; Stratton Distributing Corporation, manufacturing motor trucks, auto air craft, etc.; $51,000; E. V. Stratton, 35 Washington avenue.

New York, N. Y.; Highway Motor Truck Corporation, Manhattan borough; $2,000,000; E. S. Hawley, J. L. Watson, F. H. Butehorn, 764 St. John's place, Brooklyn.

New York, N. Y.; Keane, Horace, Aeroplanes, Inc., Manhattan borough; manufacturing aerial machines, etc., boats, automobiles; $125,000; H. Keane.

New York, N. Y.; Schacht-Arthur Motor Truck Co., Queens borough, rebuild automobiles; $50,000; E. H. Reuman, W. Schacht, B D. Arthur, Hotel Wellington.

New Bern, N. C.; Tractor & Machinery Co.; $100,000.

Celina, O.; Miami Tractor & Manufacturing Co.; $200,000.

Philadelphia, Pa.; Keystone Wagon Works, Inc., manufacturing, buying, selling, dealing in and leasing of wagons, automobiles, auto trucks, motor trucks, bodies and vehicles of all kinds and all materials, devices, supplies and articles in connection therewith; Theo A. Thompson, E. M. MacFarland, J. Vernon Pimm.

Fort Worth, Tex ; Buie, E. H., Body & Trailer Works; $50.000; E. H. Buie, V. N. Parris, N. J. Morgan.

MANUFACTURERS OF PARTS AND EQUIPMENT.

Greenwich, Conn.; Port Chester Pneumatic Tool Co., to manufacture tools, motors, etc.; $200,000.

Dover, Del.; Automatic Auto Jack Corporation; $12,000; M. M. Lucey, M. Butler, M. A. Davis, Wilmington.

Dover, Del.; Eclipse Cord Tire Corporation, manufacture of tires of all kinds; $1,000,000; Laura E. T. Connett, White Plains, N. Y.; William J. Cullen, New York, N. Y.; C. M. McKeever, Brooklyn, N. Y.

Dover, Del.; Endurance Battery Corporation; $10,000; Jesse E. Perlman, New York, N. Y.; Roland H. Cuinzburg, Flushing, L. I., N. Y.; Martin E. Goldman, Plainfield, N. J.

Dover, Del.; Geizler Storage Battery Co.; $300,000; Henry F. Tenney, Charles F. Harding, Jr., Winetak, Ill.; Harry A. Parkin, Highland Park, Ill.

Dover, Del.; International Body Corporation; $1,000,000; Theodore L. Ernst, L. S. Dumensil, A. G. Gabriels, New York, N. Y.

Dover, Del.; Mercury Body Corporation; $475,000; C. H. Blaske, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Nutractor Motor Co., manufacture engines, motors, etc.; $5,000,000.

Dover, Del.; Romanjo Tire Co., manufacture of tires, wheels, etc.; $100.000; L. L. Gowan, A. E. Machaimer, P. Zak, Chicago, Ill.

Dover, Del.; Standard Rubber Co.; $5,000.000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Sure Spark Ignition Corporation, manufacture of electrical ignition devices, etc.; $100,000.

Dover, Del.; United Carburetor & Manufacturing Co.; $500,000; C. H. Blaske, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Wright Battery Co.; $1,100,000; M. L. Horty, M. C. Kelly, D. L. Mackey, Wilmington.

Wilmington, Del.; Car-Nation Automotive Co., manufacture of motors, automobiles, etc.; $1,100,000.

Wilmington, Del.; K. & L. Radiator Co., manufacture and sale of radiators, motors, etc.; $1,200,000.

Wilmington, Del.; Sun Motors Corporation, manufacture of motors, engines, etc.; $5,000,000.

Rome, Ga.; International Steel & Motors Corporation, for construction of standard machinery, besides manufacturing parts for motor cars; $20,000,000; president, Henry L. Brittain, president of Terry Shipbuilding Co., Savannah,; the Birmingham, Ala., Steel Corporation and the Mobile, Ala., Shipbuilding Co.; vice presidents, Abner Dean, Rome, and F. W. Teague, Columbus; secretary, James M. Craig, Birmingham, Ala.; treasurer, John M. Graham, Rome.

Wichita, Kan.; National Manufacturing Co., to make automobile accessories; $500,0000.

Boston, Mass.; Lomer Armored Tire Co. of New England, tires; $50,000; Robert M. Heller, Cambridge; Jean C. Camopiano, Boston; John F. D'Errico, Providence, R. I.; Forerst D. Clark, Milton.

Boston, Mass.; Mechanical Rubber Manufacturing Co., rubber; $200,000; Fisher H. Nesmith, Cambridge; J. Sidney Stone, Wayland; Mary A. Tobin, Boston.

Boston, Mass.; Royal Tire & Rubber Co., tires for motor vehicles; $50,000; Lou S. Taylor, Lynnfield; John L. Layne, West Roxbury.

Lynn, Mass.; Centrifugal Shock Absorber Co., shock absorbers; $250,000; Harland A. Danforth and Frank G. Hattie, Lynn; Ralph M. Danforth, Saugus.

Grand Rapids, Mich.; Roadway Transmission Co., to manufacture steel disc automobile wheels; $1,000,000; Gustave A. Hendricks.

Kansas City, Mo.; General Tire & Rubber Co.; $200,000; H. A. Fries, principal Missouri agent; Otto Basye, attorney, 822 Scarritt building.

Kansas City, Mo.; Jiffy Rim Lock Co., 313-314 Scarritt arcade; R. M. Burgess, president; W. B. Sebastian, manager and secretary; Carter Williams, treasurer.

Kansas City, Mo.; Surety Tire & Rubber Co. of St. Louis, tires and tubes; $1,500,000.

Kansas City, Mo.; Terrell Tire & Rubber Co., to manufacture automobile tires, tubes and other rubber products; $1.000,000; A. C. Terrell, presidest; Otto W. Croy, vice president; R. L. Meihoffer, secretary and treasurer.

East Orange, N. J.; Jephson-Scott Body Co., Inc., 24 Sterling street, to manufacture automobile bodies, boats, furniture, etc.; $1,000,000.

East Orange, N. J.; Protecto Battery Filler Co., 3 South Walnut street.

Jersey City, N. J.; Bournonville Rotary Valve Motor Co., to manufacture engines, etc.; Eugene M. Bournonville, R. I. Tuthill, E. J. Clair.

Newark, N. J.; Newark Auto Specialties Corporation, 164 Market street; $50,000; Edmund Van Buren, Abraham Wiesenger, Betty Weisenger.

Newark, N. J.; Stirling Motors, Inc., 763 Broad street, manufacturing motors, engines, machinery, etc.; $750,000.

Brooklyn, N. Y.; Braun Gear Corporation, to make engines and boilers; $10,000; A. M. and J. J. Braun, Jr., 1321 Gates avenue.

Canandaigua, N. Y.; Canandaigua Motor Parts Manufacturing Co.; $10,500; C. H. and A. W. White, C. O. Hallenbeck.

New York, N. Y.; Auto Motive Appliances Association, Manhattan borough; $51,000; J. A. Dix, S. L. Fish, F. J. Tietsort, 11 Broadway.

New York, N. Y.; Axle Lock Corporation, motor and automobile accessories; $80,000; A. and J. Liebmann, W. P. Gahagan, 231 Lincoln place, Brooklyn.

New York, N. Y.; Ber-Mac Products Corporation, Manhattan borough, automobile and aeroplane accessories; $500,000; E. G. McKinley, Westfield, N. J.

New York, N. Y.; Britton Auto Products Co., Manhattan borough, automobile and aeroplane equipment; $150,000; V. F. and M. L. Britton, V. L. Sawyer, Hotel Empire.

New York, N. Y.; Croston-Carroll, Manhattan borough, automatic primers and vaporizers; $5000; F. Kweton, F. C. Bangs, L. C. Lindenberger, 42 West 35th street.

New York, N. Y.; Economy Bearing Corporation, Manhattan borough, automobile bearings; $10,000; I. Don, C. Zimmerman, E. Smiley, 375 East 199th street.

New York, N. Y.; Hindman Body Corporation, Manhattan borough, manufacture automobile bodies; $65,000; C. A. Hindman, R. Barnhart, G. A. Logan, 141 Broadway.

New York, N. Y.; Pressed Steel Auto Parts Corporation, Manhattan borough; $150,000; G. V. Reilly, H. C. Hand, S. B. Howard, 65 Cedar street.

New York, N. Y.; Prize Tire & Rubber Co., Manhattan borough, to make automobile tires; $7500; H. Zaum, M. M. and R. Forma, 145 West 117th street.

New York, N. Y.; Rector Carburetor Co., Manhattan borough; $215,000; F. G. Haag, G. C. Delacey, J. F. Allen, 11 Broadway.

New York, N. Y.; Regent Tire & Rubber Co., Manhattan borough; $20,000; H. O. Kahan, J. M. Saunders, I. L. Jacobson, 8 Stuyvesant street.

New York, N. Y.; Sectional Radiator Co., Manhattan borough, automobile radiators; $50,000; H. and H. Doob, S. Berman, 189 West End avenue.

New York, N. Y.; Supply Manufacturing Co., Manhattan borough, to make leather goods and garage supplies; $10,000; H. Silverstein, B. Borman, M. Grant, 638 Hopkinson avenue, Brooklyn.

Tonawanda, N. Y.; Wallenberg Sales Co., motors and engines; $100,000; L. J. Tiebor, H. E. Korff, F. J. Wallenberg.

Yonkers, N. Y.; Eastern Economy Co., devices for automobiles and motor boats; $10,000; F. Grisfield, D. J. Mahoney, N. A. Ball.

Salisbury, N. C.; Paul Tire & Rubber Co.; $1,500,000.

Springfield, O.; Springfield Auto Lock Co.; $100,000.

Philadelphia, Pa.; Kline Savidge Co., Inc., manufacturing, buying, selling and dealing in harness saddlery, automobile, electric and leather specialties, carriage and automobile materials, horse collars, horse blankets, lap robes, fly nets and other goods and merchandise pertaining to such business, at wholesale; Frank M. Kline, John P. Money, Parke L. Mason, Orrin A. Kemmerer, Henry C. Kline, Joseph Savidge, solicitor, 1102-1103 Commonwealth building.

Houston, Tex.; Giant Battery Co.; $22,000; Ralph Neuhaus, L. F. Hilly, C. C. Reuse.

GARAGES, REPAIR SHOPS AND SERVICE STATIONS.

Dover, Del.; Broad Garage; $10,000; C. H. Blaske, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Universal Motors Service System; $50,000; M. L. Rogers, L. A. Irwin, W. G. Singer, Wilmington.

Wichita, Kan.; Haskins Highway Garage Association; $100,000; H. H. Haskins, J. W. Sampson, C. H. McBurney.

Baltimore, Md.; Alpha Garage, Inc.; $100,000.

Houston, Mo.; Houston Garage, Inc.; $10,000; A. Young, L. G. Young, T. M. Moody; Barton & Impey, attorney.

Butte, Mont.; Western Garage Co.; $30,000.

East Orange, N. J.; F. and F. Garage; $100,000; Samuel Fischbein, Jersey City; Rubin Fishman, Arnold Brownstein, Newark.

Jersey City, N. J.; Thompson Garage; $25,000; William Thompson, William Thompson, Jr., James McConnelly, Frances Thompson.

Newark, N. J.; West End Garage, Inc.; 22 Littleton avenue, general automobile and garage business; $100.000; Richard A. Miller, Marie E. Drew, William V. Drew.

Newark, N. J.; Wright Garage Corporation, 747 Broad street; $125,000; Kalman Liet, Abraham Boxer, Joseph Dashefsky.

Passaic, N. J.; Eureka Tire Rebuilding Co., 20 Howe avenue, rebuilding automobile and bicycle tires; $150,000.

Brooklyn, N. Y.; Alsgood Garage Co.; $10,000; M C. Struntzer, W. F. Martens, C.

H. Alsgood, 1912 Avenue H.

Brooklyn, N. Y.; Antler Garage Corporation; $10,000; C. Goodman, B. Ruderman, B. S. Kelkin, 267 Clifton place.

Brooklyn, N. Y.; Azi-Man-Tar Garage; $30,000; S. Tartar, S. Azipatch, M. Mandiberg, 338 Linden avenue.

Brooklyn, N. Y.; Banks, C. H.; renovating automobiles; $10,000; P. D. and E. P. Washburn, M. P. Banks, 4916 Sixth avenue.

Brooklyn, N. Y.; Constant Motor Service Corporation; $200,000; R. C. M. Browne, W. A. Joyce, A. D. Constant, 419 75th street.

Brooklyn, N. Y.; Fink Garage Co.; $5000; I. and H. and E. Finkenstein, 1061 Boston road, Manhattan borough.

Brooklyn, N. Y.; Merida Garage Co.; $5000; S. Rida, N. and A. Meyers, 246 Pacific street.

Brooklyn, N. Y.; Newpoint Garage Co.; $5000; S. Feuerstein, A. Spiegel, I. Hymowitz, 161 Pulaski street.

Brooklyn, N. Y.; New York Avenue Garage; $12,000; P. Gordon, S. Aripatch, S. Tarter, 1156 Eastern parkway.

Brooklyn, N. Y.; S. K. Garage Co.; $10,000; S. A. Schorr, N. Kalman, N. Sugarman, 204 Ross street.

Brookyn, N. Y.; Stuyvesant Heights Garage; $15,000; M. P. and H. C. Baumgardner, E. D. Wirth, 1488 Pacific street.

Clarence, Erie County, N. Y.; Clarence Garage; $25,000; P. Riley, A. M. D. Gibson, E. U. Udall.

Jamaica, N. Y.; Jamaica Motor Service Corporation; $25,000; W. B. Koch, J. Costello, F. T. Marker.

Lockport, N. Y.; R. and S. Machine Co.; machine shop, foundry and garage; $25,000; F. B. Rhodes, G. A. Sheriff, W. A. Condon.

New Rochelle, N. Y.; Economy Service; automobile business; $10,000; C. H. and R. S. Paul, V. Greenbaum.

New York, N. Y.; Automobile Vigilance Association, Manhattan borough, garage; $10,000; N. L. Forrestal, J. O. Brzezinski, W. Shilling, 610B Riverside drive.

New York, N. Y.; Bakewell Co., Bronx borough, garage; $20,000; H. H. Cording, C. W. Schildwachter, R. M. Baker, 900 Summit avenue.

New York, N. Y.; Broadway Auto Radiator and Electro Plating Co., Manhattan borough; $15,000; D. D. Weinberger, W. Glickman, E. Williams, 130 Fulton street.

New York, N. Y.; Delage Concessionaires, U. S. A., Del.; garage and machinery; $200,000; B. Ozias, representative, 26 West 58th street.

New York, N. Y.; Dyckman Garage Village & Repair Shop, Manhattan borough; $50,000; A. H. Lee, E. A. Wallis, Jr., D. H. Lehman, 291 Broadway.

New York, N. Y.; Oval Garage, Manhattan borough; $10,000; G. J. Tapper, A. Faigle, L. W. Osterweis, 101 West 81st street.

New York, N. Y.; Prospect Realty Corporation, Bronx borough; storage and garages; $20,000; H. and E. H. Hunter, L. Cohen, 1032 Simpson street.

New York, N. Y.; R. and S. Auto Rebuilding Co., Manhattan borough; $5000; J. L. Lefkowitz, R. Werthim, S. Shagin, 75 West 118th street.

New York, N. Y.; Uneeda Auto Repair Co., Manhattan borough; $5000; L. and M. Davie, L. Werner, 1960 Madison avenue.

Ossining, N. Y.; Jackson, William H., Ford Service Station; $15,000; W. H., J. H. G. and L. T. Jackson.

Syracuse, N. Y.; Best Garage Corporation; $10,000; E. A. Hill, H. R. Follett, S. A. Williams.

Syracuse, N. Y.; Page-Northrop Co., delivery, garage and flour; $10,000; E. R. and R. S. Page, R. R. Northrop.

Westfield, Chateaugay County, N. Y.; Portage Garage; $100,000; O. F. Bohman, P. B. and U. B. Card.

Seattle, Wash.; New University Garage, Inc.; $120,000.

DEALERS IN ACCESSORIES, EQUIPMENT AND SUPPLIES.

San Francisco, Cal.; National Auto Devices Co.; $100,000.

Dover, Del.; Allen Auto Specialty Co.; Robert K. Thistle, A. Roy Myers, Raymond; J. Gorman, New York, N. Y.

Dover, Del.; International Sterling Auto Supply Co.; $1,000,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland, Philadelphia, Pa.

Dover, Del.; Manhattan Tire Stores; $1,000,000; Leonard J. Gressman, Sydney J. Sabath, Victor E. Kraci, Chicago, Ill.

Dover, Del.; Universal Motors Service System; $50,000; M. L. Rogers, L. A. Irwin, W. G. Singer, Wilmington.

Wilmington, Del.; Tire Service Corporation, wholesale and retail tire and automobile accessory business; $100,000.

Hagerstown, Md.; Automotive Stores Corporation; S. O. Matthews, Charles S. McClintock, Paul E. Ziegler.

Millbury, Mass.; Stewart Tire & Rubber Co., motor vehicle tires; $100,000; Charles Dunn, John A. Sands, Ernest L. Smith.

St. Louis, Mo.; Fuetterer, W. E., Battery Service; $10,000; Goodman & Duenler, attorney, Title Guaranty building.

St. Louis, Mo.; Rex Auto Top & Sales Co.; $10,000; Joseph T. Davis, attorney, Boatman's Bank building.

Bloomfield, N. J.; Jersey Auto Supply Stores; $125.000; Theodore Baker, Charles King, Emanuel Zellermayer, Verona.

Camden, N. J.; Rubber Securities Co. of America, deal in rubber tires, etc.; F. R. Hansell, I. C. Clow, J. A. McePak.

Elizabeth, N. J.; Tire Rebuilding Co., 1110 Elizabeth avenue, deal in tires; $50,000.

Newark, N. J.; Gillette Tire Co. of New Jersey, Inc., 164 Market street; $25,000; Frederick F. Mitchell, John Joseph Kellet, Ulysses G. Taylor, Jr.

Newark, N. J.; Market Auto Supply Co., 177 Adams street; $7050; Charles De Salva, Anthony J. Ferrugia, Pascal M. Lordi.

Albany, N. Y.; Stratton Distributing Corporation, motors and air craft; $51,000; E. S. Bramley, E. P. Mickel, V. Stratton.

Brooklyn, N. Y.; Acme Auto Supply Co., tires; $5000; E. and H. Weinstein, M. T. Rachtenberg, 237 South Second street.

Brooklyn, N. Y.; B. B. Truck Tire Corporation; $25,000; E. Page, M. Meggere, D. J. Fitzsimmons, 777 Bedford avenue.

Brooklyn, N. Y.; Long Island Tire Co. of New York; $10,000; A. Samuels, I. Bethley, M. Hershkowitz, 61 Stuyvesant avenue.

Brooklyn, N. Y.; Page Truck Tire Corporation; $25,000; D. J. Fitzsimmons, M. M. Meggers, E. Page, 777 Bedford avenue.

Brooklyn, N. Y.; Sugarman, auto motor and machinery business; $6500; F. and S. Witroll, P. Sugarman, 227 Roebling street.

Buffalo, N. Y.; Misner-Arnd Corporation, motor business; J. P. Misner, L. E. Arnd, A. T. Armbrust.

Buffalo, N. Y.; Superior Vulcanizing Works, deal in automobile tires, gasoline, etc.; $12,000; C. H. May, H. Groeger, J. A. Christian.

New York, N. Y.; Britton Auto Products Co., Manhattan borough, automobile and aeroplane equipment; $150,000; V. F. and V. L. Sawyer, Hotel Empire.

New York, N. Y.; Doughty Manufacturing Co., Manhattan borough, automobile accessories; $5000; F. H. Faulkner, G. E. and J. W. Doughty, 847 Hancock street, Brooklyn.

New York, N. Y.; Goody Rubber Co., Manhattan borough; $50,000; H. F. Vertkamp, I. B. Joselow, R. M. Williams, 286 West 127th street.

New York, N. Y.; Pitts Auto Equipment C., Manhattan borough; $10,000; L. Friedenberg, J. Mason, J. J. Pitts, 14 West 11th street.

New York, N. Y.; Pressed Steel Auto Parts Corporation, Manhattan borough; manufacturing, merchandising, mining, etc.; $150,000; G. V. Reilly.

New York, N. Y.; Standard Tire Stores Co., Manhattan borough; $200,000; M. Cohen, A. Jaffe, J. Nemerov, 362 Fifth avenue.

New York, N. Y.; Usonia Tire Corporation, Manhattan borough; $75,000; B. Swiryn, B. Levy, S. Jacobs, 540 West 159th street.

Syracuse, N. Y.; Lee Auto Supply Co.; $120,000.

Philadelphia, Pa.; Diamond State Automotive Co.; to buy, sell or repair automobile accessories and supplies; Paul S. Ludlam, W. Leslie Moore, C G. Fanz.

Dallas, Tex.; Dependable Tire Corporation; $100,000; Jack D Brown, R. J. John.

Dallas, Tex.; Vacuum Cup Tire Co.; $20,000; J. W. Bass, A. L. Mallioux, T. D. Cornman.

Fort Worth, Tex.; Texas Armstrong Tire Co., 14th and Houston streets; $20,000.

La Crosse, Wis.; La Crosse Automobile Supply Co.; V. J. Roth, J. Loeffland.

Milwaukee, Wis.; Borns Tire Store; $40,000.

Milwaukee, Wis.; West Point Tire & Supply Co.; $6000.

MISCELLANEOUS.

Dover, Del.; Commercial Airship Syndicate; $10,000,000; Charles Ora, L. J. Levis, enry Dean, Kansas City, Mo.

Wilmington, Del.; Fidelity Acceptance Co., financing the purchasing of automobiles, trucks, etc.; $2,000,000.

Newark, N. J.; Automobile Finance Corporation; $100,000; Wilfred Wilkes, H. R. Dolan, E. F. Kass.

Brooklyn, N. Y.; Belmont Auto Delivery Co.; $5000; S. Ostfeld, H. Stein, W. Braverman, 230 Belmont avenue.

Buffalo, N. Y.; Pierce-Arrow Taxicab Co.; $10,000; H. P. and B. Becker, F. L. Hoffman.

New York, N. Y.; Autoship Trucking Co., Manhattan borough; $5000; G. B. Lilly, A. M. Stewart, H. N. Olmstead, 569 Madison street, Brooklyn.

New York, N. Y.; Century Air Line, Manhattan borough; air plane business; $25,000; T. L. Ernst, S. M. Block, J. J. Flannery, 149 Broadway.

New York, N. Y.; Garford Motors Export Corporation, Manhattan borough; $10,000; E. M. Wills, M. Van Alen, R. Brown, 117 East 76th street.

New York, N. Y.; General Motors Research Corporation; $100,000; Henry M. Dugan, Frank A. Gaynor, James McVey.

New York, N. Y.; G. T. L. Motor Sales, Inc., Manhattan borough; general commission merchants and selling agents for bus motors; $100,000; F. L. Coyle, 120 Broadway.

New York, N. Y.; Martin Auto Transportation Co.; Queen's borough; $10,000; F. W., W. and E. W. Martin, Flushing, L. I.

New York, N. Y.; M. and G. Motor Transportation Co., Manhattan borough; trucking; $10,000; J. R. Meyer, C. Gosselin, T. M. Finn, 259 Brooklyn avenue, Brooklyn.

New York, N. Y.; Palatine Motor Transportation & Industrial Corporation of Delaware; $1,000,000; T. L. Ernst, representative, 149 Broadway.

New York, N. Y.; Queen's Scrap Rubber Co., Queen's borough; $10,000; N Kessell, F. Fischer, R. Forma, 145 West 117th street.

New York, N. Y.; Trackless Transportation Corporation, Manhattan borough; $110,000; E C. Bull, S. Ryan, A. D. Emil, 1586 Union street, Brooklyn.

INCREASES IN CAPITAL.

Wilmington, Del.; Motor Service & Fuel Corporation; $200,000 to $300,000.

Chicago, Ill.; Commonwealth Motors Co.; $400,000 to $600,000.

New Orleans, La.; Rex Motor Car Manufacturing Co.; $250,000 to $1,000,000.

Baltimore, Md.; Maccar Motor Truck Co.; $100,000 to $130,000.

Detroit, Mich.; Consolidated Truck & Tractor Corporation; $1,500,000 to $2,500,000; name changed to Consolidated Automotive Industries.

Buffalo, N. Y.; Hale, A. W., Motor Co.; $50,000 to $100,000.

New York, N. Y.; Granville Tire Co.; $10,100,000 to $15,000,000.

New York, N. Y.; H. and B. Auto Sales Co., Manhattan borough; $5000 to $50,000.

RECORD OF BUILDING OPERATIONS FOR JULY

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Greenwich, Conn.; W. T. Bailey, care of J. D. Laland, 185 Devonshire street, Boston, Mass.; two-story wood private garage, 100x40.

Hartford, Conn.; Samuel Helmovitch, 135 Bellevue street; one-story brick public garage, 44x100.

Hartford, Conn.; Standard Coal Co.; one-story wood and stucco garage, 26x52.

Hartford, Conn.; Hartford Auto Club, Inc.; seven-story public garage, 150x142, at Ann and Hicks streets; $500,000.

Waterbury, Conn.; R. K. Brown Estate, 26 East Main street; two-story brick and stucco garage and show room, 130x122; $35,000.

Washington, D. C.; Hurley Motor Co., 829 14th street; three-story brick and reinforced concrete show room and service station, 45x60.

Washington, D. C.; Randell & Hagner, 1207 Connecticut avenue; two-story brick and reinforced concrete filling station.

Lakeland, Fla.; F. B. Terrill; one-story garage, 50x75; $15,000.

Griffin, Ga.; A. F. Gossett & Sons; one-story brick garage and sales room; $50,000.

Chicago, Ill; Roseland Auto Sales Co., 1052 South Michigan avenue; one-story service station at 110th street and Michigan avenue; $20,000.

Chicago, Ill.; State Bank of Chicago, 133 West Washington street; one-story service station at 1923-1925 South Wabash avenue; $35,000.

Chicago, Ill.; O. Van Gunter, 64 East Van Buren street; two-story brick garage; $60,000.

Chicago, Ill.; A. F. Hallman, 10 South La Salle street; one-story brick and stone public garage and display room, 100x125, at Irving place and 59th avenue; $25,000.

Chicago, Ill.; Arthur Jacobs, 138 North La Salle street; one-story brick and stone garage, 50x60, at 21st and Peoria street; $12,000.

Chicago, Ill.; O. L. Freeman, care of A. L. Levy, 111 West Washington street; one-story brick and stone garage, 88x115, at 23-29 North May street; $50,000.

Chicago, Ill.; J. Torgoff, 272 North Kimball avenue; one-story brick garage; $3500.

Hopedale, Ill.; C. D. Crawford; one-story concrete garage and accessory shop.

Melrose Park, Ill.; Fisher & Traeyball, Broadway and 19th avenue; one-story brick public garage, 37x132, at 17th avenue and Lake street; $50,000.

Springfield, Ill.; Mrs. Mary Pickins, 1115 North Third street; one-story brick garage.

Springfield, Ill.; Gus Hortter, 110 West Vine street; one-story frame garage.

Albany, Ind.; McCormick Brothers; one-story public garage, 55x65.

Flora, Ind.; Standard Oil Co. of Indiana, South Bend; one-story brick service station; $7000.

Jeffersonville, Ind.; Givein Motor Sales Co., 120 East Maple street; two-story garage and sales room, 50x153; $75,000.

Rushville, Ind.; Mullins & Taylor; one-story brick garage and service station, 83x165.

Terra Haute, Ind.; Roller Power Co.; one-story brick garage, 24x50; $20,000.

Fort Dodge, Ia.; Ree Sales Co.; three-story garage, 60x140.

Iowa Falls, Ia.; East Side Auto Co.; two-story stone garage, 100x106; $50,000.

Florence, Kan.; Robinson Brothers; two-story brick and hollow tile garage and show room, 50x75; $20,000.

Covington, Ky.; Paul Schreiber, 430 Johnston street; one-story steel-clad garage.

Covington, Ky.; Frank Wolking, 220 Kentucky avenue; one-story steel-clad garage.

Covington, Ky.; A. B. Myers, 312 East Southern avenue; one-story frame garage.

Covington, Ky.; Mrs. Jennie M. Johnson, 3165 Clifford avenue; one-story brick garage.

Frankfort, Ky.; Vatter Catkey Motor Co.; three-story commercial garage, 50x112; $60,000.

Frankfort, Ky.; John P. Stewart; one-story reinforced concrete garage, 42x42.

Louisville, Ky.; W. E. Ross, 1128 Cherokee road; five-story brick and concrete public garage, 90x120, at Second and Market streets; $100,000.

Louisville, Ky.; Kentucky Motor Sales Co., 628 South Third street; one and two-story garage; $50,000.

Newport, Ky.; H. R. Grimes, 820 Park avenue; one-story brick garage.

Newport, Ky.; Standard Automobile Garage Co., Sixth and York streets; one-story brick garage and service station, 85x185; reinforced concrete floors.

Paintsville, Ky.; Paintsville Automobile Sales Service Co.; one-story brick automobile building, 60x105; $10,000.

Lake Charles, La.; Gayne Hardware Co.; one-story garage; $12,500.

Auburn, Me.; Darling Auto Co.; two-story brick public garage, 110x100.

Lewiston, Me.; E. A. McEneffray, 17 Lawton street, Boston, Mass.; two-story garage and service station, 100x100, at Main and Sabatis streets.

Baltimore, Md.; John T. Roddy, 2030 York road; one-story brick garage, 25x100.

Baltimore, Md.; Wilson Machine Motors Co., 134 West Mount Royal avenue; one-story brick garage and show room, 120x150; at Maryland avenue and Oliver street; $150,000.

Baltimore, Md.; J. W. Ligus; one-story brick garage, 50x100.

Baltimore, Md.; Dorn Motor Corporation, 85 Bentaties street; one-story brick public garage, 50x100; $10,000.

Baltimore, Md.; L. Blaustein, 2312 Callow avenue; one and two-story garage, 57x130, at 609-613 Fremont avenue; $30,000.

Catonsville, Md.; Catonsville Garage Co.; one-story brick garage, 40x150.

Pocomoke, Md.; J. Milton Cloggs; one-story brick garage, 60x150 and 60x120; $50,000.

Salisbury, Md.; Riverside Motor Co.; two-story brick and concrete garage, 60x40; one-story shop, 60x100; plate glass front.

Sparrow's Point, Md.; E. Snavely; two-story concrete block garage, 100x100.

Brighton, Mass.; G. Marsh, care of Tuck & Gilman, 34 School street, Boston; two-story brick and concrete public garage, 145x100, at Cambridge and Ham streets and Brighton avenue; $125,000.

Brookline, Mass.; Barnard Davis, 183 Walnut street, Roxbury; one-story public garage, brick and concrete, 70x218; $65,000.

Roxbury, Mass.; T. H. Connolly, 110 Bower street; one-story public garage, 120x144, at 2566 Washington street; $70,000.

Worcester, Mass.; M. N. Ullman, 50 Water street; one-story brick public garage, 80x92.

Bay City, Mich.; Garber-Buick Sales Co.; one-story garage and show room, 100x100, at First and Washington streets; $55,000.

Benton Harbor, Mich.; H. V. Sweitzer, care of Vawter Co.; one-story brick private garage, 125x23; $55,000.

Grand Haven, Mich.; Neffemegger Brothers; one-story brick garage, 100x100; $50,000.

Duluth, Minn.; August Johnson, 230 20th street, west; one-story frame garage.

Duluth, Minn.; M. Rukavina, 410 North 98th street; one-story frame garage.

Duluth, Minn.; Paul Lepak, 609 East Ninth street; one-story frame garage.

Duluth, Minn.; Josephine Anderson, 2005 West Second street; one-story frame garage.

Melrose, Minn.; A. J. Kraker; one-story brick public garage, 50x140.

Minneapolis, Minn.; A. J. Robinson, 903 Sheridan avenue; one-story brick garage.

Minneapolis, Minn.; H. E. Lee, 1928 Benjamin street; one-story brick garage.

Kansas City, Mo.; L. H. Steckling, 2623 Bellefontaine avenue; one-story garage and repair shop, 32x48, at 33rd and Brooklyn avenue; $20,000.

Kansas City, Mo.; Lester & Barrell, 1612 Benton boulevard; one-story garage, 100x100, at 16th and Montgall avenue; $25,000.

St. Louis, Mo.; Pierre Investment Co.; one-story brick and stucco garage, 200x175; $50,000.

St. Louis, Mo.; Columbia Taxicab Co., 4639 Delmar avenue; one-story brick garage, 150x150, at Channing and Lawton streets; $60,000.

St. Louis, Mo.; Kingsbury Garage Co., 943 Century building; one-story brick garage, 113x415.

St. Louis, Mo.; Horigan Realty Co., Fourth and Sylvaine streets; one-story garage, 80x120.

Tarkio, Mo.; J. D. Rankin; one-story brick and stone-trim garage, 48x128.

Omaha, Neb.; R. M. Harris, 1420 Howard street; one-story garage, 66x132, at 1305-1309 Harney street; $20,000.

East Orange, N. J.; Frank Staniere, 773 South 20th street, Newark; one-story brick public garage, 75x113, at 933 South Orange avenue; $25,000.

East Orange, N. J.; Jacob Salkaln, 15 South 14th street; one-story garage at 11-13 South 14th street; $12,000.

Garfield. N. J.; Garfield & Parsons Brothers Co., 87 Jewell street; one-story brick garage, 50x72; $20,000.

Newark, N. J.; Crescent Bottling Co., 295-299 Norfolk street; one-story commercial garage at 258 Bank street; $20,000.

Newark, N. J.; Joseph Kramer, 542 South 12th street; one-story brick and limestone public garage, 90x111, at 524-528 South 12th street; $20,000.

Albany, N. Y.; Cuyler Ten Eyck, 142 Park street; one-story concrete block garage at Lark and Spruce streets; $30,000.

Brooklyn, N. Y.; B. & C. Building Corporation, 192 Riverdale avenue; one-story brick garage, 75x96; $30,000.

Brooklyn, N. Y.; T. & H. Otto, 6417 Fourth avenue, New York; one-story brick garage, northeast corner Fourth avenue and 64th street; $20,000.

Brooklyn, N. Y.; S. R. Holding Co., 175 Bay 29th street; one-story brick garage, 100x100, south side Warren street, west Fourth avenue; $35,000.

Brooklyn, N. Y.; N. J. & N. Y. Realty & Improvement Co., 129 Front street, New York; one-story brick garage, 70x100, south side Fulton street, east Troy avenue; $20,000.

Brooklyn, N. Y.; Ralph Gargliano, 105 Jackson street; one-story brick garage, 25x40 and 25x100; $13,000.

Brooklyn, N. Y.; Samuel Brenner, 102 North First street; one-story brick garage, 50x100 ;$16,000.

Brooklyn, N. Y.; Robert A. Hill, 6518 Fort Hamilton avenue; one-story brick garage, 100x102; $30,000.

Brooklyn, N. Y.; Lazarus Rosenberg, 189 Montague street; one-story brick garage, 122x100; $35,000.

Oconto Falls, Wis.; Oconto Falls Motor Co.; one-story garage and sales room, 90x120; $25,000.

Shorewood, Wis.; A. Jung; one-story garage, 24x32.

CONTRACTS AWARDED.

Mammoth Springs, Ark.; Widmer Engineering Co., Syndicate Trust building, St. Louis, Mo.; one-story garage, 100x95, for A. R. Campbell; $20,000.

Bridgeport, Conn.; J. D. Agostino; 1½-story public garage, 92x95, for Amaryk Aldo, 96 Tom Thumb street.

Washington, D. C.; R. O. Whitty Co., Union Trust building; one-story automobile shop and warehouse, 113x100, for R. R. Andrews Paper Co., 727 13th street.

Atlanta, Ga.; H. J. Carr & Co.; three-story reinforced concrete automobile building for Atlanta Cadillac Co.; $150,000.

Atlanta, Ga.; W. H. George; two-story brick, hollow tile and concrete automobile building on 50x200 site, for John W. Grant; $75,000. Lessee, Cannon-Springbelow Co., 264 Peachtree street.

Bartonville, Ill.; Henry Lauterbach; one-story public garage, 40x120, for William Mahnah; $25,000.

Benton, Ill.; Louis Harris; one-story filling station, 30x42, for Standard Oil Co.; $6000.

Chicago, Ill.; E. C. Waller, Jr., 185 West Clark street; one-story garage, 80x162, at 1521 North Wells street; $25,000.

Chicago, Ill.; E. C. Waller, Jr., 185 West Washington street; one-story garage, 45x100; $150,000. Lessee, Bowman Dairy Co., 140 West Ontario street.

Chicago, Ill.; E. J. Ohrenstein, 58 West Washington street; one-story garage, 75x130, at Stony Island avenue and 72nd street; $70,000. Lessee, Sanitary Specialty Manufacturing Co., 175 West Jackson boulevard.

Chicago, Ill.; J. E. Faget, 3900 Grand boulevard; one-story garage and service station, 50x120; $20,000.

Chicago, Ill.; Consumers' Co., West Washington street; one-story private garage, 80x216, at 401-451 West 35th street; $30,000.

Chicago, Ill.; Lundgren & Westburg, 80 Washington street; one-story sales room and service station, 44x120, at 1343 South Michigan avenue, for George E. Scott; $40,000.

Chicago, Ill; G. Dorn, 6238 Dorchester avenue; one-story private garage, 66x84, at 6238-6246 Dorchester avenue; $10,000.

Cicero, Ill.; Frank Petra & Sons, 222 South Kedzie avenue; one-story private garage, 24x36, at 22nd street and 48th avenue, for Frank Cipek, 4809 West 22nd street; $7000.

Evanston, Ill.; Scown Building Co., 36 West Randolph street, Chicago; one-story service station at 1805 Ridge avenue for Standard Oil Co., 910 South Michigan avenue, Chicago; $4000.

Knightstown, Ind.; J. M. Fant, New Castle; one-story garage and sales room, 50x150, for Goodwyne Motor Sales Co.

Muncie, Ind.; W. P. Spangler, 200 East Seventh street; one-story garage, 50x120, for Denney McCracken Co., 608 South High street.

South Bend, Ind.; Bay City Stone Co.; one-story filling station for Standard Oil Co.; $10,000.

Knierim, Ia.; Morrison Brothers Co., 610 South 27th street; one-story garage, 40x70.

Marshalltown, Ia.; W. E. Langer, 913 Crocker street; two-story garage, 60x180, for P. H. Vogt and J. J. Young; $45,000.

Mount Pleasant, Ia.; J. Williams; one-story garage, 58x150, for H. Rukagber; $20,000.

Murray, Ia.; Long & Seeley; one-story garage, 77x150; $30,000.

Great Bend, Kan.; F. C. Cork; one-story service station, 24x48, for Sinclair Refining Co., 111 West Washington street; $6000.

Frankfort, Ky.; Service Motor Co.; one-story storage station, 60x100.

Franklin, Ky.; Stewart Lumber Co.; one-story garage, 77x114, for W. H. Winfield; $20,000.

Glasgow, Ky.; C. A. Depp; two-story garage and sales room, 50x100, for Glasgow Buick Co.; $25,000.

Louisville, Ky.; General Construction Co., 231 South Fifth street; one-story garage, 50x200, at 849 South Third street, for Consolidated Realty Co., 231 South Fifth street; $20,000.

Louisville, Ky.; West & Whitlock, 106 East Lee street; one-story commercial garage, 90x56, for Gilmore Zoverbacht Co., Marion E. Taylor building; $10,000.

Newport, Ky.; F. G. Ader Construction Co.; one-story garage and service station, 85x185, at 1028-1032 Monmouth avenue, for Standard Auto Garage Co., Sixth and York streets; $45,000.

Paris, Ky.; Bourbon Lumber Co.; one and two-story commercial garage, 50x100, for Big Four Motor Co., Lyons building; $25,000.

Vine Grove, Ky.; Jenkins Essex Lumber Co., Elizabeth, Ky.; one-story garage, 50x125, for Cooper Craycrabt Co.; $20,000.

Lewiston, Me.; J. A. Greenleaf & Sons Co., Auburn, Me.; two-story garage and service station, 100x100, at Main and Sabatis streets.

Baltimore, Md.; Price Construction Co., Maryland Trust building; one-story garage and service station, 66x100, for Standard Oil Co., Pier 2, Pratt street.

Baltimore, Md.; P. H. Guttman & Co; one-story garage, 123x20, for Albert F. Goetze, Jr., 1536 North Gay street.

Hagerstown, Md.; W. Harry Angle, Arcade building; one-story brick and terra cotta front show room, 40x60; tile and composition roof, tile floor; for Antietam Automobile Sales Co.

Boston, Mass; Dillaby Fireproofing Co., 101 Tremont street; one-story private garage for Thayer-Griffith Co., 148 State street.

Brighton Mass.; Dillaby Fireproofing Co., 101 Tremont street, Boston; one-story garage at 27 Brighton avenue, for Harris Levine, 24 Irving street; $150,000.

Brockton, Mass.; C. A. Batson, 37 West Elm street; one-story private garage 30x30, for H. C. Keith.

Fall River, Mass.; Dooley & Flores, 130 Morgan street; one-story private garage, 70x125 and 14x14, at 264 Davol street, for W. C. Atwater & Co., 2 Bedford street; $30,000.

New Bedford, Mass.; General Contract Co., Central Bank building; one-story public garage, 80x112, for J. D. Martin, 238 Maxfield street; $30,000.

New Bedford, Mass.; Z. B. Davis Corporation, 668 Acushnet avenue; one and two-story garage for R. T. Fay, 33 Buttonwood street; $40,000.

Roslindale, Mass.; Coblo & Griffin, 32 Frankfort street, East Boston; one-story garage, 45x100, for Robert McPherson.

Springfield, Mass.; A. W. Wylie, 599 State street; one-story garage and service station, 100x150, at State and Oak streets, for Western Massachusetts Cadillac Co., 521 Worthington street.

Springfield, Mass.; E. J. Pinney, 374 Main street; two-story private garage, 140x50, for C. Hahs, 120 Oakland street.

Caro, Mich.; O. W. Jenkins, 223 South Washington street, Saginaw, Mich.; one-story garage, 78x140, for W. H. Cooper; $25,000.

Detroit, Mich.; C. R. Green; one-story garage, 250x200, for F. J. Whitney, 1443 Grand River avenue.

Detroit, Mich.; J. Zynda & Brothers, 866 Riopelle street; one-story garage, 33x124x20; $10,000.

Detroit, Mich.; Bentley Co., Toledo, O.; one-story garage, 32x102 at 1304-1310 Brooklyn avenue, for Sim Co., 1305 Brooklyn avenue; $15,000.

Kalamazoo, Mich.; H. L. Vander Horst, Burdick and Walnut streets; one-story garage and sales room at Main and Park streets, for H. J. Cooper, 219 West Water street; $20,000.

Kansas City, Mo.; J. E. Taylor, 308 Reliance building; one-story garage and repair shop, 32x48, for J. H. Steckling, 2623 Bellefontaine avenue.

Kansas City, Mo.; Hoffman Brothers, 524 Ridge building; two-story sales room, 100x100, at 26th and Grand avenues, for Scarritt estate, 231 Scarritt building; $100,000.

Kansas City, Mo.; Harvey Stiver, 402 Shukert building; one-story garage, 49x124, at 1424-1426 Cherry street, for C. L. Shack, 706 Baltimore avenue; $15,000.

St. Louis, Mo.; Henry Seibel & Son, Manchester, Mo.; two-story garage, 24x35, for A. L. Hemingway, Hanley and Henderson avenues.

St. Louis, Mo.; H. Soule, Alma, Mich.; one-story garage, 62x132, for F. Burlingame & Son; $25,000.

St. Louis, Mo.; J. Voerel, 2103 Madison street; one-story garage, 50x87, at 12th and Montgomery streets, for Filerman Transfer Co., 24 North First street; $12,000.

Omaha, Neb.; Vaughn Construction Co., 522 Peters Trust building; two-story garage and sales room 160x185 at 28th and Harney streets for O'Brien Davis Coal Co.; $125000.

Manchester, N. H.; Arsene Brunelle, 316 Kelley street; one-story garage for Samuel T. Tarrante, 23 Hanover street; $60,000.

Camden, N. J.; L. N. Lambert; one-story automobile building, 60x100, fireproof, for L. W. Locklin, Ltd., Monroeville, Ala.; $25,000.

Harrison, N. J.; Salmond Brothers, 526 Elm street, Arlington, N. J.; two-story garage and show room, 70x100, at Warren and Fourth streets, for Lawrence S. Fagin, 323 Jersey street; $701,000.

Irvington, N. J.; Henry Schmidt, care of Frederick Lemmer, 681 Nye avenue; one-story public garage, at 1055-1057 Clinton avenue; $12,000.

Jersey City, N. J.; Charles Campbell, 84 Dekalb avenue; one-story garage, 65x115.

Newark, N. J.; Fatzler Co., 45 Clinton street; one-story sales room and service station at 57-63 Broad street, for Paramount Realty Co., 75 Belmont avenue; $15,000. Lessee, Chevrolet Motor Co. of New York.

Newark, N. J.; Homack Construction Co., 1399 Flatbush avenue, Brooklyn, N. Y.; two-story garage and service station at 1001 Broad street, for McAlister Caron Corporation; $100,000.

Salem, N. J., Monaghan & Losse, 3016 Chestnut street, Philadelphia; two-story garage (Ford service), 60x120, at Walnut and Carpenter streets, for Vanneman & Patrick; $45,000.

Trenton, N. J.; Ernest Klemann, 61 Swett avenue; one-story public garage, 104x18 and 104x30, at 119 East Front street, for A. Klinkowstein, 1310 West State street; $9000.

Trenton, N. J.; C. Y. Barlow; one-story public garage at Marine and Rutherford avenue, for estate of T. McKeag, 29 Marian street; $10,000.

Binghamton, N. Y.; Nick Ferron; one-story service station at 64 Lewis street, for Arlington Hotel Co., Chenango and Lewis streets; $15,000.

Brooklyn, N. Y.; Abraham Rockmore, 50 Court street; one-story public garage; $35,000.

Brooklyn, N. Y.; Thrift Home Providing Corporation, 1416 Lincoln place; one-story garage, north side Myrtle avenue, west Lewis; $30,000.

Brooklyn, N. Y.; Rocknitz Brothers, 44 Court street; one-story garage, 440x100, $100,000.

Brooklyn, N. Y.; Moody Construction Co., 90 West street, New York; one-story show room and service station at northeast corner Sterling place and Bedford avenue, for Studebaker Corporation of America, 1731 Broadway, New York.

Brooklyn, N. Y.; Rodgers & Hagerty, Inc., 103 East 125th street, New York; one-story garage and repair shop for Waterside Holding Co., 103 East 125th street, New York; $42,000.

Brooklyn, N. Y.; Post & McCord, 101 Park avenue, New York; one-story garage for Shipley Construction & Supply Co., 66 Warren street, Brooklyn; $20,000.

Buffalo, N. Y.; Buffalo Lafayette Motors, Inc., 1247 Main street; one-story sales room at 1276 Main street; $50,000.

Buffalo, N. Y.; Otto E. Gruff, 618 Linwood avenue; one-story private garage, 36x63, at 1432 Main street, for Cold Spring Storage Co.; $10,000.

Springfield, L. I., N. Y.; D. E. Killane; one-story garage at southwest corner Springfield and Merrick roads, for William B. Jones; $37,000.

Stapleton, L. I., N. Y.; John Milnes Co., West Brighton, L. I.; one-story garage, show room and service station at northwest corner Bay and Congress streets, for Staten Island Garage, Inc., 369 Van Buren street, Tomkinsville, L I.; $45,000.

Dunn, N. C.; Price Construction Co., Maryland Trust building, Baltimore; one-story garage for Standard Oil Co., 2 Pratt street, Baltimore; $10,000.

Canton, O.; McLaughlin English Co.; two-story garage and show room, 66x200, at Cleveland avenue and Fourth street; $100,000.

Cleveland, O.; Esper Brothers, 2304 Searsdale street; one-story public garage, 74x100; $25,000.

Cleveland, O.; A. A. Lane Construction Co., Union building; four-story sales room and garage, 60x150, at East 55th street and Prospect avenue, for Guarantee Building Co., 214 Union building; $100,000.

Dover, O.; Wentz Lumber Co.; one-story garage, 50x107, for Ford Motor Co.; $18,000.

East Liverpool, O.; Finley Brothers, Chester, W. Va.; three-story commercial garage, 60x136, at 18 Fifth street, for Liverpool Motor Co.; $6500.

Findlay, O.; R. W. Sattler; one-story garage, 50x200, for C. F. Sattler; $30,000.

Greenville, O.; Concrete Construction Co., 7 Mitchell building, Springfield, O.; two-story brick and stone trim garage, 50x160, for Jeffreys Co.; $50,000.

Hicksville, O.; W. L. Johnson; one-story garage, 50x150, for M. M. Manstone; $30,000.

Mansfield, O.; Schell Wolf Co.; one-story garage and service station, 70x120, for A. M. Colby, care of Dodge Brothers Service Station; $20,000.

Perrysburg, O.; Lee La Farree; 1½-story private garage 60x35, for T. Tracey; $10,000.

Toledo, O.; Culver Motor Sales; two-story service station, 90x120; $75,000.

Brownsville, Pa.; Brownsville Construction Co.; two-story commercial garage, 65x180, for C. C. Garlett; $60,000.

Butler, Pa.; G. W. Stiles Construction Co., 57 East Adams street, Chicago, Ill.; three-story commercial garage and sales room, 92x100, for McIntyre Motor Co., care of Standard Motor Co., Pittsburgh; $125,000.

Johnstown, Pa.; Berkebile Brothers; two-story commercial garage, 66x152, for Twin Valley Motor Co., Inc., 216 Dibert street; $80,000.

Lancaster, Pa.; L. V. Wright, 9 South Duke street; one-story garage, 10x22, at Harrisburg avenue and Mulberry street, for Keystone Express Co.; $500,000.

Mount Lebanon, Pa.; Martin McHenry Co., Jones Law building, Pittsburgh, Pa.; two-story private garage, 24x30; $8000.

Philadelphia, Pa.; Joseph Condy; one-story garage, 45x49, at 1317-1321 South Newkirk street; $4500.

Philadelphia, Pa.; James Gustino; one-story brick garage, 30x24, rear 6329 Summer street; $1200.

Philadelphia, Pa.; J. Y. Loux; 31 one-story brick garages, south side Pastorius street, east Germantown avenue, for Thomas Keefe; $19,000.

Philadelphia, Pa.; T. S. Fetter; one-story garage, 17x19, at 1405 North Wellington street, for Dr. J. S. Stanton; $2000.

Philadelphia, Pa.; Samuel Shoemaker; four one-story garages, 18x20 each, at 4700, 4702, 4724 and 4726 Northeast boulevard; $8000.

Philadelphia, Pa.; Fred Zimmerman; one-story garage, 28x11, at 634 North Franklin street, for Frank Stirbach; $1200.

Philadelphia, Pa.; J. H. Feeser Co.; one-story garage, at 859-863 North 28th street, for Herman Sacks; $1200.

Philadelphia, Pa.; F. L. Hoover, 1023 Cherry street; one-story garage, 20x106, at 613 North Eighth street, for C. H. Fowler, 1207 North 11th street; $5000.

Philadelphia, Pa.; Albert Boschner, 1625 South Orkney street; two-story garage, 52x121, at 705 Tasker street, for J. Waldow, 3118 Columbia avenue.

Philadelphia, Pa.; Fred C. Hoehn & Son; one-story garage at 4349-4351 North Seventh street, for Adolph Noell; $2500.

Philadelphia, Pa.; J. S. Kline; one-story garage, 45x50, at 936-920 Mountain street, for Mrs. Mary Moran; $4500.

Philadelphia, Pa.; Barclay White & Co.; one-story brick garage, 21x85, west side 23rd street, south Westmoreland, for Sharpless Specialty Co.; $3500.

Philadelphia, Pa.; William H. Gravett; two-story garage, 30x50, at 1827-1829 South Front street, for Lotz Brothers; $10,000.

Philadelphia, Pa.; Metzger & Fisher; one-story brick service station, southeast corner Broad and Lycoming streets, for Atlantic Refining Co.; $15,000.

Philadelphia, Pa.; William Steele & Sons Co.; one-story brick forge shop, south side Hunting Park avenue, west Rising Sun avenue, for Commercial Truck Co.; $15,000.

Philadelphia, Pa.; H. D. Prettyman; one-story garage, 16x18, at 2239-2241 South Third street, for Murphy Brothers; $3000.

Philadelphia, Pa.; H. D. Prettyman; one-story brick garage, 45x77, at 2146-2148 South Third street, for James Devine; $6000.

Pittsburgh, Pa.; H. Hysong, 7307 Keely street; two-story brick garage, 43x66, for E. J. Bonner, 612 Homewood avenue.

Pittsburgh, Pa.; Henry Geschwender, 1244 Juniata street; two-story storage garage and sales room, 50x180, for Allegheny Motor Co.; $65,000.

Reading, Pa.; L. H. Focht & Son, Baer building; two-story public garage, 45x90, at Washington street and Madison avenue, for Central Taxi Cab Co., 35 Poplar street; $25,000.

Reading, Pa.; H. J. Randenbush, 1324 Perkiomen avenue, Philadelphia; 1½-story private garage, 30x34, for I. A. Hopelman, care of F. A. Muhlenberg, 901 Flanders building, Philadelphia; $5000.

Wilkes-Barre, Pa.; W. H. Miller, 89 Marlborough avenue; one-story public garage, 30x71, at 17 Sterling street, for Jay Fuller, 50 Church street; $13,000.

Providence, R. I.; Interstate Construction Co., 29 Weybosset street; one-story public garage for Dimond Co., 244 Westminster street; $30,000.

Woonsocket, R. I.; John F. Fleurant & Son, 158 Rathbun street; 1¼-story public garage, 60x90, at Pond and East School streets, for P. J. Bresnahan.

Greenville, S. C.; H. K. Ferguson Construction Co., Cleveland, O.; one-story daylight type building, 100x260, for Cyclone Starter & Truck Co.; $140,000.

Sioux Falls, S. D.; Sioux Falls Construction Co.; one-story private garage, 50x140, for Minnehaha Co.; $12,500.

Brownwood, Tex.; R. E. Dudley; one-story brick garage, 100x100.

Texarkana, Tex.; C. A. Hamer; one-story brick and cement sales room and filling station, for State Line Motor Co., State Line and Fifth streets; $25,000.

Norfolk, Va.; Baker & Brink; three-story public garage, 120x238, for Travelers' garage.

Norfolk, Va.; Twin City Construction Co., Dickson building; two-story garage and storage battery station, 40x104, at Jamestown boulevard and Monteo street, for Reliance Electric Co., 771 Granby street; $65,000.

Richmond, Va.; A. C. Houston & Son, 9 South Sixth street; one-story public garage, 90x60, for W. T. Hawks, 918 West Gary street; $15,000.

Martinsburg, W. Va.; Richard R. Fuller Co; two-story garage, 99x55, for Stephen Bowers.

Moundsville, W. Va.; W. H. Batson; two-story garage, for H. W. Perkins; $31,000.

College Camp, Wis.; Alfred Pihl, Williams Bay, Wis.; one-story garage, 50x125, for Y. M. C. A. college.

Madison, Wis.; L. B. Gilbert, 16 Ellsworth building; two-story public garage, 50x60, for William Brueske; $12,000.

Milwaukee, Wis.; Wisconsin-Oakland Co., 325 Jefferson street; three-story sales room and service station, 98x120, at Oneida and Jackson streets.

Milwaukee, Wis.; C. B. Danielson, 638 Mineral street; one-story garage, 50x92, at Park and 12th avenue, for Northwestern Malleable Iron Co., 756 Park street; $11,000.

Milwaukee, Wis; M. G. Winter, 5029 North avenue; one-story garage and repair shop, 50x119, at 35th and Libson avenue, for Adam Freshberger, 508 54th street; $15,000.

Racine, Wis.; Julous Sorenson, 1805 West Sixth street; one-story garage, 40x45, for Tom Ross.

Racine, Wis.; Charles O. Johnson, 224 South LaFayette avenue; one-story garage and sales room, 56x154, at 10th and Washington avenue, for Guy H. Dixon, 834 Hayes avenue.

Reeseville, Wis.; Berninser & Newberger; two-story garage, 50x100; $10,000.

River Falls, Wis.; A. H. Ostness; two-story public garage, 66x120, for C. St. Jensen; $25,000.

Coming Events

July 17-25—Prague, Czechoslovakia, 12th Annual Automobile Exposition, Czechoslovak Automobile Club of Prague, Industrial Palace, Prague Exposition Grounds.

July 17-18—Inter-Club Run, Chicago Automobile Club.

July 24—Watertown, N. Y., Dirt Track Races. Frank G. Bell, Manager.

July 31—Fulton, N. Y., Dirt Track Races. Frank G. Bell, Manager.

August—Paris, France, Grand Prix Race, Sporting Commission, Automobile Club of France.

August——Italy, Jacques Schneider International Sea Plane Race.

Aug. 1—Felixstone, England, Sea Plane Test.

Aug. 7—Erie, Pa., Dirt Track Races. Frank G. Bell, Manager.

Aug. 7-Sept. 15—Antwerp, Belgium, Show of Motorcycles, Side Cars, etc.

Aug. 10—Niagara Falls, Ont., Automotive Metal Wheel Association, Clifton House. Standardization Discussions.

Aug. 14—Buffalo, N. Y., Dirt Track Races. Frank G. Bell, Manager.

Aug. 15-22—Danzig, Germany, Second Danzig Fair.

Aug. 20-21—Middletown, N. Y., Dirt Track Races. Horace P. Murphy, Manager.

Aug. 21—Elgin, Ill., Road Race, Chicago Automobile Club.

Aug. 21—Johnstown City, Pa., Dirt Track Races. Frank G. Bell, Manager.

Aug. 23-27—San Francisco, Cal., National Traffic Officers' Convention.

Aug. 23-28—Stillwater, Okla., Oklahoma Farm Power Show, direction State Board of Agriculture.

Aug. 27-28—Flemington, N. J., Dirt Track Races. Horace P. Murphy, Manager.

Aug. 28—Canadaigua, N. Y., Dirt Track Races. Frank G. Bell, Manager.

Aug. 30-Sept. 4—Milwaukee, Wis.; Annual Fall Automobile Show, auspices Milwaukee Automotive Dealers' Association, Wisconsin State Fair Grounds. Bart J. Ruddle, Manager.

Sept. 1—New York-San Francisco Glidden Tour.

Sept. 1—Felixstone, England, Large Air Plane Trials.

Sept. 1-3—Chicago, Ill., 13th Annual Convention National Gas Engine Association.

Sept. 3-12—Detroit, Mich., 71st Annual Exposition, Michigan State Fair Association.

Sept. 5—Sicily, Targa Florio Race.

Sept. 6—Hornell, N. Y., Dirt Track Races. Frank G. Bell, Manager.

Sept. 6—Cincinnati, O., Speedway Events, Cincinnati Speedway Co.

Sept. 6—Uniontown, Pa., Speedway Events, Uniontown Speedway Association.

Sept. 16-17—Cleveland, O., Credit Convention, Motor and Accessory Manufacturers' Association.

Method of Relining Internal and External Brake Bands

IN RELINING brake bands there are a few simple rules which if adhered to by the repairer, will considerably shorten the time needed to reline the bands and simplify the work, insuring a finished job that is correct.

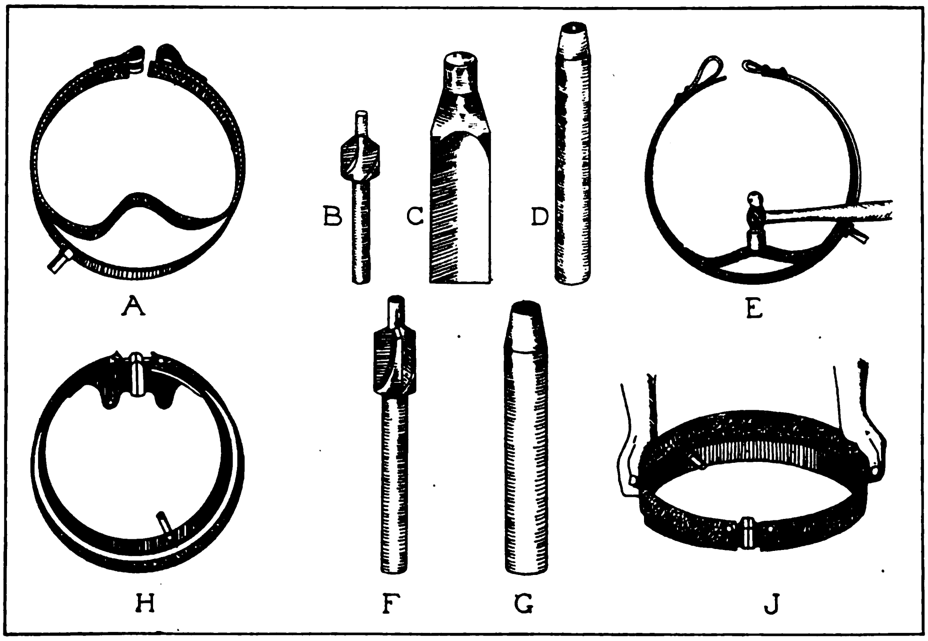


Figure 1. Fitting Brake Lining, Tools Employed.

It is always a good idea to cut the brake linings somewhat longer than required for the outside or service band; then when the lining is finally fastened in place it will draw down without wrinkling and will not be too short. The tools necessary and the methods employed are clearly shown in Fig. 1.

For brakes of 10 to 16 inches in diameter cut the lining ⅜ of an inch longer than the brake band. The ends are first attached, allowing the lining to bulge in the center as at (A). To attach the ends mark the position of the holes by piercing the lining with an awl. Drill the four holes (two in each end of the lining), then countersink the holes so that the rivet head (use solid rivet 10/16) will be at least 1/32 of an inch below the surface of the lining. For this purpose use the tapered countersink shown at (B). Then holding the ends of the lining in position so that the holes in the lining and brake bands correspond, put the rivets in place, using the anvil shown at (C), which is secured in the vise, having the small end up, and the head of the rivet resting on the anvil. Head the rivet with a hammer, using the hollow rivet set shown at (D). Next flatten the lining against the band as shown at (E), locate the holes and punch with the awl. Drill the lining and countersink the holes as before, using tubular rivet countersink shown at (F). Use tubular rivets ½ of an inch and head over with tubular rivet set shown at (G).

The internal brake bands are lined similarly, but slightly different methods are employed. Cut the lining one-half inch shorter than the band in order to stretch the lining tightly around the band. Drill and countersink the end rivet holes, then place the band flat on bench with the open end away from you. Put in two solid rivets in upper rivet holes only at each end of the band, as shown at (H). Care should be taken not to have the lining wrapped around the band when attaching these rivets, as the ends will be drawn too far apart. Head over the solid rivets as before, then force the rest of the lining around the band as shown at (J). Insert solid rivets in the two remaining holes in the end of the band and head over. Proceed to attach the balance of the lining, using tubular rivets, countersinking the holes with the tubular rivet countersink and heading them over with the tubular rivet set (G).

In attaching lining to Ford transmission bands where split rivets are used, start at one end and work toward the other end, securing one rivet at a time by forcing it through the lining with the head on the outside and coming in contact with the steel band. When the split rivets are forced through the band and lining the points of the rivets will protrude just enough to permit turning over with the hammer and rivet set.

Still another method of relining brakes that does not require special tools outside of what are usually found in the repairer's tool kit is shown in the second illustration, Fig. 2.

In this method, flat-headed copper rivets are used entirely as shown at (A). In several makes of cars is used a sort of indurated fabric for the brake linings, wire cloth being woven into the fabric, which may be obtained already cut in strips of the exact width and length required.

The tools necessary, besides a hammer and vise, will be a small hand drill for making the rivet holes in the lining, a cold chisel, an old file, a punch about 5/16 inch in diameter, another small punch, less than ⅛ inch, for removing old rivets, and a pair of cutting nippers, side cut preferred.

Remove the brake band and pry out the remnants of the old lining, leaving the flat head rivets in place, as shown at (B). Cut these old rivets off flush with the inside of the brake band, placing the cold chisel as shown at (C), but always taking the precaution of placing the band between the vice jaws to do the rivet cutting. Care should be taken never to cut the rivets in the band (D), unless the band is held rigidly between the jaws of the vise. In this manner all danger of bending or breaking out a section of band (D) is avoided.

With the small punch, drive out all the rivets after the ends have been cut off as at (C). Place the cold chisel or punch in the vise as shown, the cutting end bearing upon the screw sheath of the vise. By placing the chisel thus and using it to rivet upon, the lower side of the brake band may be placed underneath the vise jaws and the band will balance very nicely upon the chisel. Insert the first rivet close to the end of the band and take great care that the first hole is made exactly right, so that the lining will lie evenly against the band. More time should be spent in placing this first rivet right than with any three of the others. If the rivets protrude too far, as shown at (F), cut them off with the cut nippers. Cut the rivets as shown at (M), rest the head of the rivet on chisel and hammer the end down loosely as shown at (H) and (I). It is not necessary to head off the rivets completely smooth.

Two of the rivets at one end of the lining will have to be driven with the 5/16 inch punch, as they are in countersunk holes at one end of the lining. Later these two rivets must be finished while

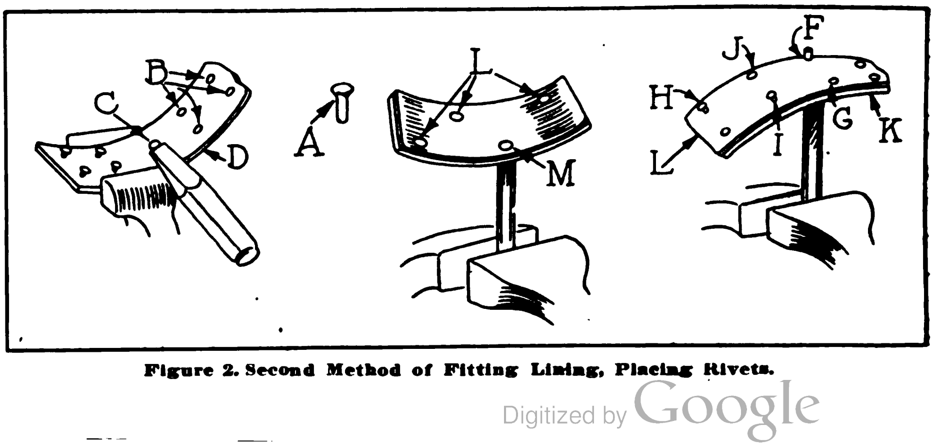
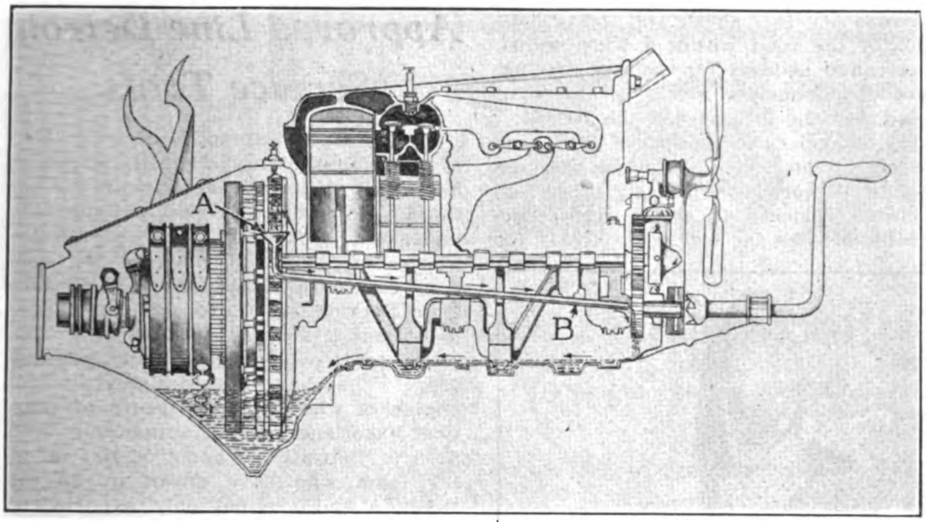


Figure 2. Second Method of Fitting Lining, Placing Rivets.



Ford Engine Lubrication: A, Oil from Flywheel Enters Trough; B, Oil Pipe Conveying Oil to Timing Gears.

resting upon the small end of the punch while it is held in the vise, with the small end up for the rivet head to rest upon. Put rivets in all the holes at the ends of the lining, but along the middle, it is best to stagger the rivets as at (H), (I) and (F), leaving vacant the holes (J) and (G), etc. These holes need not be drilled in the lining (K), which is left smooth as shown at (L).

Ream Holes Slightly.

Having drilled through lining (K), it is well to ream the holes slightly for the taper heads of the rivets. Punches and reamers are easily obtained for this work, and usually the repairer has one or more of them in his kit. However, some garage men ream the holes with the tang of an eight-inch mill file.

After inserting all the rivets and slightly heading them down, as shown at (H) and (I), reverse the brake band, placing it upon the vise. Hold cold chisel or punch as shown at (L), (L), (L). Then hammer each rivet down into the wire woven fiber until the head is fully flush with or just a little below the fiber surface as shown at (M). Do not leave any portion of the rivet projecting above the surface of the brake lining. This completes the job so far as most of the rivets are concerned. There are, however, two rivets which will have to be hammered down while their ends are resting upon the 5/16 inch punch while held in the vise as shown.

KEEP TANKS FULL.

The radiator requires to be kept filled with water. Generally speaking, once a day the cap must be removed and water added if necessary. The beginner should find out how to tell when his gasoline tank requires replenishing. Many tanks are fitted with a gauge, while in other cases a gauge may be easily supplied, which will save considerable bother and guess work. The method of filling the tank and of unscrewing the cap of the gasoline tank should be ascertained. As regards the oil reservoir in the base of the engine, the motorist should find out from the agent how to tell when oil is required and what kind is recommended.

Lubrication of the Ford Car

The lubrication system of the Ford engine is of a simple character. The lower part of the flywheel casing forms the sump, from which the circumference of the flywheel, as it rotates, picks up the lubricant, and throws it into a small copper funnel that is fitted at the upper end of a sloping copper pipe, the latter extending forward inside the crank chamber and terminating so that the oil drips on to the timing gears. From this point it runs back into the bottom of the base chamber, through troughs provided for the big end bearings of the connecting rods by splash. Incidentally, too, the flywheel throws up oil on to the brake drums and gearset gears, all of which run continuously in a smother of oil. Two pet cocks, one a high level and the other a low level indicator, are provided in the back of the lower half of the flywheel casing, and the maker's instructions are that, normally, oil should be poured in through the filler in front of the engine on the off side, until it begins to run out from the upper level cock. However, if the oil level be kept as high as this, considerable carbonization of the cylinder heads and pistons is liable to occur, and the oil will rapidly burn away until the level reaches a point about half way between the top and lower cocks. From this point, although one's safety margin is still ample, very little oil will be used; in fact, the second half of the oil supply will last three times as long as the first half.

Unless a sight oil gauge is fitted, it is impossible to know when the level of the oil is half way between the two cocks, and for this reason it is desirable to equip the engine with one of the various oil gauge glasses sold by the accessory houses.

It is unnecessary to mention in detail all the parts of the Ford chassis that need lubrication, but it is well to be liberal in greasing the universal joint at the front end of the propeller shaft and front plain bearing of the propeller shaft itself. It is important that the steering pivot pins on the inner ends of the stub axles should be oiled freely. They should also be taken out periodically and the oil channel thoroughly cleaned with kerosene.

REPAIR SHOP ORDER PROTECTOR.

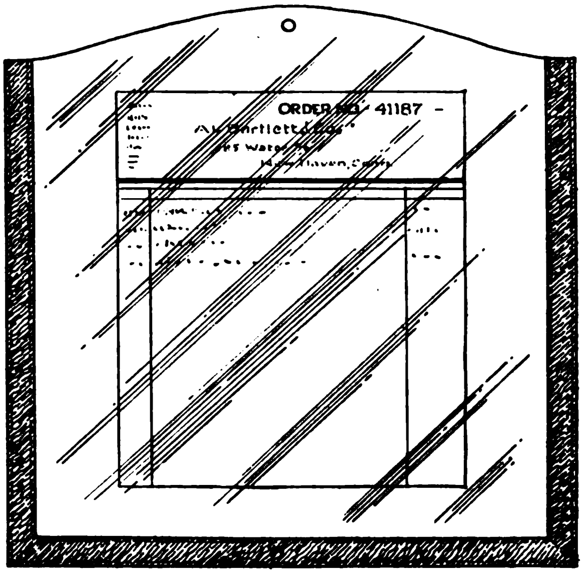
Work orders are often mislaid, soiled and torn while in use in the repair shop or garage. The accompanying cut pictures a practical order carrier and protector.

A sheet of transparent sheeting—the same material used for lights in automobile curtains—is cut to desired size. A piece of light weight leather substitute is then cut about one-half of an inch larger all around than the piece of sheeting. This extra half inch allows for a lap over on all but the top side of the protector. The lap may be stitched by a sewing machine down to the sheeting, forming a large flat pocket, open at the top for the insertion of the order.

Both the transparent front and the coated fabric back are water proof and grease proof. Dirt or grease may be easily wiped or washed off without injury to the material.

ADJUSTMENT OF THE CARBURETOR.

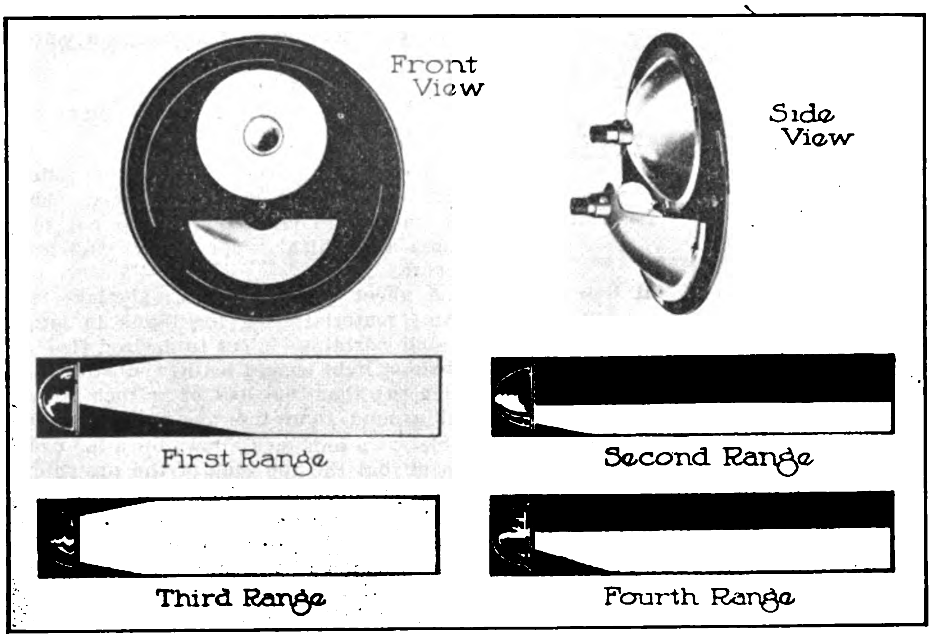
Tinkering with the carburetor often causes most disastrous results. Not only will it often result in excessive carbon deposit, waste of gasoline and power, but may cause the engine to misfire and lose speed. Unless the operator has had considerable experience he will do well to leave the carburetor severely alone. If it is thought that changed conditions necessitate carburetor adjustment, the car should be taken to the nearest service station.



Practical Protector for Order Sheet in Repair Shop or Garage.

Alvo Light Obviates Glare

Walter F. Voight and H. W. Brown, two Ashland, O., men, have developed a new form of head light designed to meet the varying needs of the modern motorist, known as the Alvo Four-Range light.



Alvo Four-Range Light Made by Alvo Manufacturing Co., Ashland, O.; Showing Ranges of Illumination.

It was their aim to do more than merely meet the requirements of city traffic regulations. The Alvo is, first of all, an efficient light to drive by. It provides the motorist with four instantly controlled ranges, which make him master of all the varying conditions of traffic, road and weather.

One of its most important features is the non-glare range; a distribution of light produced by shielding the lamp bulb from view so that the rays have a maximum height of 42 inches above the road and cannot throw a glare into the eyes of approaching motorists. The advantage of this non-glare range in the Alvo light is that glare is made impossible without the sacrifice of lighting efficiency.

The four ranges of light are produced by the use of two reflectors, one above the other. The upper reflector is five inches in diameter and the lower reflector (which is cut off in the center by a horizontal shield) is six inches in diameter. The upper reflector is a paraboloid, and the lower reflector half of a paraboloid. Both reflectors are scientifically accurate in design and commercially accurate in the smoothness and regularity of their contour. They are made of spun brass, with a polished nickel surface covered by a highly polished silvered coating. The unusually high efficiency of the Alvo four range light is made possible by the painstaking accuracy with which the principles of illumination are carried out in these two reflecting surfaces.

The advantages which the Alvo four range light offers to the motorist are these: The upper reflector throws a conical beam of light that searches out the road 500 feet ahead and lights both sides of the road within a wide radius. This range is ideal for country driving, since it commands not only the road ahead, but the ditches and the fences.

The second range is that of the lower reflector alone, which should be used for city driving or when meeting other machines. It meets all traffic regulations and illuminates the street so clearly for 175 feet ahead that small objects can be distinguished easily. There can be no question as to whether this range meets the regulations against glare. The lamp bulb is entirely hidden from view and the light is so controlled by being cut off at the horizontal that glare cannot reach the eyes of approaching motorists.

There are occasions when an unusually powerful light is required, as in driving over rough roads or in foggy or stormy weather. Under such conditions both reflectors should be used together.

The fourth range of light is that of the lower reflector with the lamp dimmed by resistance. This range is for use in parking. With this less than two amperes of current are consumed.

The various ranges of the Alvo light are obtained by a simple switch arrangement on the dash. Motorists who have installed this head light are enthusiastic in their commendations of it. They say that it makes night driving much safer and, therefore, much more pleasant.

The service which accompanies the Alvo includes not only the installation but wiring. There are various refinements in minor details, such as the clamping device on the socket of the lamp bulb, which holds the bulb securely in its focal position; and adjustment screws on the front plate, which permit the lower reflector to be tilted slightly upward or downward.

The Alvo Manufacturing Co. of Ashland, O., is manufacturing this device. A large and well equipped factory is now nearing completion and the company expects to produce the Alvo Four-Range light on a quantity basis by August.

Approved Line Detroit Service Tools

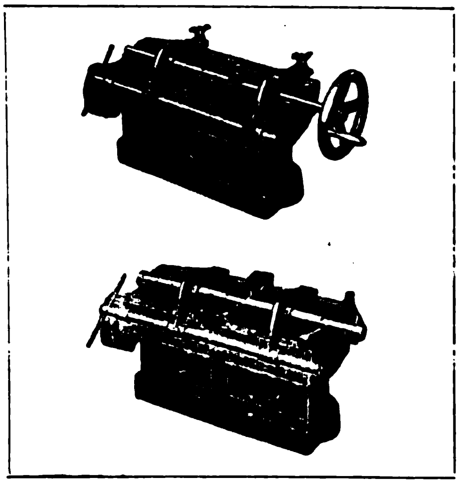
The Detroit Garage Equipment Co., East Columbia stret, Detroit, Mich., is marketing a line of equipment for garages, repair shops, service stations, etc., under trade name of "Detroit Service Tools, the Approved Line." The company calls attention to the fact that Detroit Service tools are not an experiment, but a finished product of proven merit, as is evidenced by many satisfied users. They have been designed by tool engineers who have had years of practical experience in the automobile business in Detroit, the home of the industry; men who have grown up in the business and are not only experienced in the designing of tools, but are actually engaged in the service departments of leading manufacturers.

Detroit Service tools are designed to meet the requirements of service stations and are absolutely guaranteed against any defects in material or workmanship.

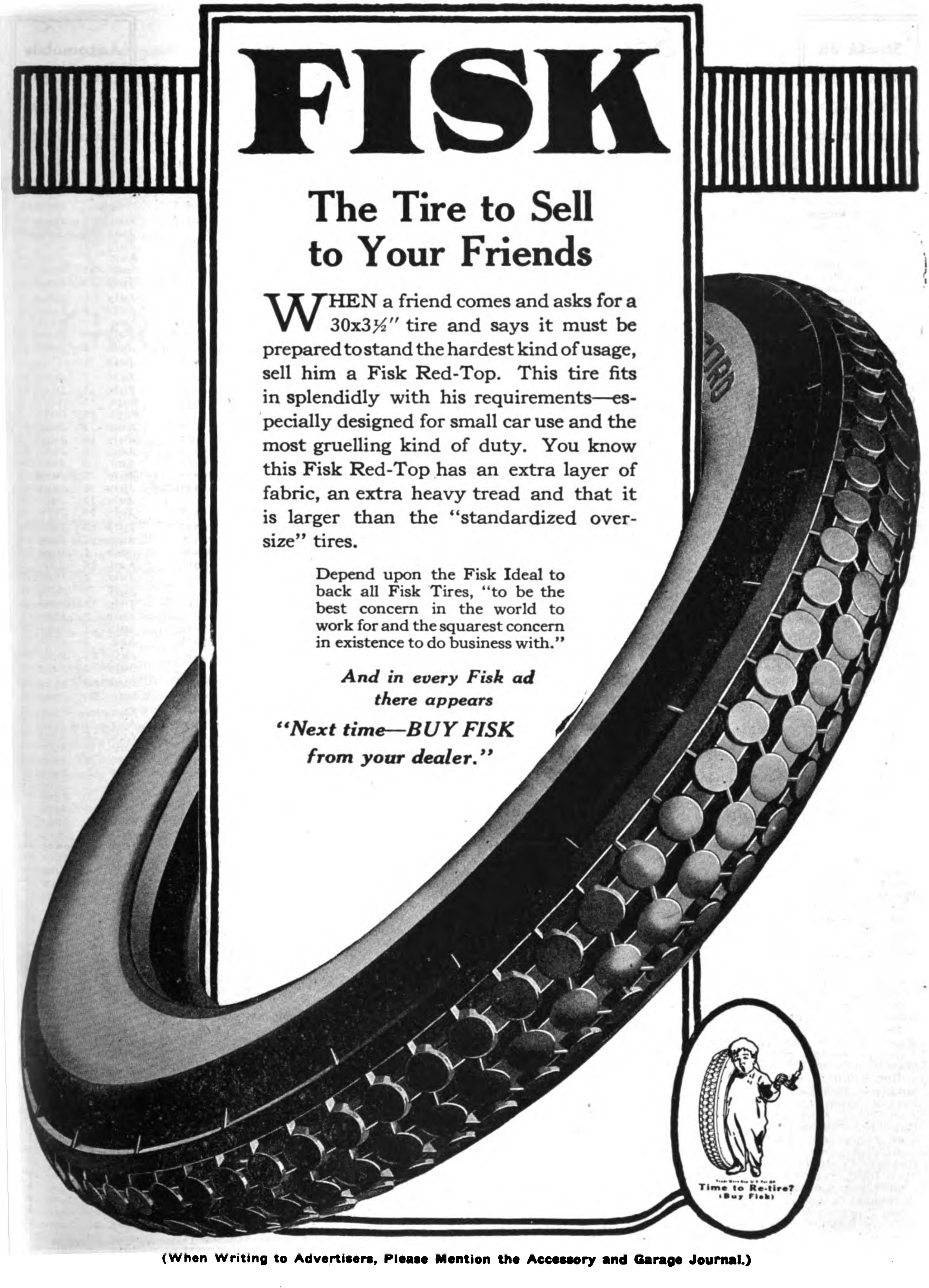
Among the useful equipment featured is the Detroit rebabbitting and reboring outfit for Ford Model T or Fordson tractor main bearings, also made in combination for both, and the Detroit combination arbor straightening press and truing up machine with a guaranteed capacity of 200 tons. These tools, as is the case with all of the Approved line, turn out the work for which they are designed accurately and quickly, one of the chief requisites for a service station.

NEW ERA BOOK OF SONGS.

In connection with the spring meeting of the Automotive Equipment association at Del Monte, Cal., the New Era Spring & Specialty, Grand Rapids, Mich., issued a Book of Songs for free distribution among the trade, which presented original and appropriate verses for many of the popular songs and choruses of the day, as well as the words of familiar old melodies of the North and South. A roster of the Sante Fe special party is also included, making it an interesting souvenir of the trip.



Detroit Rebabbitting and Reboring Outfit for Ford Model T Cars and Fordson Tractors.



FISK

The Tire to Sell to Your Friends

WHEN a friend comes and asks for a 30x3½" tire and says it must be prepared to stand the hardest kind of usage, sell him a Fisk Red-Top. This tire fits in splendidly with his requirements—especially designed for small car use and the most gruelling kind of duty. You know this Fisk Red-Top has an extra layer of fabric, an extra heavy tread and that it is larger than the "standardized oversize" tires.

Depend upon the Fisk Ideal to back all Fisk Tires, "to be the best concern in the world to work for and the squarest concern in existence to do business with."

And in every Fisk ad
there appears
"Next time—BUY FISK
from your dealer."

Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK EXCHANGE.

Week Ending July 24, 1920.

Company	High	Low	Last	Ch'ge
Advance Rumely	34	33½	34½	+ ½
Advance Rumely, pfd	64	63½	63½	— ½
Ajax Rubber	60⅜	59¾	59¾	— ¼
Allis-Chalmers	36½	35¼	35¼	— ¼
Allis-Chalmers, pfd	76⅛	76⅛	76⅛	+ ⅛
American Bosch Magneto	99½	95½	97⅛	— ⅛
American-La France Fire Engine	11⅜	11⅜	11⅜	....
Auto Sales	7	6	6	—2½
Bethlehem Motors	21⅜	20⅜	20⅜	— ¾
Case, J. I., Plow	13⅝	10⅞	10⅞	—2⅞
Case, J. I., Plow, pfd	94	94	94	+ ¼
Chandler Motor	99	95½	98	+1
Emerson-Brantingham, pfd	74¼	74¼	74¼	—2½
Fisher Body, pfd	105	105	105	+2¾
Fisk Rubber	32¼	30¼	30¼	—2⅛
General Motors, pfd	76	76	76	—1
General Motors, 7 per cent. deb	85	84½	84½	— ½
General Motors, 6 per cent. deb	71½	70⅞	71½	— ⅜
Goodrich, B. F	60¾	58¼	58¾	—1⅓
Gray & Davis	25	23	24	....
Hendee Manufacturing	31	30	30	—1
Hupp Motor Car	16	13¾	14½	—1⅛
International Harvester, new	127½	127¼	127¼	— ¾
International Harvester, pfd	105½	105½	105½	— ¾
International Motor Truck	58	55	55	—4
International Motor, 1st pfd	81½	80	80	— ¾
International Motor Truck, 2nd pfd	66	66	66	—2¾
Kelly-Springfield Tire	97¼	93½	95	—1
Keystone Tire & Rubber	27¾	26½	26⅝	— ⅞
Maxwell Motors	20¾	12¾	14¾	—5¾
Maxwell Motors, cts. of dep	15⅛	10½	10½	— 8½
Maxwell Motors, 1st pfd	37	33	33¾	—8¾
Maxwell Motors, 1st pfd. cts. of dep.	32¼	31	32¼	—6
Mullins Body	37¼	37¼	37¼	— ¼
Pierce-Arrow	51⅞	48⅜	48⅝	—2⅜
Republic Motor Truck	44½	43⅝	44½	+1
Saxon Motor	9	8½	8⅝	— ⅜
Stewart-Warner Speedometer	41	39	40	....
Stromberg Carburetor	90⅝	79½	86⅝	+5
Studebaker	71¾	68½	69¼	—1
United States Rubber	94	91	92	— ¾
United States Rubber, 1st pfd	106	104½	104½	—1⅝
Westinghouse E. & M.	48¾	48⅜	48½	— ¼
White Motors	51½	50	50⅛	+2¼
Willys-Overland	19	17¾	*17¾	— ⅞
Willys-Overland, pfd	82½	82½	82½	+ ⅛

*Extra dividend.

AKRON RUBBER PRICES.

	July 15		July 2	
	Bid	Asked	Bid	Asked
Amer. R. & T. com	83	88	83	88
Amazon Rubber	..	96	..	98
Firestone T. & I. com	152	156	145	148
do 6 per cent. pfd	90½	91½	89½	90½
do 7 per cent. pfd	92	92½	90½	91½
General T. & R. com	800	900	..	800
do 7 per cent. pfd	..	98	..	97
B. F. Goodrich, com	63½	66	62	64
do 7 per cent. pfd	89½	90½	87½	88½
do 5 yr. 7 per cent. notes	94⅛	95⅛	94½	95½
Goodyear T. & R. com	132	136	129	130
do 7 per cent. pfd	87	88	86½	87
India Rubber com	175	190	..	190
do 8 per cent. pfd	..	93	..	90
Mason T. & R. com	24	27	..	25
do 7 per cent. pfd	..	70	..	68
Marathon com	..	50	45	55
Miller Rubber, com	..	160	43	146
Mohawk Rubber	..	300	..	290
Portage Rubber com	80	90	80	86
do 7 per cent. pfd	..	80	69	75
Republic Rubber com	2½	3	1½	2½
do 7 per cent. pfd	..	65	..	60
do 8 per cent. pfd	20	30	15	25
Rubber Products	..	110	..	110
Star Rubber com	160	175	160	175
do 8 per cent. pfd	..	100	..	100
Swinehart com	..	75	..	75
*do 7 per cent. pfd	..	80	69	80
Phoenix Rubber com	..	22½	..	22
do pfd	..	90	..	20
Standard Tire com	175	185	..	175
do 7 per cent. pfd	..	90	..	90

DIVIDENDS DECLARED.

	Rate	Period	Pay-able	Stock of Record
Advance Rumely, pfd	1½%	Quart.	July 1	June 14
American Bosch Magneto	20%	Stock	July 15	July 1
American Bosch Magneto	$2.50	Quart.	July 1	June 15
American La France	2½%	Quart.	Aug. 16	Aug. 2
American LaFrance, pfd	1¾%	Quart.	Aug. 16	Aug. 2
Apsley Rubber, pfd	3½%	Semi-An'l	July 1	June 26
Chandler Motor	$2.50	Quart.	July 1	June 15
Cleveland Motor, pfd	$2.00	Quart.	July 1	June 14
Continental Motors	2%	Quart.	Aug. 15	Aug. 7
Continental Motors, initial	3⅓%	Semi-An'l	July 15	June 30
Continental Motors, pfd	3½%	Semi-An'l	July 15	June 30
Delion Tire & Rubber	2%	Quart.	July 1	......
Electric Storage Bat	$2.50	Quart.	July 1	June 14
Electric Storage Bat., pfd	$2.50	Quart.	July 1	June 14
Electric Storage Bat	$3.00	Quart.	Sept. 13	Oct. 1
Electric Storage Bat., pfd	$3.00	Quart.	Sept. 13	Oct. 1
Emerson-Brant'gham, pfd	1¾%	Quart.	Aug. 2	July 16
Firestone Tire & Rubber	1½%	Quart.	July 15	July 1
Fisher Body	$2.50	Quart.	Aug. 2	July 20
Fisher Body, pfd	1¾%	Quart.	Aug. 2	July 20
Fisk Rubber	75c	Quart.	July 1	June 15
Fisk Rubber, 1st pfd	$1.75	Quart.	July 1	June 15
Ford Co. of Canada	$15.00	....	July 15	July 12
Franklin Auto	75c	Quart.	July 20	July 10
General Electric	$2.00	Quart.	July 15	June 10
General Electric	2%	Stock	July 15	June 10
Globe Rubber	10%	Stock	July 1	June 30
Goodrich, B. F	$1.50	Quart.	Aug. 16	Aug. 5
Goodrich, B. F., pfd	1¾%	Quart.	July 1	June 21
Hendee Mfg., pfd	1¾%	Quart.	July 1	June 21
Herschell-Spillman	2%	Quart.	July 1	June 21
Herschell-Spillman	½%	Extra	July 1	June 21
Herschell-Spillman, pfd	2%	Quart.	July 1	June 21
Hood Rubber, pfd	1¾%	Quart.	Aug. 2	July 20
International Harvester	1¾%	Quart.	July 15	June 25
Int. M. Tk., 1st & 2nd. pfd.	$2 33	....	July 1	June 15
Jordan Motor Car	$2 00	Quart.	June 30	June 14
Jordan Motor Car, pfd	1¾%	Quart.	June 30	June 14
Kelly-Springfield Tire	$1.00	Quart.	Aug. 2	July 17
Kelly-Springfield Tire	75c	Stock	Aug. 2	July 17
Kelly-Springfield Tire, pfd.	2%	Quart.	Aug. 16	Aug. 2
Kelsey Wheel. pfd	1¾%	Quart.	Aug. 1	July 21
Lee Rubber Tire	50c	Quart.	Sept. 1	Aug. 14
Liberty Motor	2½%	Quart.	July 1	June 21
Liberty Motor, pfd	2%	Quart.	July 1	June 21
Liberty Motor	2%	Extra	July 1	June 21
Lincoln Motor, Class A	$1.25	Quart.	July 30	July 20
McCord Mfg	$1.00	Quart.	July 1	June 19
McCord Mfg., pfd	$1.75	Quart.	July 1	June 19
McGraw Tire & Rubber	1¾%	Quart.	July 1	June 20
Magor Car	$1.00	Quart.	June 30	June 25
Magor Car	$2.00	Extra	June 30	June 25
Magor Car, pfd	1¾%	Quart.	June 30	June 25
Maibohm Motors	2%	Quart.	July 1	June 15
Moline Plow, 1st pfd	1¾%	Quart.	Sept. 1	Aug. 18
Moline Plow, 2nd pfd	1½%	Quart.	Sept. 1	Aug. 18
Mullins Body	$1.00	Quart.	Aug. 1	July 17
Mullins Body, pfd	2%	Quart.	Aug. 1	July 17
Nash Motor	$6.00	....	Aug. 2	July 20
Nash Motor, pfd	$1.75	Quart.	Aug. 2	July 20
National Carbon, pfd	2%	Quart.	Aug. 2	July 21
Packard Motor	25c	Quart.	July 31	July 15
Pennsylvania Rubber	1½%	Quart.	June 30	June 15
Pennsylvania Rubber, pfd.	1¾%	Quart.	June 30	June 15
Pierce-Arrow Mot. Car, pfd.	2%	Quart.	July 1	June 15
Pyrene Mfg	25c	Quart.	Aug. 2	July 21
Spicer Mfg	50c	....	Aug. 1	July 1
Spicer Mfg., pfd	2.00	Quart.	July 1	June 22
Standard Motor	½%	Quart.	Aug. 2	July 6
Sterling Tire	1%	....	July 20	July 6
Sterling Tire, 1st pfd	1¾%	Quart.	July 20	July 6
Sterling Tire, 2nd pfd	2%	Quart.	July 20	July 6
Stewart Mfg	$1.00	Quart.	Aug. 15	......
Stewart Mfg., pfd	2%	Quart.	Aug. 1	July 31
Times Square Auto Supply	62½c	Quart.	July 6	June 25
Times Sq. Auto Sup., pfd.	$1.75	Quart.	July 6	June 25
United States Rubber	2%	Quart.	July 15	June 30
United States Rubber, pfd.	2%	Quart.	July 15	June 30
Westinghouse Elec. & Mfg.	2%	Quart.	July 31	June 30
West. Elec. & Mfg., pfd	2%	Quart.	July 15	June 30
White Motor	$1.00	Quart.	June 30	June 15
Willys-Overland	25c	Quart.	Aug. 2	July 21
Willys-Overland, pfd	$1.75	Quart.	July 1	June 21
Wire Wh. of Amer. 8% pfd.	1%	....	July 10	July 1

The ACCESSORY and GARAGE JOURNAL

VOL. X. PAWTUCKET, R. I., AUGUST, 1920 No. 4

Good Roads an Important Factor in Automobile Industry

Dealers Should Cooperate with Other Agencies to Secure Proper Maintenance and Increased Mileage

IN PREVIOUS articles in the Accessory and Garage Journal endeavor has been made to point out the responsibility of motor car dealer in the matter of cooperation to secure the stability and continuance of the industry on a sound and conservative basis for the future.

Another important factor that very essentially enters into the increased safe and pleasurable operation of the automobile today and will, consequently, affect the status of the business of every motor car and accessory dealer, as well as garage and repair shop, in the land, is the construction and maintenance of good roads. These activities should, therefore, if only from the purely selfish motive of continued and increased business, cast their votes with and add their influence and endeavors to those of the motorist in favor of every movement to advance the building of new and the proper upkeep of old highways.

"Better Roads Mean More Business," could well be the dealers' adaptation of the good roads slogan which is now becoming well nigh universal throughout America. All fees for licenses, registration, taxes, etc., should be all the more cheerfully paid when it is borne in mind that in nearly all, if not all, the states of the Union a considerable proportion of the money thus collected is expended on the roads in one way or another, and the motor car driver is thus directly and the dealer and manufacturer indirectly benefitted.

A Great Road Building Era.

Even the most conservative observers place the funds available for road building in this country during the present year at not less than $700,000,000, outside of cities and other municipalities, and the estimates run all the way up to $1,000,000,000. The unprecedented stimulus given highway construction in the United States in the four years that have passed since the Federal government entered upon its policy of aiding road improvement, is shown by the fact that road operations under the Federal aid road act thus far initiated aggregate in length nine times the distance from New York to San Francisco, according to Thomas H. MacDonald, chief of the bureau of public roads, United States Department of Agriculture. The Federal government's share in this stupendous undertaking is greater than the cost of the Panama canal. The participation of the national government in highway improvement marked a departure from a policy which had been followed for nearly a century. "Federal cooperation with the states on approximately a '50-50' basis has counted more than any other factor," says Mr. MacDonald, "in initiating highway construction that is being carried on under adequate supervision, and in accord with a programme coordinating local, state and national needs."

Highways of Splendid Type.

Second only in importance to the size of the present road building programme is the excellence of the roads being built. Sixty per cent. of the total allotment of Federal funds which has been approved to date will be spent for roads of such durable types as bituminous concrete, Portland cement concrete and vitrified brick. These roads, when built, will in-

Typical Good Surfaced Road: Section of the Lincoln Highway Over the Tuscarora Mountains in Pennsylvania.

crease by 7600 miles the total of 14,400 miles of roads of this class which existed in the United States before the federal aid road law was passed. But these figures by no means represent the total mileage affected.

In 1915 the total expenditure for roads and bridges by all the states and local governments was $267,000,000, while this year the estimated funds available for main road construction are nearly three times that amount, or $633,000,000. In all federal funds to the amount of $266,750,000 have been apportioned among 48 states without a suggestion of favoritism so adequate are the provisions for a just distribution.

FEDERAL AID ROAD PROJECTS CONTEMPLATED,

	PROJECT STATEMENTS RECEIVED.				PLANS, SPECIFICATIONS AND ESTIMATES RECOMMENDED.			
	No.	Total Estimated Cost	Federal Aid Requested	Length Miles	No.	Total Estimated Cost	Federal Aid Requested	Length Miles
Alabama	69	$2,721,075.71	$1,352,925.26	434.726	54	$2,441,255.27	$1,200,159.89	338.723
Arizona	19	3,382,806.55	1,661,775.16	260.148	8	1,148,378.48	546,870.24	40.643
Arkansas	48	5,867,647.15	1,447,216.59	572.275	29	4,112,256.56	848,871.53	336.483
California	37	7,657,631.31	3,792,310.62	409.880	30	5,126,043.10	2,546,327.60	276.840
Colorado	39	1,902,259.72	939,232.56	286.022	22	1,307,394.93	652,538.62	138.835
Connecticut	4	1,634,839.55	790,230.00	56.383	3	718,900.16	338,103.05	24.310
Delaware	6	1,626,350.00	394,914.39	34.17	7	1,929,809.44	284,980.01	34.115
Florida	22	2,294,249.81	1,120,952.02	169.292	9	539,085.45	240,975.54	34.750
Georgia	122	8,972,901.82	3,978,870.42	879.252	57	5,036,786.65	2,346,922.84	490.186
Idaho	27	4,831,193.36	2,387,953.06	374.610	7	1,514,748.11	743,452.62	129.630
Illinois	11	15,582,091.02	7,532,869.06	612.080	68	17,032,993.23	8,398,629.77	500.985
Indiana	18	14,577,435.00	6,912,446.80	383.510	18	4,640,346.47	2,241,329.75	121.288
Iowa	70	9,268,543.62	4,103,409.66	1,094.170	30	4.012,040.87	1,649,723.77	399.030
Kansas	36	15,060,357.06	3,982,344.37	456.985	31	8,506,115.27	2,567,662.62	200.561
Kentucky	19	11,735,222.15	840.562.12	142.994	8	949,731.12	471,689.61	50.514
Louisiana	35	3,424,521.38	1,608,273.79	374.030	28	2,662,939.41	1,272,515.38	296.970
Maine	4	701,899.90	350,949.94	40.644	3	773,489.74	337,199.26	35.454
Maryland	37	7,227,789.31	3,478,129.37	263.230	42	3,457,699.75	1,638,360.99	123.272
Massachusetts	28	2,856,532.53	1,318,170.66	95.221	22	2,021,514.12	956,349.27	65.816
Michigan	36	6,726,571.26	3,121,981.18	324.584	31	3,149,403.12	1,724,639.87	204.344
Minnesota	103	10,727,619.99	4,684,142.84	1,340.870	64	6,297,845.90	2,745,502.75	812.171
Mississippi	45	3,111,721.81	1,860,566.93	432.250	28	1,736,376.89	853,040.18	224.790
Missouri	58	7,250,970.65	3,259,076.52	603.511	17	2,169,430.08	872,790.97	167.853
Montana	59	2,693,852.73	1,337,176.33	483.670	27	1,011,006.65	505,503.28	152.380
Nebraska	113	7,368,149.45	3,590,742.04	2,595.117	42	3,669,026.07	1,737,645.94	905.197
Nevada	27	1,932,181.91	948,945.35	264.663	18	1,244,103.37	620,248.13	142.680
New Hampshire	86	1,409,240.18	703,119.92	114.019	76	1,279,186.23	638,775.58	93.007
New Jersey	22	7,461,819.36	2,597,262.63	89.073	15	2,811,764.03	1,092,669.23	65.100
New Mexico	34	3,094,119.36	1,547,059.66	539.970	11	1,156,761.59	578,380.77	125.380
New York	37	6,248,708.55	3,117,604.27	216.640	11	2,055,900.85	1,021,200.42	53.130
North Carolina	103	10,699,610.43	4,965,855.18	1,047.185	51	4,436,022.22	1,912,115.51	378.518
North Dakota	80	2,619,188.64	1,274,671.40	1,124.715	38	1,417,752.49	708,876.16	502.265
Ohio	102	17,284,539.93	5,428,395.30	519.256	82	13,442,297.38	4,376,903.36	398.996
Oklahoma	21	5,229,997.23	2,470,393.67	234.639	12	1,711,325.34	841,268.61	79.653
Oregon	33	5,395,466.55	2,583,982.04	356.140	19	2,877,228.96	1,420,114.45	171.770
Pennsylvania	66	19,234,000.42	7,618,973.39	450.552	75	17,732,256.53	7,615,393.12	388.923
Rhode Island	7	655,939.63	279,089.46	18.245	5	340,413.54	165,434.79	12.776
South Carolina	40	2,622,341.92	1,062,780.71	293.864	25	1,396,216.21	682,373.22	163.642
South Dakota	33	2,469,378.79	1,212,881.79	429.460	18	1,649,604.55	824,802.22	249.530
Tennessee	18	3,304,491.62	1,636,159.67	218.725	11	1,812,182.43	904,659.42	110.705
Texas	123	12,083,008.19	4,214,932.50	1,673.909	71	5,670,356.18	2,218,469.70	895.371
Utah	15	4,549,938.66	2,274,967.80	514.790	5	488,470.13	244,235.06	113.440
Vermont	12	525,053.29	262,526.63	31.910	9	306,125.56	153,062.49	16.935
Virginia	56	3,591,502.34	1,777,325.21	292.142	46	2,694,666.50	1,347,333.18	203.547
Washington	46	5,222,671.59	2,488,671.73	275.835	42	4,582,159.83	2,182,994.83	214.711
West Virginia	80	4,278,433.05	1,708,907.98	288.027	57	3,125,204.52	1,356,713.72	157.683
Wisconsin	100	4,008,623.96	1,335,230.20	458.587	99	4,382,965.60	1,447,631.61	447.618
Wyoming	37	2,014,511.44	999,916.43	346.240	23	1,516,340.87	757,334.78	236.893
Total	2243	$275,138,946.65	$117,656,824.61	22,518.301	1504	$164,493,921.75	$70,832,775.71	11,367.413

Many New State Highway Departments.

One of the early and most far-reaching results directly attributable to the adoption of the federal aid programme was the creation of adequate state highway departments in 17 states which previously had either no state department, or departments insufficiently equipped. Within one year after the passage of the Federal Aid Road act more constructive state highway legislation was placed upon the statute books than had ever been enacted in a similar period in the history of the country.

The insistence of the government upon the construction of federal aid roads under the supervision of engineers of the state departments has resulted in placing a much larger proportion of road work under skilled direction. In 1915, the year before the Federal Aid act was passed, only 30 per cent. of the money for roads and bridges built in the United States was expended under the supervision of state highway departments. This year these departments will exercise control over fully 80% of the large sums that will be spent for road building.

The Result of Two Acts.

The Federal government's present programme of highway improvement is the result of two acts, the Federal-Aid Road act signed by the President July 11, 1916, and provisions in the Postoffice Appropriation bill for 1920 signed Feb. 28, 1919, containing an amendment to the original Federal-Aid Road act. The original appropriation of $75,000,000 was made available for rural post roads in installments at the rate of $5,000,000 for the fiscal year ending June 30, 1917; $10,000,000 for 1918, $15,000,000 for 1919, $20,000,000 for 1920 and $25,000,000 for the fiscal year ending June, 1921. Ten million dollars for forest roads was made available at the rate of $1,000,000 a year after July 1, 1916. The apportionment of the post road appropriations of the states, after deducting the administrative fund, which must not exceed three per cent., is based upon area, population and mileage of rural delivery and star routes in each state. Each of these factors have a weight of one-third.

Federal Activities Broadened.

Three months after the signing of the armistice, the Postoffice Appropriation bill for 1920 became a law. One of the important amendments which it contained provided that the term "rural post roads" as used in the earlier act was to be construed to mean "any public road a portion of which is now used or can be used, or forms a connecting link not to exceed 10 miles in length of any road or roads now or hereafter used in the transportation of the United States mails."

The law also changed the limitation that the government expenditure could not be in excess of $10,000 a mile (exclusive of bridges of more than 20 feet clear span) by raising the maximum to $20,000 a mile. This Postoffice Appropriation bill carried an additional appropriation of $200,000,000 for the construction of federal aid roads and $9,000,000 additional for the construction and maintenance of roads and trails in the national forests.

These federal funds may be expended only for construction and must not exceed 50 per cent. of the value of the roads. In other words the states, either directly or through county or other government units, are required to bear something more than half of the total cost of their road improvement.

Under the law the secretary of agriculture is charged with the administration of the Federal Aid act. He has assigned the details of administration to the chief of the Bureau of Public Roads, a branch of the department, which is considered to be in closer touch with the highway situation and requirements of the country as a whole than any other agency in the United States.

States Must Initiate Projects.

The Federal Aid act requires that road projects for federal aid be initiated by the states. As a first step, a statement is forwarded to the district engineer of the Bureau of Public Roads, announcing in effect that the state proposes to build a piece of road of a certain type and length in a certain location. This notice, known as a "project statement," is accompanied by an estimate of cost. The project statement is examined by the district engineer to determine whether the project complies with the Federal Aid Road act. If his decision is favorable he forwards the statement to the Washington office with his recommendation. There it is examined by the chief engineer and his assistants and, if they concur in the recommendation of the district engineer, the project is placed before the secretary of agriculture for his approval. Until the secretary has acted, no further action is taken by the state. Over half of the projects handled are passed by district officers in an average of five days—an illustration of the manner in which work can be expedited even where a large organization and complex procedure are involved.

Up to June 30, 1920, 2985 projects, involving a total of 29,319 miles of road had been approved by the secretary of agriculture. The preliminary estimate of the cost of these projects is approximately $384,900,000, of which about $163,841,000 will be approved as federal aid. On the same date 2116 projects, representing approximately 15,944 miles, had either been completed or were under construction. The estimated total cost of these projects in various stages of construction and completed, is $200,000,000.

It should be borne in mind, however, that all of this federal aid money for good roads must be increased by at least equal amounts raised by the individual states, as stated previously. And most of the commonwealths, counties and municipalities are not content with the comparatively smaller amounts made available by the turning back to them of a share of the money collected by the payment of license and registration fees, but are raising large sums by the authorization of bond issues for road building.

Statistics compiled by C. M. Wood, who is in charge of the newly created Good Roads bureau of the Goodyear Tire & Rubber Co., show that legislation is now pending to authorize good roads bonds to a total amount of $391,253,800 with excellent chances of being passed. Texas is reported to take the lead in the amount authorized, with bond issues totalling $88,708,000; Pennsylvania is to spend $76,217,945; California, $68,435,000; Illinois, $69,152,845; Michigan, $53,100,000; Alabama, $30,000,000; Georgia, $15,375,000, and North Carolina, $13,459,635.

Some of the provisions of the federal aid bill and postoffice appropriation act, under which government money is now being expended on roads, have met with strong disapproval in some quarters, and this opposition has taken concrete form, during the past few years, in a number of proposed amendmends and new measures, the most comprehensive of which is, perhaps, the so-called Townsend bill.

One of the chief objections against it is that it proposes a substantial increase in appropriations, inasmuch as it authorizes the expenditure of $425,000,000 for the four fiscal years beginning July 1, 1920, and ending June 30, 1924. Fifty millions of this is to be immediately available, $75,000,000 for the fiscal year ending June 30, 1921, and the balance at the rate of

APPROVED AND COMPLETED TO JAN. 1, 1920

	PROJECT STATEMENTS APPROVED.				PROJECT AGREEMENTS EXECUTED.			
	No.	Total Estimated Cost	Federal Aid Requested	Length Miles	No.	Total Estimated Cost	Federal Aid Requested	Length Miles
Alabama	69	$2,721,075.71	$1,352,925.26	434.726	40	$1,233,060.45	$615,589.63	257.657
Arizona	18	2,764,202.50	1,352,473.04	204.315	7	866,504.10	398,643.10	32.179
Arkansas	47	5,797,097.83	1,417,216.59	551.145	27	3,993,940.85	811,371.53	328.673
California	36	7,501,981.31	3,714,485.62	398.040	24	4,105,093.37	2,035,852.75	220.180
Colorado	38	1,799,582.01	887,893.71	283.295	17	1,174,190.82	587,095.37	136.080
Connecticut	4	1,634,839.55	790,230.00	56.383	3	718,900.16	338,103.05	24.310
Delaware	6	1,626,350.00	294,914.39	34.170	6	1,781,858.89	227,669.40	32.105
Florida	19	1,620,444.32	784,049.28	147.638	9	534,737.43	238,801.53	34.750
Georgia	120	8,824,631.72	3,910,812.39	866.627	41	3,507,419.27	1,628,415.96	395.029
Idaho	23	4,270,578.16	2,057,645.47	312.910	5	746,170.73	359,163.93	99.130
Illinois	11	15,582,091.02	7,532,869.06	612.080	26	10,875,887.38	5,333,182.17	341.038
Indiana	18	14,577,435.00	6,912,446.80	383.510	17	4,267,341.57	2,079,269.75	113.185
Iowa	66	8,851,182.17	3,894,909.66	1,021.320	24	2,367,594.23	862,071.32	348.900
Kansas	36	15,060,357.06	3,982,344.36	456.985	16	3,961,133.68	1,435,427.12	109.892
Kentucky	18	1,649,432.27	798,382.12	140.885	7	881,723.40	437,685.75	47,227
Louisiana	35	3,424,521.38	1,608,273.79	374.030	27	2,585,891.40	1,233,991.38	288.920
Maine	4	701,899.90	350,949.94	40.644	2	667,171.22	284,040.00	28,404
Maryland	37	7,227,739.31	3,478,129.37	263.230	33	2,974,988.01	1,423,580.57	104.185
Massachusetts	27	2,763,417.42	1,271,613.11	92.595	17	1,303,412.79	638,613.67	48.775
Michigan	35	6,638,021.26	3,093,981.18	321.784	30	3,330,802.65	1,615,339.64	197.305
Minnesota	95	9,365,907.11	4,164,334.49	1.256.560	57	5,402,378.97	2,317,111.98	784.751
Mississippi	45	3,100,046.81	1,356,783.65	423.850	19	961,887.33	465,925.13	156.581
Missouri	54	6,108,232.45	2,687,707.42	549.151	16	1,831,652.63	772,513.00	157.333
Montana	53	2,028,005.13	1,004,252.53	426.170	14	527,818.63	263.909.28	56.180
Nebraska	111	7,127,304.45	3,470,319.54	2,534.117	34	3,085,477.86	1,445,871.91	808.177
Nevada	27	1,932,181.91	948,945.35	264.663	15	1,042,521.22	519,457.06	126.090
New Hampshire	86	1,409,240.18	703,119 92	114.019	59	1,017,304.85	508,629.66	78.665
New Jersey	18	3,972,191.35	1,177,414.33	76.677	12	2,320,206.21	921,931.23	57.763
New Mexico	33	3,079,087.86	1,539,543.91	533.470	11	1,156,761.59	578,380.77	125.380
New York	35	5,484,708.55	2,735,604.27	197.540	9	1,782,956.35	884,723.17	45.140
North Carolina	92	8,982,302.90	4,124,325.71	881.515	43	3,049,945.39	1.231.339.80	329.822
North Dakota	80	2,619,188.64	1,274,671.40	1,124.715	32	1,130,036.05	565,017.96	442.190
Ohio	102	17,284,539.93	5,428,395.30	519.256	72	12,007,497.76	3,912,343.36	349.208
Oklahoma	19	4,104,737.40	1,946,236.85	207.968	8	1,191,995.64	581,603.77	65.673
Oregon	30	4,724,062.30	2,198,279.92	328.510	12	1,607,286.74	767,821.51	105.320
Pennsylvania	56	19.234,000.42	7,618,973.39	450.552	75	17,732,256.53	7,615,393.12	388.923
Rhode Island	6	546,824.25	227,689.46	15.675	5	340,413.54	165,434.79	12.776
South Carolina	40	2,622,341.92	1,062,730 71	293.864	16	937,505.57	453,017.92	115.298
South Dakota	33	2,469,378.79	1,212,881.79	429.460	11	882,113.18	441,056.56	151.470
Tennessee	18	3,304,491.62	1,636,159.67	218.725	7	861,219.69	429,178.06	67.781
Texas	119	11,425,380.09	4,037,762 61	1,620.935	61	4,481,915.79	1,769,223.47	726.724
Utah	15	4,549,935.66	2,274,967.80	514.790	4	472,062.17	236,031.08	113.070
Vermont	12	525,053.29	262.526.63	31.910	9	299,506.53	149,752.97	16.933
Virginia	56	3,591,502.34	1,777,325.21	292.142	38	2,260,876.33	1.130,438.11	176,532
Washington	46	5,222,671.59	2,488,671.73	275.835	36	3,906,436.13	1,863,713.64	187.158
West Virginia	79	4,214,753.05	1,677,227.98	284.527	44	2,256,156.89	972,862.18	109.420
Wisconsin	100	4,008,623.96	1,335,230.20	458.587	91	3,966,319.50	1,308,749.58	423.169
Wyoming	36	1,978,871.44	982.096.43	334.346	16	1,134,717.85	566,523.29	179.060
Totals	2173	$260,052,445.09	$21,650,723.34	21.650.841	1204	$129,524.849.32	$55,421,867.58	9,139.508

$100,000,000 a year for the ensuing three years.

Differences in Two Bills.

Following are the principal points of difference between the two plans as outlined by Representative William N. Vaile of Colorado in the National House of Representatives:

First, the Townsend bill would give the nation a connected system of main trunk lines designed to meet the needs of interstate transportation and leaves the construction in the hands of the national government or requires federal supervisory power where state highway departments are made use of. On the other hand, the federal aid plan deals with each state as a separate unit and provides only that the government shall cooperate with the states, leaving actual construction to the state highway departments.

Second, the Townsend bill would relieve the states of the heavy financial burden involved in the construction of trunk lines and facilitate feeder development by releasing state funds for that purpose, whereas the federal aid plan forces the state to match dollar for dollar with the national government in highway construcion.

Section of Main Highway Near Beaver Falls, Pa., Constructed to Endure Under Extreme Climatic Conditions.

Third, the Townsend bill specifically provides that the national government must forever maintain all national highways, this insuring the least possible waste and greatest possible efficiency, while setting sound precedents for state, county and district construction. The federal aid plan, on the other hand, spefically forbids the states to use national funds for maintenance, thus placing the burden of road upkeep upon the states and civil subdivisions,

Fourth, the Townsend bill would place national construction in the hands of a commission of five men appointed by the President, with the approval and consent of the Senate, and with final power to accelerate the use of funds along sound and economical lines. The federal aid plan places national administration in charge of a bureau of a government department, with the result that legal procedure might greatly delay actual construction.

Fifth, the Townsend bill directs the commission to investigate the principles of transportation and to locate and construct highways to meet the requirements of future traffic and concentrates the expenditure of national funds on a selected system of mileage, while the federal aid plan makes no provision for the scientific location of highways with respect to future traffic development and permits the funds to be scattered over disconnected parts of the total road mileage of 2,500,000 miles without regard to their importance as parts of a connected system.

Sixth, the Townsend bill directs the commission to secure the advice of the state highway departments, with respect to the location of links of the national system, but leaves the final power of selection in the hands of the commission with the proviso that connecting roads must be constructed with the needs of interstate transportation as a first consideration. The federal aid plan leaves the location of federal aid routes to state highway departments, which are obligated to expend the state funds primarily to meet the needs of traffic within the state instead of between the state and adjacent states with the tendency that the federal funds are not concentrated on any main system even within the state itself, but that they are scattered all over the state according to the pressure exercised by the constituents of the department.

Seventh, the Townsend bill has as one of its primary purposes to provide the nation with a connected network of highways which would serve as effective agencies of through transportation in time of war, while the federal aid plan takes no account of the possible military needs of the nation.

Uniform Regulations of Traffic.

Eighth, the Townsend bill provides for uniform regulations of traffic on national highways with the proviso that the civil and criminal jurisdiction of the state shall not be affected thereby, while the federal aid plan makes no provision for uniform regulations of traffic.

Ninth, the Townsend bill provides that only such "durable" types of surface shall be adopted as will adequately meet any existing or probable future traffic needs. The federal aid plan defines an acceptable project as one which is "substantial in character," and it is claimed that 60 per cent. of the total mileage approved to date by the Department of Agriculture has been of a type lower than macadam.

10th, the Townsend bill provides that, where states have constructed sections of highways which are selected as a part of the national system and which are of a standard of construction deemed adequate by the commission, the reproduction cost shall be valued at current prices and wages and the commission shall construct or contract with the state to construct other highways connecting or correlating with the national system and of a mileage equal in value to the highway or part thereof so selected as part of a national system, with the proviso, however, that no cost of maintenance of such roads shall be borne by the government. There is no provision in the federal aid acts for the acquisition by the government of roads already constructed.

11th, the Townsend bill modifies the provision of the federal aid act by which all condemnation proceedings must be instituted by the states, by requiring states to turn over rights of way to the government so far as may be legally possible under the constitution of the state.

12th, under the national system provided for in the Townsend bill, all highways are to have a right of way of not less than 66 feet and a wearing surface of not less than 20 feet except where this is rendered impracticable by physical conditions, excessive cost or legal obstacles. The federal aid acts do not provide any standard widths of roadways.

13th, the Townsend bill unifies all road building activities of the Department of Agriculture under the heading of the Federal Highway commission, which is to take over also such highway duties as are not vested in the Council of National Defense, while the federal aid acts are primarily for the construction of postal routes.

Explanation of Tables.

The accompanying table gives a complete record of the road building projects in the various states in connection with federal aid provisions since the acts went into effect and up to the opening of the present year. The last section, "Project Agreements Executed," gives the actual amount of work done, and a comparison of the totals with those of the other sections will show the proportion between the projects contemplated, approved and actually performed. These comparisons may also be readily made for any particular state or group of states. It will also be noted that the estimated cost of construction and the amount of federal aid desired is included. Under the heading of "No." is stated the number of the different projects or sections of road into which the work is divided. The cost per mile in any state may be easily computed by a consideration of the length in miles in connection with the estimated cost.

Notes of the Industry and Trade

Hebner is President of Bearings Co.

At a recent meeting of the board of directors of the Bearings Service Co., Detroit, Mich., Ralph S. Lane, Harry J. Porter and Alfred K. Hebner tendered their resignations as president, treasurer and secretary, respectively, of the corporation. To fill these vacancies Mr. Hebner was elected president and Dana H. Torrey secretary and treasurer. Messrs. Lane and Porter continue as members of the board of directors.

Messrs. Hebner and Torrey have been connected with the Bearings Service Co. since its inception, the former as general manager and the latter in charge of sales work. Mr. Hebner retains the title of general manager, together with that of president. W. J. St. Onge, formerly with the Wire Wheel Corporation, has been appointed to supersede Mr. Torrey as sales manager.

Founded on a trade mark and an idea in September, 1916, the Bearings Service Co. has grown, in that short space of time, to a nationally known corporation having 33 direct branches and more than 1000 authorized distributors. The concern acts as the service department of the Timken and Hyatt roller bearing companies and the New Departure Manufacturing Co.

NEW CORCORAN LAMP FACTORY.

Due to the increased demand for its product, the Thomas J. Corcoran Lamp Co., Winter place, Cincinnati, O., has been obliged to construct a new factory, an illustration of which is shown. It is unnecessary to add that this building is modern in its every detail. It will supply 100,000 additional square feet of floor space.

The Thomas J. Corcoran Lamp Co. manufactures the well known Cor-Co-Lite automobile lamps.

The Roller-Smith Co., 233 Broadway, New York City, announces changes in sales organization:

G. L. Crosby, previously sales manager, is now general sales manager at New York City: M. Frankel, previously assistant sales manager, is now western sales manager at Chicago: W. J. Shire, previously a sales engineer, is now eastern sales manager at New York; C. G. Kahant, sales engineer, now export and district sales manager, N. Y.

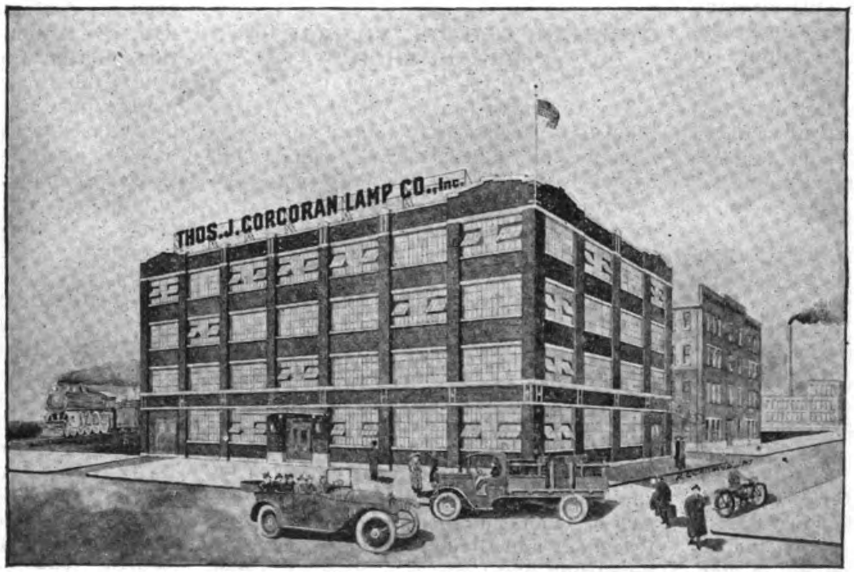
Alfred K. Hebner, New President of Bearings Service Co.

SEMI-ANNUAL STATEMENT OF EISEMANN CORPORATION.

The statement of business transacted by the Eisemann Magneto Corporation, Brooklyn, N. Y., for the first six months of 1920 throws light on the status of the automobile industry as a whole since its condition is directly reflected in the production of ignition apparatus.

Orders and contracts on hand Jan. 1, 1920, totaled $2,978,362, or $1,500,000 increase over the corresponding date last year. Orders and contracts on hand July 1, 1920, were $3,442,380, or an increase of 100 per cent. over July 1, 1919.

Net sales for the first six months of 1920 were $2,316,482. For the last six months of 1919 they were $1,665,581, the first six months of 1920 showing an increase over the preceding half year of $650,000.


THOS. J. CORCORAN LAMP CO., Inc.

New Factory of Thomas J. Corcoran Lamp Co., Cincinnati, O.

New Addition for Heil Plant

The Heil Co., maker of Quality tanks, bodies and hoists, Milwaukee, Wis., is constructing an addition to its factory in that city. The annex is 136 by 260 feet, which will make a total of approximately 150,000 square feet of floor space. The new equipment will include two crane runways, one 40 and the other 50 feet, for 10-ton cranes. This will make a total of seven 10-ton cranes in operation.

The addition is to be used for a stock room and new machinery for cutting steel is being installed. Part of the increased space will be devoted to the mounting of truck bodies, hydro hoists and compartment truck tanks, and considerable room will be taken up by the building of gasoline storage tanks in which field the Heil Co. is a leading manufacturer.

FEDERAL TRUCK CO. NOT TO CLOSE.

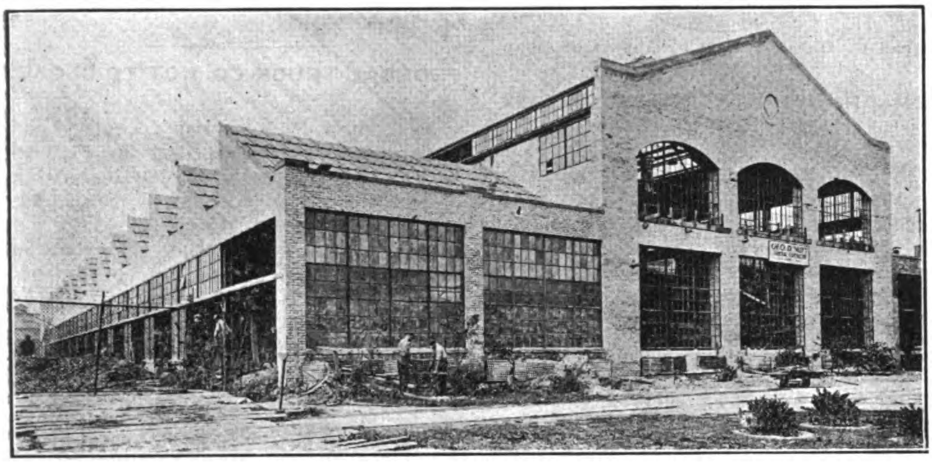
An erroneous story has recently been circulated to the effect that the Federal Motor Truck Co. contemplated shutting down its plant on account of lack of orders. The Federal Motor Truck Co. authorizes the statement that that concern not only has no intention of closing, but is, on the other hand, continuing on the greatest production schedule in its history, laid out at the beginning of 1920, and has produced, up to July 1, in spite of switchmen's strikes and other delaying factors, more than its original schedule for six months. In spite of this there has never been a time when the end of orders has even been within striking distance. The Federal Co. has been far behind orders, both domestic and foreign since April of last year. Further, not a man in the Federal factory has been laid off—new machinery is being placed, and a new building of 60,000 square feet area, which is badly needed, is being rushed to completion, to supplement the 250,000 feet now under roof and crowded with trucks in the process of manufacture.

More than this, Federal is not only carrying the largest inventory in its history, but is constantly making large additions to it. This is necessary because of the greatly augmented production schedule undertaken because of the demand for trucks this year. The demand for Federal trucks has not waned.

Detroit Steel Products Adds to Plant

It is stated that additions to the motor spring department of the Detroit Steel Products Co.'s plant at 2250 East Grand boulevard, Detroit, now nearing completion, will make that concern the largest motor leaf spring manufacturer in the world. This new shop will have a capacity of 1,920,000 springs a year, enough to equip 45,000 cars and trucks a month, or 540,000 vehicles a year. For several months, with its present facilities, the Detroit Steel Products Co. has been turning out 2000 tons or more of springs a month, and when the addition is under operation this will be increased to 3000 tons a month.

A new forge shop, with steel storage bins, 242 by 65 feet, is included in the addition. The steel will be unloaded directly from the cars by means of 10-ton electric cranes that will transport it to the storage bins and forge shops. The bins will have space for 20,000 tons of steel. The forge shop will be equipped throughout with the latest designed spring making machinery, an example of which is the new spring-forming machine that forms, quenches and hardens the leaf in a single operation. This machine turns out an eight-leaf spring each revolution, requiring about one minute of time and greatly reducing the labor.



New Addition to Motor Spring Department of Detroit Steel Products Co., Detroit, Mich.

At the present time the Detroit Steel Products Co. is making about 110,000 completed springs a month and supplies about 50 pleasure car and truck manufacturers, and among them may be mentioned the following:

Acason, Acme, All-American, Commerce, Columbia, Denby, Dodge, Auburn, Gary, GMC, Cole, Hawkeye, Apex, Winther Maxwell, Graham, Wichita Triangle Master, Jumbo, Bell, Hall, Tower, Traffic, Stewart, Transport, National, Chalmers, Paige, Defiance, King Trailer, Signal, Olson Unit, Huron, Lone Star, Bollstrom, Higrade, Ace and Stephens Six.

The Detroit Steel Products Co. also manufactures Fenestra WindoWalls in what is claimed to be the largest factory in the world engaged exclusively in making steel windows.

MEETING OF ACCESSORIES BRANCH, NATIONAL HARDWARE ASSN.

The third annual meeting and exhibition of the accessories branch of the National Hardware Association of the United States will be held in the Coliseum, at St. Louis, Mo., Tuesday, Wednesday, Thursday and Friday, Nov. 30, Dec. 1, 2 and 3. Each associate member of the association will be allotted, without charge, a booth for the display of accessories, supplies or equipment. The Hotel Statler has been selected as headquarters and arrangements have also been made for the accommodation of delegates at the Planters', Jefferson and Marquette hotels.

SEWELL CUSHION WHEEL DISTRIBUTORS.

The Sewell Cushion Wheel Co., Detroit, Mich., announces the following appointments as distributors for Sewell cushion wheels:

Gibbes Machinery Co., Columbia, S. C., state of South Carolina; 805 Tire Co., Fort Wayne, Ind., for northern Indiana; Casper Supply Co., Casper, Wyo.

Direct factory assembly plants are under erection in Chicago, New York and San Francisco.

DYCKMAN GARAGE VILLAGE AND REPAIR SHOP.

The Dyckman Garage Village & Repair Shop has purchased 10 lots in the Dyckman section on 202nd street, east of 10th avenue, New York City, on which to erect a number of garages, each with steam heat and water supply, with a central supply structure.

HAYNES TO HAVE SERVICE CONVENTION.

The Haynes Automobile Co., Kokomo, Ind., is to hold a two-day business convention for the benefit of its dealers and salesmen at the factory Aug. 30 and 31. Arrangements are in the hands of 10 committees, each headed by an executive or official of the company with Vice President and General Manager Alton G. Seiberling and Gilbert U. Radoye in general supervision.

National Chemical Industrial Exposition

Among the exhibitors at the Sixth National Exposition of Chemical Industries in the Grand Central Palace, New York City, Sept. 20 to 25, inclusive, are listed the following:

Allis-Chalmers Manufacturing Co., American Hard Rubber Co., American-La France Fire Engine Co., Barrett Co., Brown Instrument Co., Carborundum Co., E. I. Du Pont de Nemours, General Bakelite Co., General Electric Co., Midwest Engine Co., Northwestern Chemical Co., Warner Chemical Co., Westinghouse Electric & Manufacturing Co.

Among the other features on the programme will be a symposium devoted to "Fuel Handling and Economy," which will be of especial interest to those concerned in the automotive industry.

NEW MERCER CATALOGUE.

An attractive catalogue, descriptive of the Mercer car, has just been issued by Hare's Motors, which now controls and operates the Mercer and Locomobile factories.

Two models have been added to the Mercer line this season, a touring limousine and a four-passenger coupe. The new touring limousine is of the sedan type with an adjustable glass partition between the driving and rear compartments. It thus appeals particularly to the owner-driver.

The standard 22.5-horsepower Mercer chassis, with 132-inch wheelbase, is used on both these new models, and the body construction is up to the standard of the other members of the Mercer line.

The new cars are to be available for delivery this month, and the catalogue may be obtained from Mercer distributors or from Hare's Motors, 16 West 61st street, New York City.

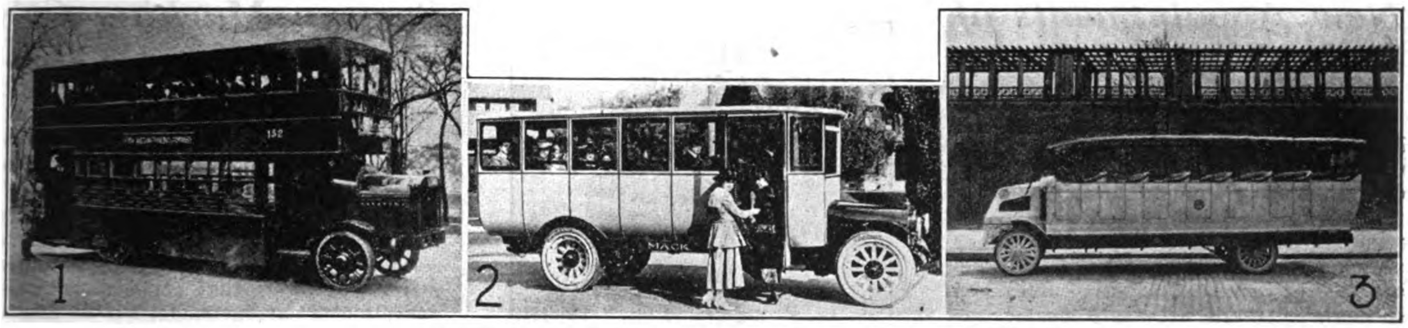
PHILADELPHIA USED CAR DEALERS' ASSOCIATION.

The Philadelphia Used Car Dealers' association, which consists of reputable used car dealers of that city, cooperating with the Automobile Salesmen's association, Better Business bureau, Philadelphia Sabbath association and similar organizations, started a movement the first of the season to keep closed Sundays, and the plan has worked so well and met so unanimously with the approval of the public that all members of the associations have agreed to continue to stay closed Sundays.

OAK RUBBER CO. REBUILDS.

The Oak Rubber Co., Ravenna, O., is erecting new buildings on the site of its plant which was burned last March. The new factory will consist of a one-story work shop, 60 by 170, and main building, 60 by 180.

The Miller Defee Tire Co. has entered business at 111 East Fifth street, Fort Worth, Tex., as authorized agent for Gates half-soled tires.



Some of the Latest Types of Passenger Busses: 1, Two-Deck Bus Now in Service at Chicago; 2, Standard Single-Deck Enclosed Bus Body; 3, Open Bus with Folding Top and Side Door Body on a Mack Chassis.

Samson Managers' Sales Conference

The Samson Tractor Co., Janesville, Wis., recently held its first semi-annual sales convention at the factory, which was attended by branch managers from as far North as Canada, Texas in the South and Syracuse, N. Y., in the East, as well as from many points West. The aims, policies and selling plans of the organization were outlined by President J. A. Craig and General Sales Manager C. C. Clay.

In the accompanying illustration is shown a group of the company's executives, taken during the convention. Reading from left to right are seen J. F. Campbell, branch manager, Samson Tractor Co., Indianapolis, Ind.; L. L. Putney, branch manager, Samson Tractor Co., Syracuse, N. Y.; L. R. Wright, branch manager, Samson Tractor Co., Atlanta, Ga.; James McMullen, branch manager, Samson Tractor Co., Denver, Col.; R. L. Samuel, branch manager, Samson Tractor Co., Fargo, N. D.; W. C. Manning, branch manager, Samson Tractor Co., Kansas City, Mo.; L. A. Gano, branch manager, Samson Tractor Co., Baltimore, Md.; S. S. Bean, branch manager, Samson Tractor Co., Peoria, Ill.; H. M. Craig, assistant to sales manager; W. E. Husting, branch manager, Samson Tractor Co., Janesville, Wis.; C. C. Clay, general sales manager; M. C. Parrott, branch manager, Samson Tractor Co., Des Moines, Ia.; L. F. Garlock, assistant to sales manager; W. L. Sample, branch manager, Samson Tractor Co., Minneapolis, Minn.; J. S. Rapley, Flint, Mich.; C. E. McTavish, sales manager, Samson Tractor Co. of Canada, Ltd., Oshawa, Ont.; W. D. Hoyt, branch manager, Samson Tractor Co., Omaha, Neb.; K. V. Hook, branch manager, Samson Tractor Co., Dallas, Tex.; A. J. Ferrielle, branch manager, Samson Tractor Co., Memphis, Tenn.; D. W. Robinson, manager advertising division; J. W. Miller, manager parts and service division; F. E. Walser, branch manager, Samson Tractor Co., Sioux Falls, S. D.

NEW ADDRESS OF NATIONAL CHAMBER OF COMMERCE.

The National Automobile Chamber of Commerce announces that it has moved into its new headquarters in the Marlin-Rockwell building, New York City, and that its address is now 366 Madison avenue, at 46th street. The telephone number will remain as formerly, Murray Hill 5804.

JACQUET MOTORS NOT TO MOVE.

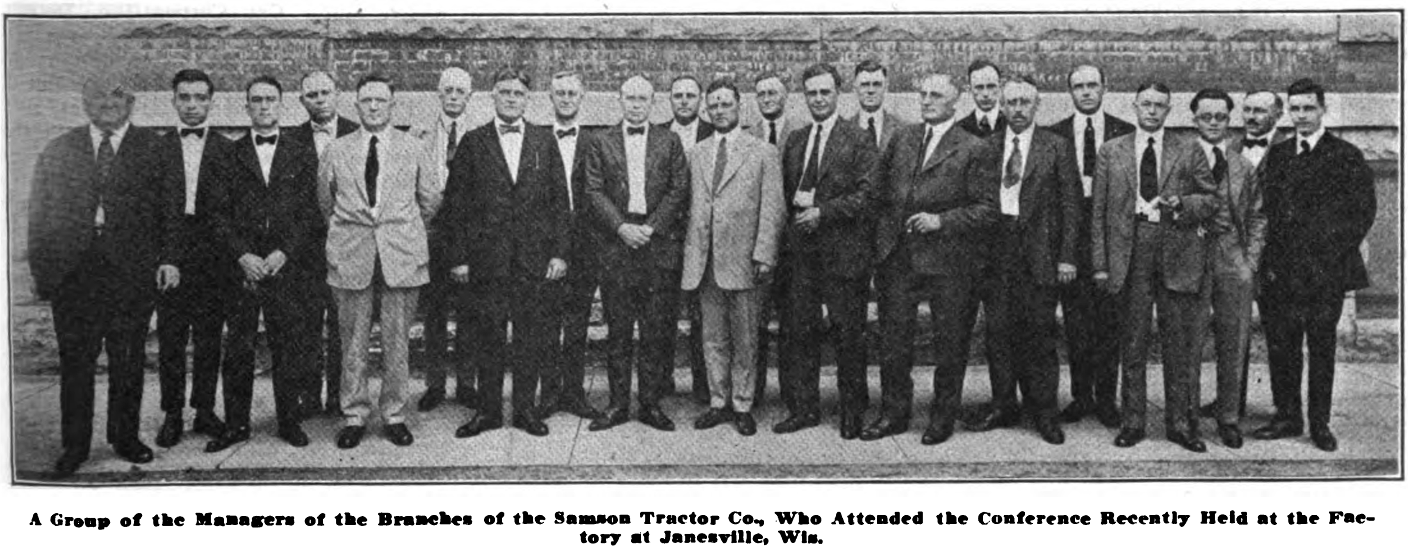
L. W. Wilson, vice president and general manager of the Jacquet Motors Corporation of America, Belding, Mich., states that rumors recently circulated to the effect that that concern was to move its factory to Manitowoc, Wis., were absoluely without foundation. Mr. Wilson says that his company does not intend to move its factory to any other town.

Passenger automobiles or trucks, or both, are made in 32 states in this country.

New M. A. M. Association Members

The following automotive concerns have recently been elected to membership in the Motor & Accessory Manufacturers' association:

Adams Axle Co., 433 West Main Cross street, Findlay, O., manufacturer of passenger car, truck, tractor and trailer axles; Asch & Co., Inc., 16-24 West 61st street, New York City, flower vases, belt hinges, locking devices, etc.; Atlas Crucible Steel Co., Howard avenue, Dunkirk, N. Y., carbon and alloy steel; Duplex Rim Device Co., 7546-7548 South Chicago avenue, Chicago, Ill., rim devices and other accessories; Kalamazoo Spring & Axle Co., 401 Portage street, Kalamazoo, Mich., flat leaf automobile, carriage, wagon, motorcycle and bumper springs; Kelso Manufacturing Co., 58 Market street, Trenton, N. J., asbestos brake lining and clutch facing; Miller Rubber Co., Akron, O., automobile tires, tubes, accessories and repair material; Norton Co., New Bond street, Worcester, Mass., grinding wheels, machinery and abrasive materials; Rome Wire Co., Clyde avenue, Buffalo, N. Y., automobile lighting, starting and ignition cables; Russell Manufacturing Co., Middletown, Conn., brake linings, woven and fiber clutch facings, fan belts, web straps, top webbings, hood and radiator lacings, anti-squeak webbing, belting; Tillotson Manufacturing Co., City boulevard and M. C. R. R., Toledo, O., carburetors; Westinghouse Union Battery Co., Swissvale, Pa., lead storage batteries.



A Group of the Managers of the Branches of the Samson Tractor Co., Who Attended the Conference Recently Held at the Factory at Janesville, Wis.

New Appointments of Corcoran Co.

The constantly increasing demand for Peerless Guaranteed products for Ford cars, and the swiftly expanding business of the Corcoran Manufacturing Co. in the western territory has caused the appointment by that concern of Rex H. Finney as manager of western sales, with headquarters at Denver, Col. Mr. Finney was formerly a retail accessory dealer, going from that into the accessory jobbing business, for years being active in the organization of the Hippee-States Co., Des Moines, Ia. He thoroughly understands the Peerless line and will personally travel in the Middle West and Western Coast states and western Canada in the interests of the nationally advertised line of Peerless radiators, fenders, hoods, tool boxes, etc., for Ford cars.

The Corcoran Manufacturing Co. also announces the appointment of Edward L. Allis to be manager of eastern sales, with headquarters in Boston. Mr. Allis organized and formerly managed the accessory department of Butts & Ordway of Boston and was also formerly sales manager of the Motor Car Equipment Co. of that city. He is thus well versed in all phases of the accessory business and will render intelligent service to the trade in his field.

THE BROWN SPRING OILER.

A satisfactory way to obviate annoying squeaks in spring shackles, leaves, etc., is to equip with Brown spring oilers, which are being marketed by the Brown Spring Oiler Co., 6911 Carnegie avenue, Cleveland, O., and are especially designed to feed the lubricant in between the spring leaves automatically while the car is running. This works out the rust and polishes the leaves. Brown spring oilers permanently maintain a film of oil between the spring leaves by feeding the lubricant continuously through the sides. Capillary attraction draws the oil between the leaves and the feathering action of the spring forces the oil along their entire length. A liberal supply of oil will quickly flush out the worst rust, it is claimed, and, with the rust gone, the leaves soon begin to polish themselves. In this condition the springs flex freely and carry their load smoothly.

The company also makes a special type of pump oil can, which is recommended for general oiling, at a list price of $2.50.

NEW ACME TRUCK CATALOGUE.

The Acme Motor Truck Co., Cadillac, Mich., has just issued the 1920 edition of its motor truck catalogue under the appropriate title, "Pointers to Profits." It includes complete information of the construction, specifications and tested utility of the vehicles manufactured by this company, and is effective in the subject matter of its text and clarity of its copious illustrative features. The various body equipments are detailed and specifications given showing their adaptation for different classes of work.

Rex H. Finney, Manager of Western Sales for Corcoran Manufacturing Co.

COLUMBIA DATA SHEET SERVICE.

The National Carbon Co. of Cleveland, O., and San Francisco, Cal., has recently increased the scope and efficiency of the Columbia data sheet service for users of motors and generators so that they may now be assured of absolutely correct brushes for these machines. The data sheet furnished has 20 blank spaces in which the user indicates whether the brushes are needed for a generator, motor or rotary converter, also the service for which it is used, whether the current is direct or alternating, the name of the manufacturer, the type and serial number of the machine, voltage, capacity, load measurements, etc.

From these data, in connection with exhaustive laboratory tests, it is possible for the National Carbon Co. to furnish Columbia Pyramid brushes best suited for the exact operating conditions. Through this service of investigation, analysis and specification, it is possible to guarantee satisfaction with these brushes.

Edward L. Allis, Eastern Sales Manager for Corcoran Manufacturing Co.

Puritan Machine Co's Recent Purchases

The Puritan Machine Co., Detroit, Mich., has recently completed the consummation of important business connections as follows:

It has taken over from the Rutenber Motor Co., Marion, Ind., the complete service business covering all motors manufactured by that concern with the exception of current model No. 25 now in production.

From the Fairbanks-Morse Co., Three Rivers, Mich., the complete service repair business of marine engines has been purchased on all components formerly manufactured by that company; also that of the Sheffield Car Co.

The purchase is announced by the Puritan Machine Co. from the Standard Parts Co. of the complete service business covering the Hess axle division formerly located at Cincinnati, O. This is the 371st service taken over by the Puritan Co.

All service parts, tools, jigs, blue prints, etc., belonging to these various concerns have been moved to the main plant of the Puritan Machine Co. at Detroit, and all orders in the future should be directed to the Puritan Machine Co., Lafayette boulevard, at 10th street, attention factory sales department.

MORE MOTOR CARS IN MAINE.

Up to the first of June, this year, automobile fees to the amount of $614,934 have been received in Maine as against $520,655.75 for the corresponding period last year, an increase of $94,278.25.

A total of 58,954 operators' licenses have been issued and 41,907 automobiles, 5728 trucks, 573 automobile dealers, 923 motorcycles and 20 motorcycle dealers have been registered. Last year 48,856 operators' licenses were issued and 36,175 automobiles, 4301 trucks, 493 automobile dealers, 978 motorcycles and 17 motorcycle dealers were registered in the same period.

SAXON TO SUPPLY ALL PARTS.

When the manufacturing policy of the Saxon Motor Car Corporation, Detroit, Mich., was recently changed, it was predicted that the owners of earlier models would be unable to secure parts. But C. L. Fox, sales manager, states that, as a matter of fact, in conformity with the inflexible standard of service, always maintained by the Saxon Co., new parts will be supplied direct from the factory for every model of the Saxon that has ever been produced; that the Saxon organization stands back of every car produced and is equipped for full protection and constant service.

LARGE ORDER FROM FORD CO.

The Automotive Products Corporation, Hazelton, Pa., manufacturer of pistons, piston pins, etc., is at present at work filling an order of 350,000 pistons and 1,000,000 wristpins for Ford Motor Co.

Personal News of Industry and Trade

Wilson Sales Manager for New Chrysler

E. B. Wilson, formerly director of sales for the Buick Motor Co., has been appointed sales manager for the new Chrysler six-cylinder car to be introduced this season by the Willys Corporation. Mr. Wilson's headquarters are at Elizabeth, N. J., where the offices of the Chrysler car are located. This appointment follows a long and close acquaintance with Mr. Wilson's qualifications by Walter P. Chrysler, executive vice president and general manager of the Willys Corporation. Mr. Wilson's experience covers a long range of intensive motor car merchandising. His rise in that field has been rapid and steady since he resigned 10 years ago as branch manager for the John Deere Plow Co. at Columbus, O., to occupy a similar position with the Buick Motor Car Co. in Chicago, from which, after one year, he was promoted to be manager of the Memphis, Tenn., branch. Eighteen months later he became Buick manager in Philadelphia, and was made director of sales at the end of 1918. A huge plant is being constructed for the accommodation of manufacturing operations on the new Chrysler car at Elizabeth.

Jay Chamberlin has been appointed manager of the Cleveland, O., branch of the Pennsylvania Rubber Co., Jeannette, Pa., and L. J. Waldron, manager of the New England territory, with headquarters at Boston. Mr. Chamberlin has been identified with the Pennsylvania company for the past two years as a representative in the Chicago territory, and Mr. Waldron has for the past five years acted as assistant manager at the Boston branch.

Arthur J. Lewis has joined the Franklin Automobile Co., Syracuse, N. Y., as an assistant in the chemistry laboratory, and will make a special investigation of paints, varnishes and enamels in connection with their use on automobiles. He is a graduate of Amherst college and passed the last three years as head of the paint division of the United States bureau of standards at Washington, D. C.

Charles P. Grimes, who was in charge of dynamometer laboratory tests for the government during the war, has joined the Franklin Automobile Co., Syracuse, N. Y., as research engineer. He was formerly experimental engineer with the Wheeler & Schebler Carburetor Co., Indianapolis, Ind.; the National Motor Car & Vehicle Co. and the Root & Vandervoort Engineering Co., Moline, Ill.

Nathaniel Stone, general manager of the Cadillac Automobile Shop at Albuquerque, N. M., the largest plant of its kind in the state, recently died in that city. He is survived by a wife and one daughter.

F. C. H. Troesch, export manager for the American Rubber & Tire Co., has sailed for Europe for an extended business trip.

K. P. Drysdale, Who Recently Joined Brooke, Smith & French Agency.

George H. Kiley has been appointed assistant district manager for the Goodyear Tire & Rubber Co., with headquarters at Denver, Col. He was formerly assistant branch manager at New York and before going to Denver was in charge of the field activities of Goodyear's "Motorize the Farm" bureau. He has been with Goodyear for 10 years.

E. L. Triffitt, formerly secretary of the Chamber of Commerce, Connersville, Ind., and who has had wide experience in the publicity field, has been appointed advertising manager of the Rex Manufacturing Co., Connersville, Ind.

William R. Parker is erecting a one and two-story garage and service building, 58 by 177 feet, at 1316-1320 Poplar avenue, running through to Ogden street, to cost $30,000.

E. B. Wilson, Sales Manager, for New Chrysler Car.

Drysdale Makes New Agency Connection

K. P. Drysdale, a widely known advertising man, has joined the agency of Brooke, Smith & French, Inc., Detroit, Mich., as special advertising and merchandising counsel. For more than 12 years Mr. Drysdale was associated with the Cadillac Motor Car Co., first as assistant sales manager and for 10 years as advertising manager. His work as an analyst of media and copy has earned for him recognition as one of the foremost directors of publicity. Among the increasing list of clients of Brooke, Smith & French, of which Mr. Drysdale will assume direction, is the Lincoln Motor Co., headed by Henry M. and Wilfred C. Leland, for many years the chief executives of the Cadillac Motor Car Co., Detroit, Mich.

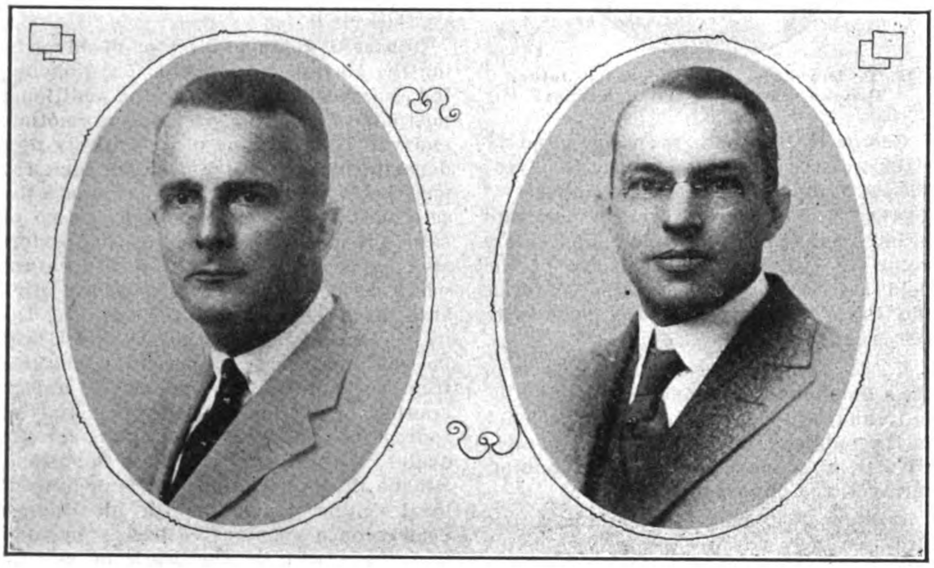
Gilbert U. Radoye, director of advertising the Haynes Automobile Co., Kokomo, Ind., has been appointed to the additional position of director of sales promotion, and will be in charge of an entirely new department to be organized by him, the purpose of which will be to stimulate the sale of Haynes cars through a system of sales promotion. Mr. Radoye had extensive experience in work of this nature while associated with the selling division of the Packard Motor Car Co., Detroit. One feature of the new work will be the analyzing of potential markets from both the factory and dealer angle; another will be the development of sources of prospective customers for the dealer; a third, and the most important, will be the preparation and launching of local selling campaigns for all Haynes dealers on a cooperative basis. In addition there will be the work of getting high-grade representation everywhere, the preparation of prospect letters for dealers, the compiling of detailed information, statistics and specifications and the furnishing of data to salesmen concerning the Haynes selling and advertising plans.

Joseph L. Hardig has been appointed by H. A. Brown, Jr., manager of the motor bearings division of the Hyatt Roller Bearing Co., as advertising manager of this division. Mr. Hardig was for several years advertising manager of the Remy Electric Co., during which time he produced the book, "Starting, Lighting, Ignition—Simplified." For the past 15 months he has been assistant advertising manager of the motor equipment division of the General Motors Corporation. Mr. Hardig will direct all the advertising activities of the motor bearings division which covers the motor car and truck fields.

Edward Kippax of Philadelphia, formerly an official of George W. Kendrick & Co., banker, has become treasurer of the Spacke Machine & Tool Co., Indianapolis, Ind., succeeding W. N. MacAfee of Pittsburgh, Pa. Mr. Kippax will make his headquarters in Indianapolis.

Carroll Sales Director for Fairbanks

Hazen Carroll has been appointed director of sales for the Fairbanks Co. in the United States and Europe. He is an engineer by profession and was formerly in the experimental department of that company in Detroit. The Fairbanks Co. is doing some publicity work at the present time in the moving picture field, as 4000 feet of film has been prepared showing the labor saving devices and machinery of the company. This service will be extended in the fall to the principal cities of foreign countries, head lines and titles of course being in the various languages to accompany the films. The company is also planning to continue the "clinics" that proved so successful the past season. One item in the extension of the service department is the recent completion of a service station in Chicago. 360 by 100 feet.



George H. Crossan, President, and S. X. Newman, Vice President, Automatic Safety Tire Valve Corporation.

B. C. Helm, C. R. Norton, H. S. Norton, Fred H. Miller, J. Murray Page, C. A. Kingsley and Erle E. Devlin have been appointed by Henry Lansdale, vice president of Hares' Motors, as special representatives. Mr. Helm was recently eastern district manager of the Packard Motor Car Co. H. S. Norton was recently vice president of the Packard Cleveland Co. Mr. Miller was recently general carriage sales manager of the Packard Pittsburgh branch and formerly metropolitan district manager of the Packard New York branch, and prior to that manager of the Packard branch in Brooklyn. Mr. Page was with the Locomobile Co. of America for 15 years as branch manager in Los Angeles, Cal., and Chicago, Ill., and was more recently Locomobile western representative. Mr. Devlin was formerly a district manager attached to the Buick Philadelphia branch and later general manager of the Bigelow-Willey Motor Co., Paige distributor in Philadelphia, New Jersey, Delaware and Maryland. C. R. Norton was formerly general distribution manager of the Packard Motor Car Co. in charge of all sales of passenger cars, trucks, air planes, etc. He has been assigned to the western field for Hare's Motors. Mr. Kingsley, a veteran Locomotive executive, recently Locomobile branch manager in Pittsburgh, Pa., and has been in the Locomobile western district and a special Locomobile representative in New England, on the Pacific coast and in the South.

Hiram Harris, president of the Bethlehem Motors Corporation, has resigned this office to which he was elected last January. He has also been general manager for the past year. Mr. Harris joined the Bethlehem organization originally in connection with the work of enlarging the great plant of the company at Allentown, Pa., and in putting into large production the big plant at Pottstown, where Bethlehem motors are made. His work had to do with the building up of the organization generally and having completed the task he undertook he has tendered his resignation to take up other duties after a brief respite. It will be remembered that Mr. Harris also achieved great success during his connection some time ago with the Republic Motor Truck Co., Alma, Mich.

Harry G. Robinson of Bridgeport, Conn., has taken the position of general superintendent of the Lincoln Machine Co. of Pawtucket, R. I., manufacturer of automobile parts, textile feed rolls, special machinery and tools. During the past four years Mr. Robinson has been assistant superintendent of the Locomobile Co. of Bridgeport, in charge of production methods and general equipment. He also at one time held an executive position with the Taft-Peirce Co., Woonsocket, R. I.

Robert Gordon, 3rd, and C. A. Selheimer, under the firm name of Gordon Motor Co., have assumed the representation of the Hanson automobile at 723 North Broad street, Philadelphia.

Charles W. Hatch, well known in the automobile trade in Brooklyn, N. Y., died Aug. 11 at his home on the Glenham road, St. Albans, N. Y.

Automatic Tire Valve Officials

George H. Crossan, president and **S. X. Newman**, vice president of the Automatic Safety Tire Valve Corporation, New York City, manufacturer of the Whistler pressure regulator for tires, will represent that concern at future conventions of the Automotive Equipment association. The Automatic Safety Tire Valve Corporation has just been elected a member of the association, which is an indication of the steadily increasing popularity of Whistlers among accessory jobbers and dealers.

Henry Lansdale, vice president in charge of distribution and maintenance of Hare's Motors, the controlling company for Locomobile, Mercer and Simplex cars, has announced the following appointments: P. W. Hine has been made general distribution manager with offices in New York City, to succeed E. A. Travis, who has taken over the New York Locomobile branch. Mr. Hine was, until recently, Locomobile division distribution manager, and prior to that assistant sales manager of the Locomobile Co., being connected with the Locomobile Co. previous to the organization of Hare's Motors for eight years. Mr. Hine was succeeded as distribution manager of the Locomobile division by H. C. Wessman, who was manager of the specification department of Hares' Motors. L. B. Waters succeeds Mr. Wessman.

Harry A. Biggs has been appointed a director and vice president of the Studebaker Corporation of America, in charge of domestic sales, in recognition of his efficiency as general sales manager of the automobile division for the past year. E. H. McCarthy, Mr. Biggs' chief assistant, will hereafter have the title of assistant to the vice president. L. J. Ollier director and vice president, who has just returned from a trip around the world, will be in charge of export sales, including Canada. H. S. Welch will remain with Mr. Ollier as assistant to the vice president.

Frank C. Kip, formerly sales promotion manager of the Packard Motor Car Co., has disposed of his interest in and resigned as president of the Automotives Products Corporation of California to become general manager of the George D. Bailey Co., Chicago service division for Shafer roller bearings. Mr. Kip will have entire charge of sales and advertising, in which field he has had broad experience.

M. L. Pulford has been appointed service engineer in charge of the service department of the Commerce Motor Car Co., Detroit. He has been in the employ of the Commerce Co. for the past seven years, most of that time in the engineering department.

C. B. Morse has become general advertising manager of Hare's Motors, with headquarters in New York City, succeeding John A. Kingman. Mr. Morse was until recently advertising manager of the Packard Motor Car Co. of New York.

Cooperation Between Sales and Service Departments

(*By R. B. Perry, Service Manager, Allen Motor Co.)

WHAT THE SERVICE DEPARTMENT EXPECTS OF THE SALESMAN.

First—That he inform himself fully in regard to the functions and policy of the service department.
Second—That he will, as a rule, follow the policy of "hands off" in matters pertaining to service.
Third—His hearty support at all times.
Fourth—To report conditions that call for attention.
Fifth—That in recommending dealer contracts full consideration be given to the importance of the dealer's service facilities.
Sixth—That he refrain, in general, from technical discussions unless thoroughly qualified to participate therein.
Seventh—That he know the limitations of the car he is selling and makes no extravagant claims.

WHAT SERVICE DEPARTMENT OWES TO SALESMAN.

First—It should supply him with necessary information in regard to functions and policy.
Second—All claims should be promptly adjusted.
Third—It should support the salesman at all times
Fourth—A representative should be sent to any point needed on short notice.
Fifth—Salesman's choice of dealers should be backed up by thorough and intelligent educational effort to the end that they may learn to help themselves.

IT WOULD be quite possible to condense this paper into a single word, which would be a comprehensive statement of the ideal relations between sales and service—the word "cooperation." Nor would such a statement be likely to invite criticism. There are some watchwords which, popular for a time, eventually fall into disrepute through misapplication or misuse. It would probably not be difficult to start an argument here over such terms as "System" and "Efficiency." Both are elements essential to the proper conduct of any business, but we have come to understand that both may be overworked. "Too much system" has spelled defeat to many an enterprise and "efficiency" is a good servant, but a poor master.

Cooperation cannot, however, be placed in this category. It is expressive of the principle which actuated our primitive forbears to band together against common foes; it is the underlying principle of government; it supplied the motive for the formation of these United States of America; it was the formula which merged the somewhat conflicting interests of our allies in the world war into a single driving force which led to victory; it is the solution to the vexing problem of the relations between capital and labor. It is, nevertheless, a principle which has been to some extent overlooked in our industrial relations. This is the day of specialization. In every field of endeavor we have become specialists. Nor is this tendency to be discouraged. As the fund of world knowledge grows, each one of us must of necessity select some comparatively narrow field in which to specialize. Yet it is highly important that each one of us keep his perspective and recognize that his own endeavor is important, not so much in itself, as in its relation to the endeavor of his fellows—in other words the higher the degree of specialization the greater the need for cooperation in its fullest sense.

Starting with this text, let us pass to a consideration of our subject—dividing it, for it is really a double subject—and taking up first the question of "What the Service Department Expects of the Salesman."

Service Department and Salesman.

First, the service department expects that the salesman—whether he be connected with the factory organization or a retail man dealing with our friend, Mr. Ultimate Consumer—to inform himself fully of the functions and policy of the service department. There are perhaps no more serious problems in service than those resulting from promises or inferred promises made by salesmen who are not sufficiently informed or who are carried away by misdirected zeal. The prospective dealer or owner accepts statements made by salesmen as official and his faith in the organization with which he is dealing, if not in the product itself, is badly shaken if he later discovers that he has been misled. Certainly sound business is founded on sincerity and misleading statements cannot be construed as other than insincere. The service department expects the salesman, therefore, to sell only such service as is offered by the company he represents.

Salesmen and Service.

Second, the service department expects that the salesman will, as a rule, follow the policy of "Hands Off" in matters pertaining to service. The traveling service representative or service manager who would, in his relations with the trade, undertake adjustments in territory or revise schedules for delivery would certainly be unpopular not only with the sales department, but with the management. Yet has a salesman, on the other hand, any more right to arrange adjustments on defective parts or to agree to send a service territory man on a specified date for an unlimited stay in some dealer's territory? Surely the service man may suggest or recommend revisions of territory or shipping schedules if he has information which permits him to make suggestions or recommendations intelligently and surely the salesman may make similar recommendations with respect to service functions, but in both cases action on the part of sales or service men should be strictly limited to recommendations and should never be complicated by promises made the dealer or owner.

Hearty Support for Service Department.

Third, the service department expects the salesman's hearty support. It should be taken for granted by the salesman that the service department is operating in a manner satisfactory to and in accordance with a policy approved by the management. In his travels through the territory the salesman will inevitably meet dealers and owners who will complain of service. Without question the service department, from the nature of its functions, is constantly subject to criticism. If a repair part does not arrive promptly, or the wrong part is received, the service department is usually blamed. Yet the service department has no control over the vagaries of the mails and telegraph—it cannot regulate express and freight movements, nor can it be held responsible if an order calls for a propeller shaft when an axle shaft is really wanted. Nevertheless, the dealer or owner will complain and if the salesman at this more or less critical point takes the stand that he is right, serious harm may be done. Let him learn in detail the nature of the complaint and refer it to the service department for investigation, assuring the dealer or customer that all errors for which his company may be responsible will be rectified.

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*Abstract of paper read at Service Managers' convention at Indianapolis, Ind.

Salesman Should Report Conditions.

Fourth, the service department expects the salesman to report conditions in the territory which call for attention on the part of the service department. It is recognized that well intentioned effort on the part of this department may at times result in complications in certain territories which in turn develop sales resistance. The quickest way to clear up such situations is to report fully with respect to each case from the salesman's angle. Not only should the service department profit from each case of this kind with which it has to deal and be in a position to avoid repetitions, but the salesman will shun the risk of losing prestige which is likely to result from efforts to make adjustments on his own initiative.

Importance of Service Facilities.

Fifth, the service department expects that the factory salesmen will, in recommending dealer contracts, take into full consideration the importance of the dealer's service facilities. It sometimes seems that the salesman's estimate of a prospective dealer's desirability from a factory standpoint is based upon the dealer's location on Automobile Row, his financial responsibility and the size and quality of his sales force. Those of us who have, however, struggled with problems of service would be more likely to push through the imposing show room, brush aside the courteous and attentive salesman—even shut our ears to glowing recommendations of the bankers—and see for ourselves whether or not the dealer we were considering had a well-lighted, well-manned and clean service station, provided with necessary equipment and backed up by a well stocked parts room. We would be interested to learn whether or not the same courtesy were extended the owner by the service department that had been accorded him by the salesman and whether the owner recommended the dealer in the same hearty terms as did the banker. If we found conditions favorable here we could overlook certain shortcomings in the matter of location, sales force or even finances, because we would feel that these shortcomings would be speedily overcome as a result of the sales impetus which would be sure to be derived from thoroughly satisfactory service. So the service department expects the salesman to inquire into this vastly important detail and, other things being equal, recommend as a desirable dealer the man who is well grounded on the foundation of good service.

Salesman Should Refrain from Technical Discussions.

Sixth, the service department expects the salesman, unless he be thoroughly qualified, to refrain in general from technical discussions. He should without question be informed as to troubles—particularly those of a chronic nature—occurring in the product he is selling. He should be informed also as to remedies which are being applied. He should be advised of any critical conditions which may be preventing prompt shipment of parts. But this information should be employed by the salesman only to the extent of meeting the trade intelligently. He will learn the gratitude of the service department if he does not embarrass it by attempts to diagnose specific cases of trouble, but instead relies upon the service department to investigate and correct.

Salesmen Should Know Car's Limitations.

Seventh, the service department expects the salesman to know what are the limitations of the car he is selling. If, for example, the car has a maximum speed of 60 miles an hour under favorable conditions, it is useless to attempt to meet the argument of the prospective buyer or dealer that "the car is not fast enough" by arranging to have a service man call upon him to "tune the car up" so that greater speed will be possible. Very frequently the salesman overrates the car and relies upon the service department to make good his assertions. This practise can only result in the embarrassment of the salesman and purposeless effort on the part of the service department.

Now then, what is the other side of our cooperative plan? What does the service department owe to the salesman?

First, without doubt the service department, in demanding that the salesman be familiar with its functions and policy, owes it to him to supply the necessary information. Through the medium of factory conferences, bulletins and letters the salesman should be kept fully advised of these subjects.

All Claims Should Be Promptly Adjusted.

Second, if the service department expects the salesman to refrain from attempts to adjust disputed claims or other complications of a purely service nature, then it owes the salesman in return its best efforts to settle all disputes promptly. Unless this be done the salesman will be badly handicapped by the dealer's or owner's attitude that he is not interested in future business until he can save pending claims adjusted. Nothing is better calculated to discourage the dealer than inattention to such details. His inquiries must have prompt answers, his complaints and suggestions must be given immediate consideration, his credits must be issued without delay, if the service department hopes to retain his good will and pave the way for the salesman's efforts.

Service Department Must Support Sales.

Third, if the service department expects the salesman's support then in return it must support the salesman. Any condition which is reported by the salesman as affecting sales effort, merits prompt investigation and appropriate action. Even though the fault may not lie with the service department, the report should not be disregarded. The dealer's or owner's erroneous conclusion in such a case should be met with a courteous statement of the facts and the salesman should receive a copy of the statement for his information. He is entitled to the knowledge that his report has been received and disposed of and if, as will doubtless be true in the majority of cases, the fault does not lie with the service department, the salesman's faith in his own organization will be strengthened and he will be better able to handle subsequent complaints.

Dealer and Service Man.

Fourth, the service department owes it to the salesman to be so organized that it is in a position to send a representative on short notice to any point where he may be needed. Very naturally the dealer is prone to take up with the salesman any problem which may be vexing him. From the nature of his duties the salesman is likely to be the member of the factory organization with whom the dealer feels best acquainted and whom he sees oftenest. Doubtless we have in the past left the salesman too much on his own resources. We have made it necessary for him to attempt the diagnosis of specific cases of trouble, to answer inquiries of a technical nature, to discuss disputed claims, because we have not backed him up with well organized service. We should have our service representatives call on the dealer as frequently as do the salesmtn.

The dealer will be much better satisfied to discuss technicalities with one qualified to give definite information and to take positive action. The service department will be more nearly fulfilling its mission of keeping in touch with each new development and many a trivial misunderstanding will be adjusted before it has reached the stage of a heated controversy.

Help the Dealer to Help Himself.

Fifth, we have said that the service department expects that the salesman will pay due regard to the importance of service in connection with the placing of dealer contracts. Yet it should not be overlooked that the salesman will rarely be able to select ideal representation. The service department, therefore, owes it to the salesman to back him up with thorough and intelligent educational effort. Even though the dealer may not be fully alert to the importance of service, he is usually open to suggestions. Practical assistance can be given him in a variety of ways, in the main being directed toward making him able to help himself. The local situation should be analyzed—he should be advised as to his repair stock requirements. Suggestions and aids may be given in the matter of stock and repair records, shop equipment and arrangement, and in variety of other ways. Such a programme will help the dealer to make his business successful—will tend to render the salesman's work effective and permanent.

The Essential Functions of Ideal Service

(*By F. E. Moskovics, Vice President, Nordyke & Marmon Co.)

NOTHING in the world has the right of existence that does not serve humanity. You can build the best motor car in the world and get the best sales department in the world for it, but if you do not arrange for the service on this car to be conveniently obtained by the owner, both the work of the best engineering department and of the best sales department will fall.

Given the right product properly presented; given a properly functioning service organization and the work of the sales department is indeed a thing of pleasure and joy.

After a concern has been in operation a sufficient length of time for its product to have attained a fair saturation point in relation to its market, I believe that if the service department functions as it should, from 50 to 70 per cent. of the ensuing product of the company can be merchandised to its old owners. In other words, assume that there are 40,000 cars of a certain make in existence; assume an output of that factory of 12,000 cars a year; I maintain that the manufacturer has a reasonable right to expect that from 6000 to 9000 cars can be sold to the 40,000 owners then in existence annually. But you can readily see that this will only be true if the service department is functioning well and supporting the sales department by making these 40,000 owners satisfied. And mind you, their main work is on after the guarantee period has expired.

Sales and Service Parallel.

Now, if this is true, you will readily see that there is a very close relation between the two departments, and they should operate along very parallel lines. Also this will show you the tremendous influence the service department can eventually wield on sales. A poor service department can ruin more sales than a good sales department can make—also a good sales department cannot permanently sustain the ill effects of a poor service organization. If I were a dealer and were forced to make my choice of two evils—that is, a poor service department or a poor sales department—I would prefer to have the poor sales department, which is another way of saying that the dealer must have a good service department if he has any right to future existence. Therefore, you can readily understand why I am essentially more in sympathy with the service man than with the salesman.

The salesman retailing motor cars has a right to expect from the service department a few fundamentals, without which the department is unworthy of its name.

Fundamentals of Service.

First, the department must have the physical equipment, which means proper room, machinery and a sufficient supply of parts to reasonably take care of the business. We consider this so important that within the past few months the Nordyke & Marmon Co. has established what is known as a Field Maintenance department. This department has the duty of seeing that every dealer of the Nordyke & Marmon Co. has the proper physical equipment to give reasonably good service, and the knowledge of how to do this. It is not a part of this department's function to see that the dealer actually gives service—simply that he has the proper physical equipment, properly located and arranged stock rooms and proper systems for handling the work and the stock. It is also the function of this department to see that the executives of the shop know how to do this work. This department, in other words, is the mechanical adviser of all our dealers in the arrangement of their shops and their layouts and routing of work and material.

Second, the salesman has a right to expect that the service department has a most intimate knowledge of the product and, given the proper equipment, knows how to utilize it.

The Bugbear of Broken Promises.

Third, he has a right to expect that the service department has the mental grasp and organization to take care of the work when it comes in and to take care of that most terrible enemy of the salesman, broken promises. I believe that all the imaginary troubles between these two departments rests mostly on this one ground, broken promises. Nothing can so provoke a customer as to be promised a car on Thursday, when he is planning to leave for the week end on Friday, and then when he gets it to find it incomplete, or in place of his car he gets a nice promise, which when deflated will not take him very far on his trip. The salesman has the right to expect the service department to courteously inform the customer sufficiently in advance if unforseen contingencies, over which the service department had no control, would not permit the car to be delivered on time, that the customer could make other arrangements to avoid these 12th-hour disappointments.

Fourth, courtesy; and there the salesman usually makes his biggest kick. This is the cheapest thing the service department has to dispense. The salesman has the right to demand that special study and attention be given to this one little thing, and how few service departments actually deliver on this, the cheapest thing they have.

I do not believe a sales department can expect more than these things from a service department, but given these things and given a ground of common understanding, the service department is of immeasureable benefit in advancing and furthering sales. One of our sales executives has called the service department the "Rear Door Sales Department."

The two departments should have a sufficient meeting ground to understand each other. They should get together frequently and frankly tell each other their mutual troubles. This will permit the salesman to really sell the service, and if the meetings are sufficiently frequent, and if they come to understand each other better, you will eliminate the danger of the salesman exaggerating the possibilities of the service department. In other words, I believe it is the duty of you gentlemen to see that the sales departments connected with your dealers fully understand all the real problems of service; understand the terrible, harrowing difficulties that we are going through at the present moment in the transportation of parts, the obtaining and training of help; the obtaining of adequate room and what it means to even keep up a semblance of truly good service in these times. Unless the salesman well understands this you cannot blame him for expecting too much and taking the side of the customer at all times.

Importance of Service Men.

In our own work we are prone to take the side of the service man. We understand his problems, we have studied them carefully. We look upon the service man in the same light that the superintendent of maintenance of a railway should be regarded. We figure his duties are just as important, because in the last analysis he is keeping up one truly important line of transportation.

The service man has to be a mixture of salesman, diplomat, teacher and a monument of patience, in addition to the small qualities of being a perfect mechanic, a crack organizer, a lawyer and perhaps possessing a little medical knowledge, and to understand psychology would not come amiss. Given these attributes, we figure he has a fair chance for success.

Prime Facts of Service.

In our own work we try to get into the minds of the service man the following prime facts:

First, the proper physical equipment, including room and all special tools. The knowledge of how to use the equipment and the materials to use it with and, given this, we figure the salesman has the right to expect courtesy, reasonable promptness and good work.

We have never felt that free service was the great essential so much as prompt and efficient service. We figure that a man is willing to pay for good service, providing he gets it with reasonable dispatch. I do not feel the salesman has a right to expect that everything that is done to the car for a year after the owner purchases it should be done free, but he has the right to expect it to be done when promised and when it is done to be finished so it will "stay put." We have clothed the service department with a positive dignity. We do not look upon it as a necessary evil, but as a branch of the business fully on a par with the sales department and just as important to our future welfare and to the satisfactory performance of our product in the hands of that final judge of all of us, the owner.

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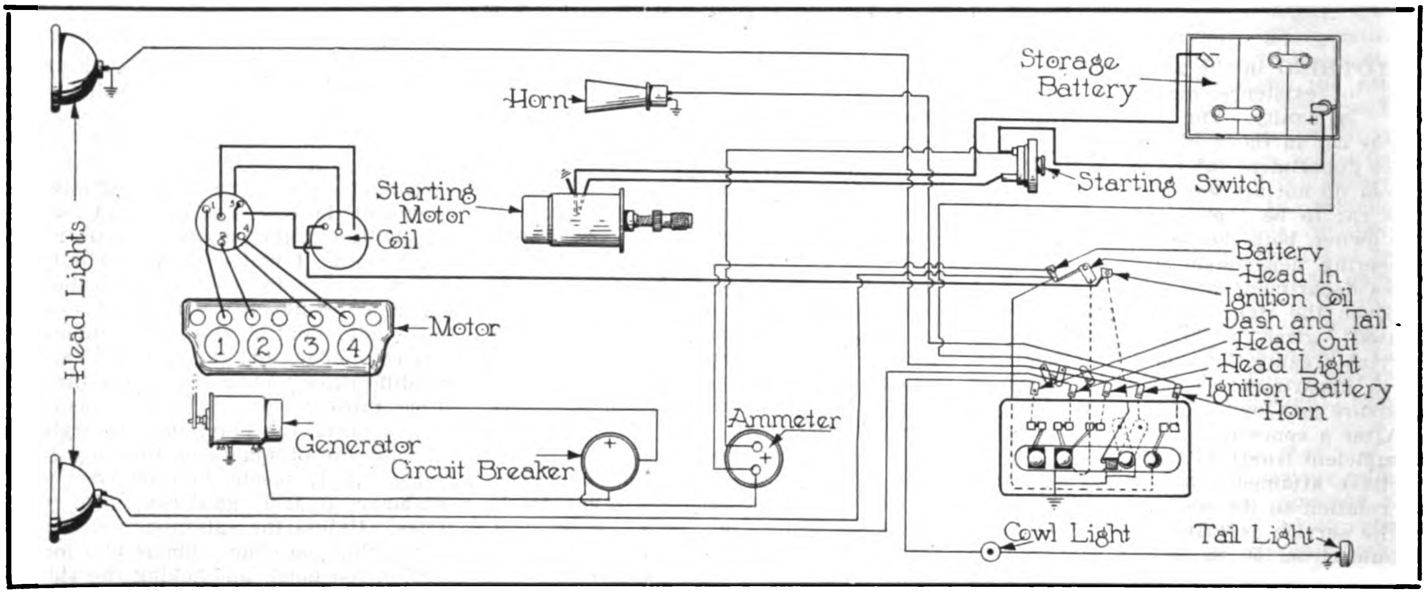
*Abstract of paper read at Service Managers' convention at Indianapolis, Ind.

Monthly Wiring Diagram No. 7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Starting Motor
Coil
Starting Switch
Battery
Head In
Ignition Coil
Dash and Tail
Head Out
Head Light
Ignition Battery
Horn
Motor
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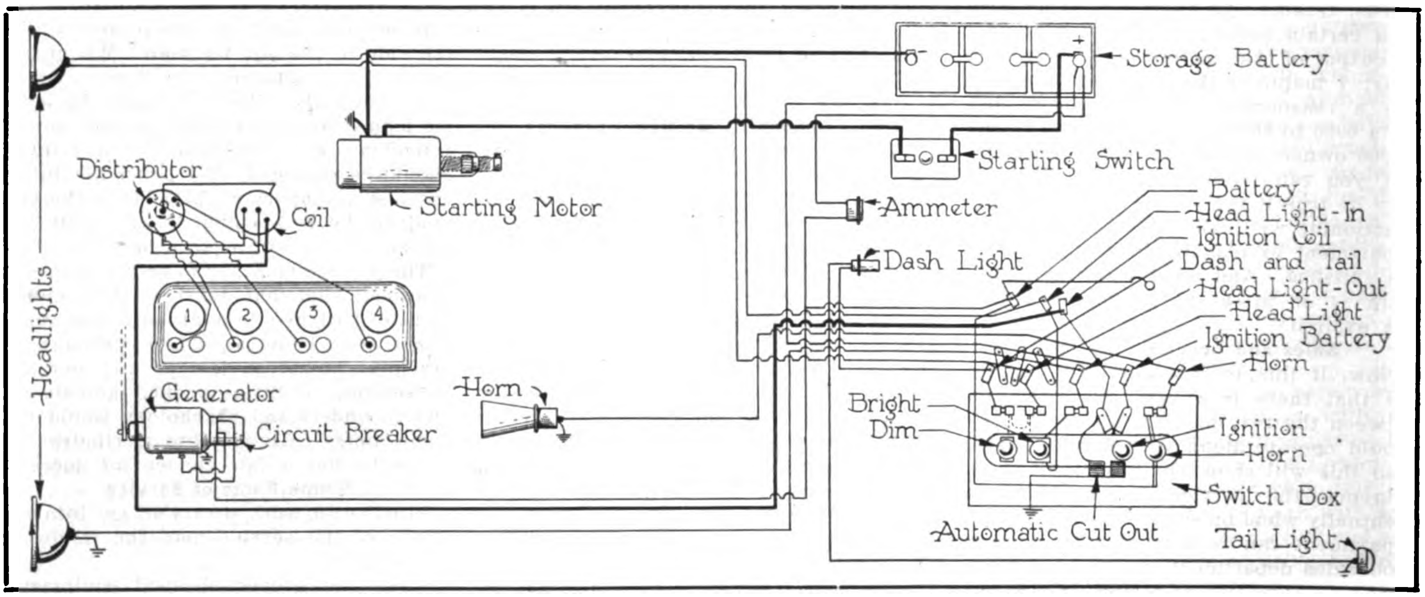
2
3
4
Head Lights
Generator
Circuit Breaker
Ammeter
Cowl Light
Tail Light

Overland Model 75-B, 1917, Four Cylinders.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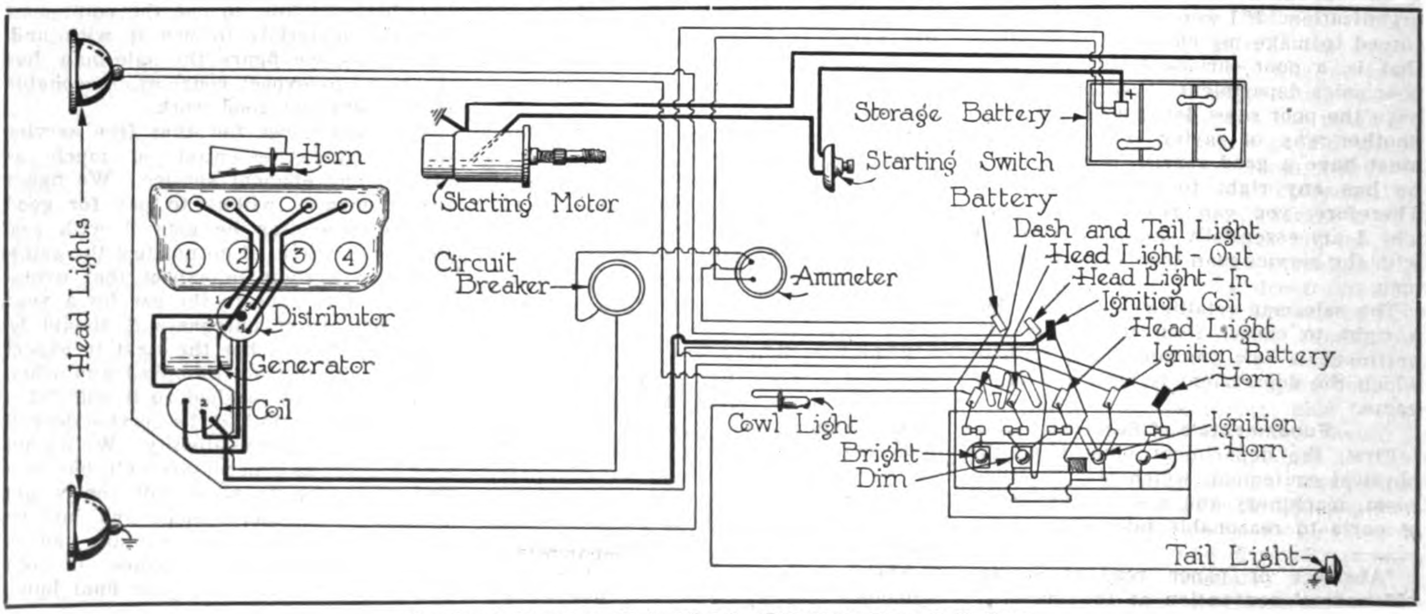
Starting Switch
Distributor
Coil
Starting Motor
Ammeter
Dash Light
Battery
Head Light-In
Ignition Coil
Dash and Tail
Head Light-Out
Head Light
Ignition Battery
Horn
1
2
3
4
Headlights
Generator
Circuit Breaker
Horn
Bright
Dim
Ignition
Horn
Switch Box
Automatic Cut Out
Tail Light

Overland Model 85, 1917, Four Cylinders.


Horn
Storage Battery
Starting Switch
Starting Motor
Battery
Dash and Tail Light
Head Light - Out
Head Light - In
Ignition Coil
Circuit Breaker
Ammeter
Head Lights
1
2
3
4
Distributor
Head Light
Ignition Battery
Horn
Generator
Coil
Cowl Light
Ignition
Horn
Bright
Dim
Tail Light

Overland Country Club Model, 1918-1919, Four Cylinders.

ENLARGEMENT OF COLUMBIA AXLE PLANT.

After having reached a capacity production of $1,000,000 a month in six years, the Columbia Axle Co., Cleveland, O., maker of Columbia one-piece housing rear axles and Columbia front axles, has now acquired the land and buildings of the Properties Co., which are adjacent to its present plant. These increased facilities will take care of present unfilled orders and plans are being made for the rapid expansion of the business which appears to be imminent.

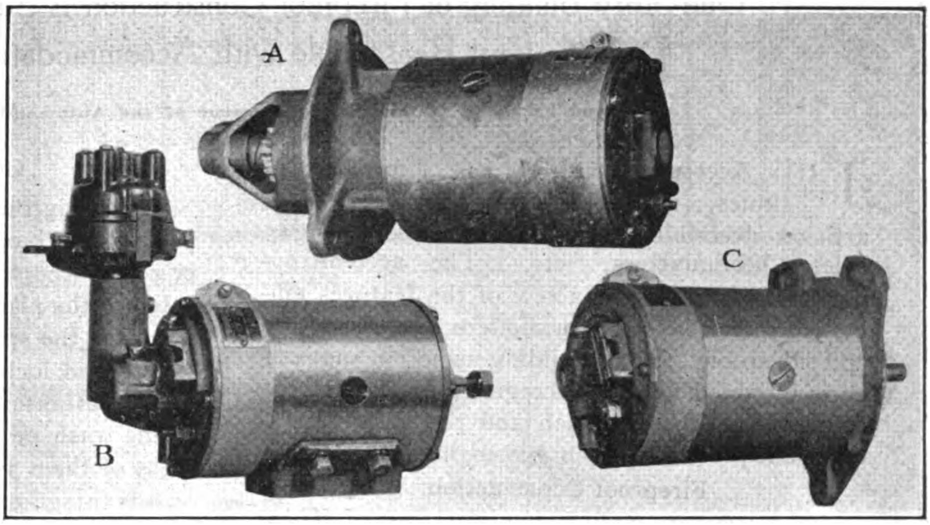
The holdings of the Properties Co. comprise 8½ acres of land, improved with two large factory buildings, one of four stories, and one of two. This gives the Columbia Axle Co. immediately the use of 300,000 square feet of floor space.

The common stock of the Properties Co. was purchased by the Columbia Co. in a deal involving approximately $1,000,000. E. H. Parkhurst is vice president and general manager of the Columbia Axle Co., and will continue in that capacity. W. R. Hopkins is president of the Columbia Co., Ben F. Hopkins is secretary-treasurer, R. E. Fries is chief engineer and general sales manager, and R. J. Goldie is factory manager.

The product of the Columbia Axle Co. will continue to be axles exclusively. It will do a general business in passenger car and truck axles, both front and rear, under the Columbia trade mark. The original company was organized in 1914, doing $136,000 of business during that year.

New Westinghouse Automotive Equipment

A NEW line of automotive starting motors and lighting generators has been developed for the 1920 season by the Westinghouse Electric and Manufacturing Co., this being in addition to the present line of machines furnished by the company.



New Westinghouse Line of Starting and Lighting Equipment: A, PW Motor for Sleeve Mounting Outboard Pinion Screw Shift; B, PW Generator with Westinghouse SC Ignition Distributor; C, PW Generator for Flange Mounting.

The chief feature of these new motors and generators, which are known as type PW, is the construction of the frame and the commutator end bracket. In the older type the frame was short and the bracket cylindrical. In the new the frame is extended and the bracket is flat; and the brushes, which are mounted on the bracket, are housed within the extension of the frame. Openings in the frame (covered ordinarily by an easily removed steel band) give access to the commutator and brushes. This construction gives additional mechanical strength to the machine. The brushes and commutator are especially accessible.

The generators, which are of the third-brush type, have an additional advantage in that the position of the third brush can be adjusted from the outside without removing the bracket. This is accomplished by mounting the brush on an arm which is pivoted around the bearing housing and is firmly held by screws on the outside of the end bracket. When these screws are loosened the arm and the brush can be turned through any desired angle.

These motors can be supplied for cradle, flange or sleeve mounting and with either inboard or outboard screw pinion shifts. The generators can be supplied for cradle, flange or foot mounting, with either ball or sleeve bearings, and with or without ignition brackets.

HARE'S MOTORS DINNER.

The first organization dinner of Hare's Motors, Inc., was held in New York City at Hotel Vanderbilt, Aug. 3, which was attended by executives from the engineering, production and distribution departments to the number of 45.

President Hare, in a brief address, announced that in his opinion the recent action of the Interstate Commerce Commission, in granting an increase to the railroads, was one of the most constructive steps taken in years, one that would contribute tremendously to the prosperity of the country, not only in eventually reducing the cost of living through better transportation, but in the general confidence it would give capital.

In referring to conditions in the automotive industry, he said, "If one considers it from the viewpoint of transportation he need not worry over present conditions. Obviously no temporary slump can change the fact that the actual need for quality transportation exists. Manufacturers of quality vehicles produce only a fraction of what the market actually needs. If we analyze the situation we find that the alarmist of today is the opportunist of yesterday."

REPRESENTATIVES OF NATIONAL MOTOR TRUCK COMMITTEE.

To give broader representation to matters directly affecting the truck end of the automobile industry, President Charles Clifton of the National Automobile Chamber of Commerce has increased the number of representatives on the national motor truck committee from seven to nine, and announces the following appointments:

Windsor T. White (White), chairman; George M. Graham (Pierce-Arrow), Victor L. Brown (Sterling), M. L. Pulcher (Federal), R. H. Salmons (Selden), Ray C. Chamberlain (Packard), A. J. Whipple (Diamond T), D. S. Ludlum (Autocar), D. C. Fenner (Mack), F. W. Fenn (N. A. C. C.), secretary.

This committee meets on the first Tuesday of each month, the day previous to that of the meeting of the directors of the National Automobile Chamber of Commerce.

HANDLEY-KNIGHT CARS SOON TO BE UNDER PRODUCTION.

Work in the new plant of the Handley-Knight Motor Co. at Kalamazoo, Mich., has reached the point where the temporary engineering and purchasing offices have been moved from Toledo to Kalamazoo, and the actual shipment of cars will be started by the latter part of September, it is reported.

The new Knight-Handley cars will be powered with the four-cylinder Knight sleeve-valve motor. The wheelbase will be 125 inches and the weight will be approximately 3200 pounds. The models to be manufactured at the outset will be a seven-passenger touring car and a seven-passenger sedan, both mounted on the same chassis.

TOURING BY ELECTRIC.

The New York Edison Co. has published, for free distribution to electric car owners, a booklet describing tours to points within a radius of 250 miles of New York. This brochure includes a list of the electric charging stations and garages in and around the Metropolis. Among the tours scheduled are a number depicted on two route maps from New York City to points as far away as Buffalo and Albany, N. Y.; Pittsfield, Mass.; Hartford, Conn.; Atlantic City, N. J., and Philadelphia, Pa.

PLATE XXXIII.

MODERN SERVICE STATION AND SALES ROOM

One-Story Building of Fireproof Construction Is Suggested for Average Dealer—Cost Reasonable with Accommodations Adequate.

Designed by the Architectural Department of the Automobile Journal Pub. Co.

THE Accessory and Garage Journal continues, in this issue, the series of articles describing service stations, garages, sales headquarters, etc. The accompanying sketches illustrate a few of the features embodied in the layout of a modern service station and salesroom. Such a building as herein suggested is intended for the average dealer, as its cost could be within his reach and the accommodations adequate for the needs of his business.

Fireproof Construction.

The structure would cover an area of 50 by 100 feet, the size of an ordinary city lot, and usually the only size obtainable in a desirable location. Our aim is to point out how compact, yet serviceable, a garage of this type can be made.

The plan is that of a one-story building of fireproof construction. The office and salesroom, shown in the forward part of the building, would be sufficient for the requirements of the average dealer. Flanking the office on the left is the entrance leading to the storage compartment, which is 50 by 60 feet, and which will house a considerable number of cars.

In the rear will be found a repair department, 24 by 18½ feet, having two pits to permit working on two cars at one time. This department could be well lighted by a large skylight, also affording ample ventilation.

Next we have the machine shop, the heart of the service station. Without such a place no station can give the service demanded in these modern times. Delay that would result in securing new parts could be saved by having the parts repaired on the job, or new ones turned out if necessary. The machine shop is so important that the dealer makes a mistake when he fails to provide for one.

Machine Shop.

The machine shop as shown in this plan would be 12 by 18½ feet, having room for a lathe, a punch, an emery wheel and a forge, also an anvil. A large sink is another feature. Provision is made for two toilets, one for the shop and the other for the office employees, and in these there would be modern lavatories with hot and cold water.

General Construction.

On the ground floor is a locker room for employees' clothing. A stairway leading to the boiler room occupies a portion of this room, as indicated in the plan. The boiler room is located underneath the space covered by the machine shop, toilets and locker room, and is 23 by 18½ feet. Special attention should be given to the location of the washstand and turntable, and the arrangement of them as this plan suggests will be found an advantage to all concerned.

The general construction is as follows: Foundation, concrete (see section); walls, 12 inches thick with 16-inch piers, and may be made with brick or cement blocks; main or front elevation designed for brick with concrete trimmings: steel beams used to support the roof, which is of plank covered with tar and gravel; floor four inches of rough concrete with two-inch dressing drained as shown.

Lighting would be furnished by large skylights in the roof, but which are not shown in the plan. A special feature would be a large door of wood automatically operated, being hoisted to the ceiling. The metal window sash shown adds much to the general appearance.

Cost of Building.

The cost of the building would be approximately $7500, equipped as shown. Any further details desired will be supplied on application to the Architectural Department of the Automobile Journal Publishing Co.

The plan presents many features that should prove valuable for a service station and salesroom, and the dealer who is contemplating the construction of a building to be used for such purposes will probably find it decidedly profitable to give careful consideration to these sketches. Of course, many variations could be made in the details and still the general plan followed.

The Architectural Department is having prepared plans for various types of buildings suitable for the use of those engaged in the automobile industry. Readers of Accessory and Garage Journal are invited to write to this department for additional information in regard to any of these plans.

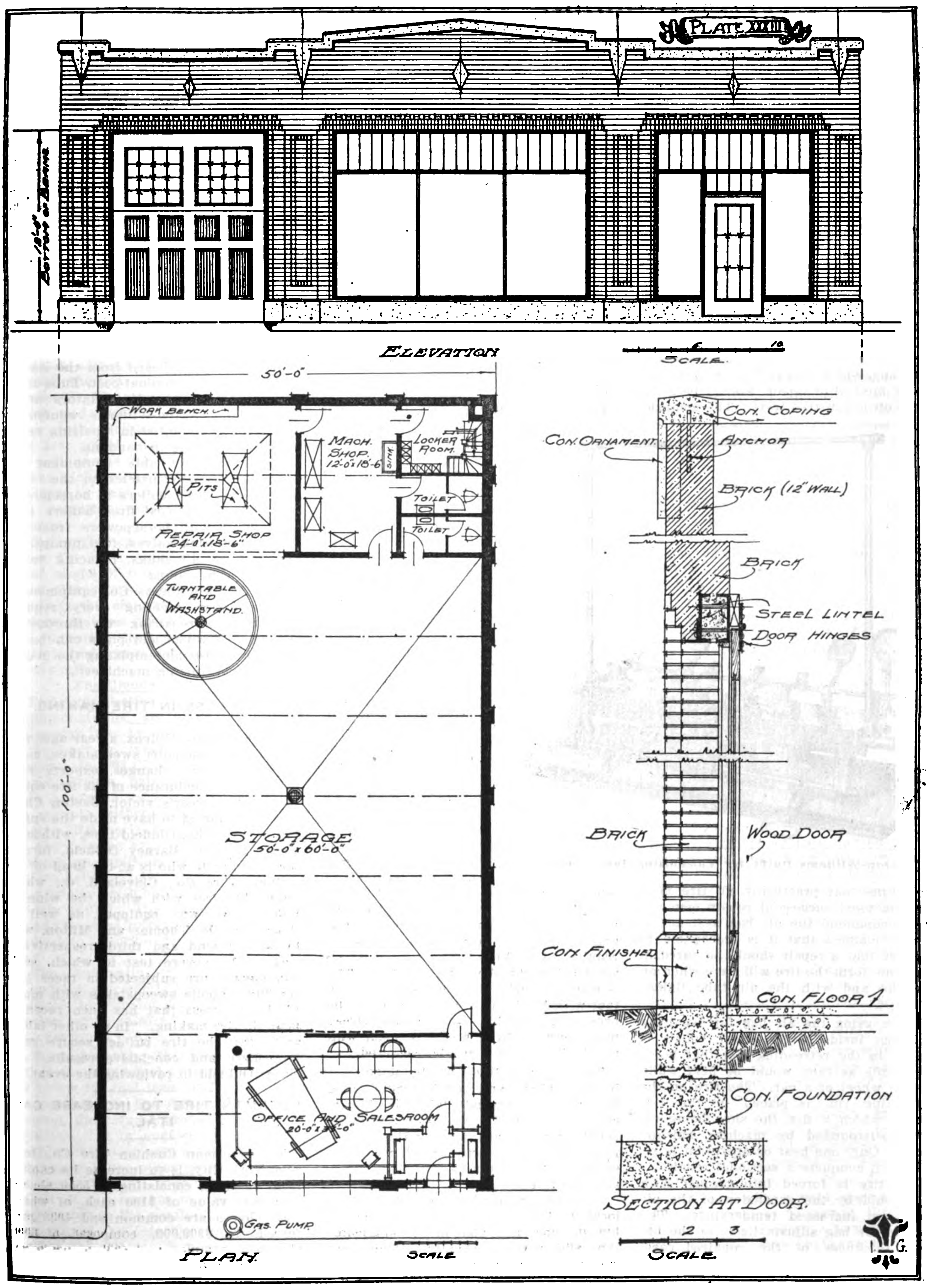
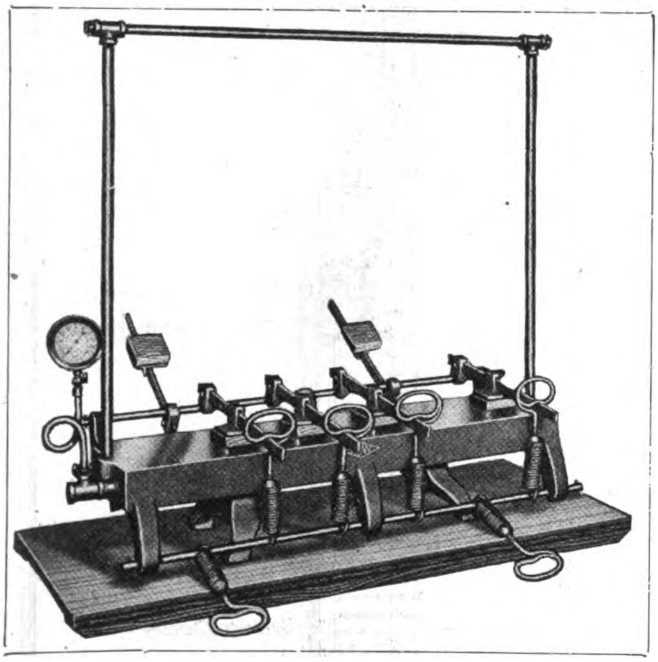


PLATE XXXIII
10'-18'-0" Bottom of Beams
ELEVATION
SCALE
50'-0"
WORK BENCH
MACH. SHOP. 12-0"x18'-6"
SINK
LOCKER ROOM
PITS
TOILET
TOILET
REPAIR SHOP 24'-0"x18'-6"
TURNTABLE AND WASHSTAND.
100'-0"
STORAGE 50'-0"x60'-0"
OFFICE AND SALESROOM 20'-0"x30'-0"
GAS PUMP
PLAN
SCALE
CON. COPING
CON. ORNAMENT
ANCHOR
BRICK (12" WALL)
BRICK
STEEL LINTEL
DOOR HINGES
BRICK
WOOD DOOR
CON. FINISHED
CON. FLOOR
CON. FOUNDATION
SECTION AT DOOR.
2 3
SCALE
G.

Akron-Williams Tire Repair Equipment

THE man who is the best equipped to do work is the man who is naturally going to make the biggest success of tire repairing. Many concerns in the larger cities specialize tire repairing in their localities and, while prosperous, are not widely known. There are larger concerns, some possibly connected with tire factories, that repair tires sold or guaranteed by them. It is to these two classes of concerns that the equipment dealt with in this article will appeal. There are also some service stations that do more or less of this work which may be interested.

The Williams Foundry & Machine Co., Akron, O., manufactures a very complete series of tire and tube vulcanizing machinery. The air bag system is used in the tire moulds manufactured by this company, which claims it is decidedly the better method of repair, basing the statement on exhaustive tests. The company maintains that practically all tire makers and most successful repair men use and recommend the air bag system. It is also claimed that it is reasonable to suppose that a repair should be cured in the same form the tire will have when on the rim and with the air tube tightly filling it.



Akron-Williams Outfit for Vulcanizing Inner Tubes.

When using the air bag for repairing it is put inside of the shoe, which is placed in the retreading rim that holds the beads as they would be held while on the wheel of a car. The tire on the retreading rim is placed in the tire mould, which it fits, the shoe being entirely surrounded by machine finished metal. Only one heat or operation is required to complete a sectional repair.

The tire is forced into contact with the mould by the expansion of the air bag from increased temperature. The flexible air bag adjusts itself to the uneven thickness of the repaired case, pressing the plies together with uniform pressure during the cure. Other methods require two or three operations.

Years of satisfactory service demonstrate that the Akron-Williams equipment for tire and tube vulcanizing is correct, and it has been proven very satisfactory with repair men because of efficiency, simplicity and economy.

The plates are very large, eight inches wide, finely machined and polished. Especial attention has been given to the steam circulation, so that the plate shall be evenly heated. The system consists of a series of baffles, or internal walls, which cause the steam to travel through every part before reaching the outlet, this construction greatly reinforcing the casting. Pressure is applied to the tubes while being cured by heavy oil tempered springs held in place by swinging levers. By adjustable handles the pressure may be regulated, the range being from six ounces to 50 pounds, in a few seconds time, this manner of adjustment meeting all requirements.

Three of the vulcanizers require separate steam, Nos. 21, 22 and 23. The width of the three plates is the same, eight inches, and the lengths of the plates are respectively 20. 36 and 54 inches, the large sizes having capacity for more repairs at a time than the small.

The steam generating tube vulcanizers consist of four models, Nos. 422, 1, 0 and 00, using gas or gasoline for heating, and are adapted for the tube and minor casing repairs of the small tire shop.

The unit system bears the recommendation of the Akron-Williams Co. and is a complete assembled unit, fitted with the necessary vulcanizers, tools, etc., for usual tire repair shop, and can be added to as needs of business require. All Akron-Williams vulcanizers are machine finished and polished. This is necessary where rubber comes in contact with hot iron. Clamps are of an improved type with quick acting thread nuts operated by a socket wrench, with which the pressure can be regulated.

Tire makers differ in the manner of building shoes and repair moulds must be made that are adaptable to differing constructions and types. Akron-Williams repair moulds are made adjustable to practically any tire, for they can be equipped with liners so that they will fit any size of tire.

Sectional vulcanizers are built in a localized heat type, in sections of one to five or more and also in the single-unit type with a steam chamber. These vulcanizers depend on an outside source for their steam, usually a steam boiler. They are built in various sizes from the smallest, having capacity for a 28 by three-inch motorcycle tire to the large car tire, 37 by 4½ inches. New types of vulcanizers have recently been added for the repairing of the large sizes of pneumatic truck tires and tubes.

The self-steam generating types are Nos. 16 for the six-inch tire, 17 for the seven-inch tire and 18 for the eight-inch tire, and can be purchased in the sectional steam type if required.

A series of vulcanizers is also manufactured for repairing bicycle tires. These are the sectional steam and the steam generating types for outside and inside work. Where gas is not available force feed gasoline is advocated. This outfit can be purchased from the Akron-Williams Co. at nominal cost. Tube splicing mandrels and tube deflators are a part of the Akron-Williams equipment and are very essential in repairing tubes, saving much time in handling.

The Akron-Williams equipment includes such useful articles for the repair shop as gas fired boilers in horsepowers from one to 12, coal fired boilers (vertical type) with horsepowers from five to 10, regulating valves, feed pumps, air compressors, air tanks, reducing valves and hose connections.

The Akron-Williams Co. equipment is very complete, meeting every requirement for tire repairing very thoroughly. Working drawings and plans can be obtained by those contemplating the installation of vulcanizing machinery.

PROGRESS IN TIRE MAKING.

When Howard Wilcox, a year ago, winning the Indianapolis sweepstakes, made but three tire changes, experts marvelled at the endurance of his tire equipment. This year's victor, Gaston Chevrolet, is reported to have made the entire 500 miles on his Oldfield tires, without a single change. Barney Oldfield, former race champion, who is at the head of the Oldfield Tire Co., Cleveland, O., which made the tires with which the winning Monroe car was equipped, as well as those used by Thomas and Milton, who finished second and third respectively, credits the severe test to which such components are subjected in races like the Indianapolis sweepstakes with much of the progress that has been recently made in tire making. "In no other laboratory can the tire builder secure such immediate and conclusive results," declares Oldfield in reviewing the event.

OVERMAN TIRE TO INCREASE CAPITAL.

The Overman Cushion Tire Co., Inc., New York City, is to increase its capital from $550,000, consisting of 5500 shares of a par value of $100 each, of which 1500 shares are common and 4000 preferred, to $900,000, composed of 5000 shares of common and 4000 of preferred of par value of $100.

Adaptation of Claudel Carburetor to American Requirements

THE Claudel carburetor, which has been widely used in Europe for 20 years, is now made in America by the Claudel Carburetor Co., Long Island City, N. Y. This highly perfected, plain tube mixing device was designed by Charles Henri Claudel, the pioneer in the development of this type of carburetor, who is recognized as one of the foremost authorities on carburetion in Europe.

Records made by the Claudel carburetor in European racing before the war included 93 first prizes taken in 1913 alone, in addition to the Indianapolis race and the breaking of all world's records on the Brooklands track in England. They were also employed extensively on the aviation engines of the Allied air craft during the war, including Rolls-Royce, Sunbeam, Peugeot, Samson, Hispano-Suiza and Renault. The Sunbeam engine of the British dirigible R-34, made the first round trip across the Atlantic, as well as the Rolls-Royce power plant of the Vickers-Vimy air plane, which was the first to make a non-stop flight across the Atlantic, were equipped with the Claudel.

The engineers of the Claudel Carburetor Co. have Americanized the European model of the Claudel to meet the particular requirements of engineering needs in this country. They have added several features demanded by the American motorist, such as a quick starting device and rapid acceleration with a cold engine.

The Claudel Carburetor.

Early carbureting devices employed a spring-controlled air valve in an effort to secure the proper mixture balance throughout a wide range of engine speeds. In 1903 Charles Henri Claudel of Paris, France, patented the first plain tube automatic compensating carburetor to operate without the use of moving parts. His early principle of breaking up the gasoline by a swift current of air, making an emulsion inside the jet itself before delivery to the carburetor proper, was original with him and has since been widely copied. The modern Claudel retains the same principle, refined and improved to vaporize the heavy fuel of today.

The automatic functioning of the Claudel carburetor is based upon the action of the diffusor jet assembly. This device combines three distinct principles of operation:

First, the orifice or jet which supplies all of the liquid fuel is placed at charge, or below the fuel level, where its flow is proportional to the difference in head; second, the diffusor proper is in "shunt" position, that is, enclosed in a chamber with openings at one end to the atmosphere and at the other end to the suction in the carburetor, thereby reducing the effect of the suction on the fuel flow; third, through the nozzle holes in the diffusor head the interior emulsion chamber of the diffusor is placed under the direct action of the vacuum in the carburetor, increasing the discharge as the vacuum is increased.

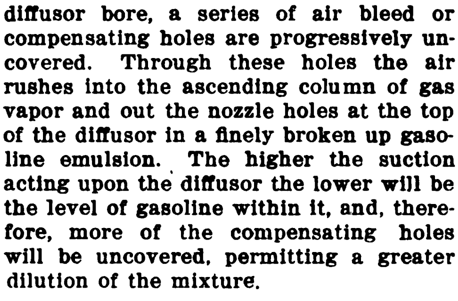
The combination of these three principles of operation, correctly applied, gives a balanced mixture exactly proportioned for the best results at every engine speed and load.

The Claudel is really a combination of two types of jet, one, the main jet, of constant flow per unit of time; the other, through a series of nozzle holes, of suction-controlled flow. Fuel from the float chamber flows through the main jet into the diffusor, then through the compensating holes into the reservoir or diffusor bore. It also flows through the idling jet into the idling tube, the level in the three tubes being the same as that in the float chamber.

The Diffusor.

Air at atmospheric pressure enters the outside base or air tube of the diffusor column, passes up this outer sleeve and over the top of the gasoline guard tube, which prevents the fuel from overflowing. As the throttle is opened gradually and the suction in the diffusor increases, thereby lowering the liquid level in the diffusor bore, a series of air bleed or compensating holes are progressively uncovered. Through these holes the air rushes into the ascending column of gas vapor and out the nozzle holes at the top of the diffusor in a finely broken up gasoline emulsion. The higher the suction acting upon the diffusor the lower will be the level of gasoline within it, and, therefore, more of the compensating holes will be uncovered, permitting a greater dilution of the mixture.

At the higher speeds the diffusor is practically empty and 21 spirally arranged air bleed holes are in action. As the gasoline globules are lifted by the suction, they must pass through a barrage of 21 air guns shooting at right angles into the ascending fuel. This turbulent mixture effect produces a finely divided fuel emulsion ideal for rapid flame propagation, extreme economy and high power. The diffusor discharge is in approximately the ratio of 15 parts of air to one part of gasoline by volume. This thorough intermixture of air and gasoline before it enters the carburetor barrel is the Claudel method of breaking up the heavy fuel of today for extreme economy.



American Type of Claudel Carburetor.

It will be easily seen that any kind of a power or consumption curve desired can be secured by changing the size and position of the compensating holes in the diffusor wall. For example, if the consumption curve shows a rich spot at an engine speed of 1000 revolutions per minute, the holes at this level of the gasoline in the diffusor could be enlarged, thinning out the mixture and bringing it to the point desired. In this way an exact gasoline and air ratio can be maintained for the best results.

The clean, streamline interior of the Claudel plain tube carburetor with the barrel throttle giving an extended venturi effect, leaves no obstruction in the path of the charge and consequently full volumetric efficiency is secured. Also the gradual taper of the interior walls holds the mixture in uniform suspension and velocity.

The Idling Device.

The idling device is incorporated in a central tube projecting up into the depression of the barrel throttle, where a strong pull is exerted on the idling jet for low speed action. The barrel throttle is slotted to pass around the idling jet and the only adjustment on the carburetor is a screw extending into the air space to partially block off the area of this slot as desired. Screwing it in lessens the air area and enriches the idling mixture. Screwing it out makes the mixture leaner.

Easy Starting Feature.

In the American type of Claudel, shown in the sketch, a decided improvement has been incorporated for strangling the air by means of a sliding air cone, controlled from the dash. This device assures quick starting and warming up in cold weather, and absolutely disregards temperature. The streamline air cone, concentric with the diffusor, may be raised into contact with the venturi, shutting off the air supply and puting the full suction on the diffusor. In this position it is only necessary for the cylinders to exhaust the air in the top of the carburetor before the diffusor discharge must commence. This action is instantaneous, as the volume is small.

Referring again to the cut, the sliding cone A, in its closed or strangling position, fits snugly into the venturi entry V. The streamline shape of the cone centers and steadies the air stream so that it passes the nozzle holes of the diffusor with high velocity and in an even column ideal for the best results. In its lowest position the cone offers no restriction to the maximum performance required and is of benefit in minimizing air intake turbulence.

In warming up a cold engine when a richer mixture is necessary, the cone A may be dropped slightly, forming a variable venturi. With the cone in this restricting position one may readily get away while his engine is still cold. Thus, in reality, the Claudel acts as a double carburetor—one of small venturi for normal driving, and, with lowered cone, another of full engine capacity.

The advantage of the Claudel cone over the common type of butterfly strangler valve, placed some three or more inches ahead of the fuel discharge nozzle, is very evident. In some of the latter type, all of the dead air lying between the nozzle and the strangler valve must be exhausted before fuel will begin to flow. In the Claudel type, suction on the nozzle is instantaneous.

When the common type butterfly strangler is only slightly open (condition when warming up), the small amount of air passing the fuel discharge nozzle has little or no velocity and hence can pick up very little fuel. Fuel, however, is discharged because of the greater pressure existing in the float chamber than in the mixing chamber, and instead of being picked up by the air this raw fuel runs down to the butterfly strangler, where the air velocity is highest, there to be only partially vaporized and carried into the engine. In the Claudel type, on the other hand, an emulsion is discharged from the diffusor nozzle, where it is immediately carried upward by the air entering at high velocity through the small, annular streamline passage between the cone and the venturi.

The Claudel is a very high-grade carbureting instrument built in a number of standard S. A. E. vertical sizes. A horizontal model will be announced later. Special models, however, for special installations are built to order, including air plane and duplex designs.

The Claudel carburetor is highly finished and carefully built for quality performance and appearance, and is universal with regard to levers and flange positions.

OPPORTUNITY FOR AUTO PAINTERS.

Automobile painting shops that do not include a top trimming department are neglecting a most profitable source of revenue. Only a small space is required and the equipment is inexpensive. The top trimming trade is not hard to learn and shops can usually readily secure workmen skilled in this work. As rubber top materials are usually uniform in texture and grain, a limited stock is sufficient to take care of all demands and little outlay of money is necessary.

If the automobile refinishing shop has a reputation for good painting its customers will be glad to add their top trimming work. Autoists usually have a tendency to keep the old top on the car as long as possible, but a little salesmanship on the part of the owner of the refinishing shop will be sufficient to convince them of the desirability of having a new top put on.

FILLING FOR CAST IRON.

One-quarter tumbler full of Japan dryer, 1½ ounces finely ground dry white lead. Mix and add one quart of finishing Japan. Stir in dry rotten stone until mixture is a thick paste.

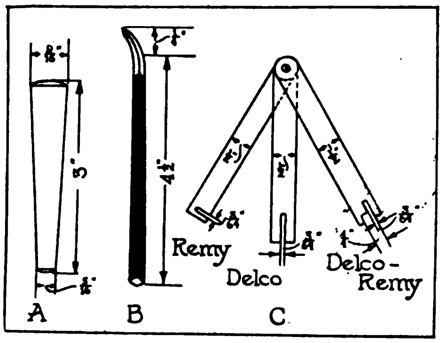
Handy Shim Locating Tool

The tool illustrated at A is very useful when removing the No. 45 motor generator from the 1915 Hudson model 6-40. In taking this generator from the base in which it rests the shims used in lining it up may become scattered and mixed. Several hours are consumed in replacing the shims again before lining up the generator.

This may be eliminated by turning down three hard wood pins as shown. After removing the three bolts that hold the generator to the base plate, insert the three wooden pins in place of the bolts. The generator can then be removed and the shims are held properly in place.

At B is shown an effective tool for cleaning the commutator. Hardened oil and carbon dust frequently collect on the mica and act as a conductor between the copper bars, causing a short circuit. The tool is made by bending the end of a triangular file and grinding the point to fit the slot between the commutator bars. Convenient dimensions are given in the illustration.

This tool is used in the service station in emergencies and in many cases eliminates the necessity of removing the generator from the car. It is in no sense to be used to undercut mica, but simply as a cleaning tool.



At C is shown a combination wrench used for adjusting Remy and Delco contact arms. This wrench allows bending the arms in any shape to give an accurate fit to the points. Holding two wrenches at right angles will give the leverage for bending.

BRASSING IRON.

Iron ornaments may be covered with copper or brass by properly preparing the surface so as to remove all organic matter which would prevent adhesion, and then plunging them into melted brass or copper. A thin coating is thus spread over the iron, and it admits of being polished or burnished. The better the article is finished and cleaned before dipping the better will be the final result.

TO TURN HARD IRON AND STEEL.

Use a drip can for the tool with the following solution: Petroleum, two gallons; turpentine, one gallon, and camphor, two ounces.

CLEANING SPARK PLUGS.

A somewhat novel method of cleaning spark plugs was brought to notice recently. It consisted of a blow pipe held in a gas flame, with the pipe held in the mouth. The plug was held with a pair of tongs, so that the blow pipe flame impinged on the points of the plug, the plug being held in the same line as the flame.

Where a foot power blower is available this may be used instead of the blow pipe and will prove more expeditious in burning out the carbon accumulation.

LOOSE FAN BELTS.

Sometimes an engine will overheat for no apparent reason. Occasionally a motorist will fuss with his power plant for some time before it is finally borne in upon him that the whole trouble lies in the fact that his fan belt is running too loose, causing the fan to run below its proper speed. If this condition is found he should either tighten the fan belt himself or take the car to a garage and either have the adjustments tightened or the belt shortened.

RADIATOR REPAIR.

To make a good emergency repair of a honeycomb radiator, use a small bolt longer than the depth of the radiator and fine enough to pass through the hole in the honeycomb. On each end of this bolt a steel washer is placed, with a rubber washer inside. Tighten the nut on this bolt and the rubber washers are drawn tight enough to stop the leak. This repair cannot, however, be made on a tubular radiator.

BLACK FINISH FOR STEEL.

The pieces of steel to be blackened should first be polished with No. 120 emery cloth. After polishing the surfaces should be cleaned carefully and then the work placed over the fire and drawn evenly to a second blue. The work is next dipped in lard or sperm oil for a few seconds and immediately removed and all loose oil shaken off. This prevents the forming of blisters. An old piece of rubber—a section of an old garden hose will do—is placed on the fire and as it burns the work is held over the flame and smoke that comes from the burning rubber until it is covered with a thick coat of black soot. Remove from the fire and permit it to cool slowly. When cool rub with an oiled cloth. One heat is used for the process.

LIQUID FOR ETCHING ON STEEL.

The following solution will be found excellent and reliable either for very deep etching upon steel or for producing beautiful frosted effects upon the surface: Mix together one ounce sulphuric acid, ¼ ounce alum, ½ teaspoonful salt, ¼ pint acetic acid or vinegar and 20 drops concentrated nitric acid. The etching effect produced by this liquid depends upon the length of time it is allowed to act upon the metal and is applied similarly to ordinary etching acid.

RECORD OF BUILDING OPERATIONS FOR AUGUST

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Birmingham, Ala.; G. P. Dexter, 3470 Highland avenue; one-story fireproof garage, 54x140; $10,000.

Little Rock, Ark.; Lilbourne Shoemaker; two-story brick and concrete garage, 150x140; $300,000.

Malvern, Ark.; Rector Motor Co.; one-story fireproof repair plant, 50x150; $17,500.

Springdale, Ark.; Oxark Trail Motor Co.; one-story fireproof garage, 50x100; install garage equipment.

Bridgeport, Conn.; Bridgeport Gas Co.; two-story public garage, 185x50.

Hartford, Conn.; Puritan Motor Sales Co., 334 Pearl street; one-story public garage, 40x150; $30,000.

New Britain, Conn.; Mendel Sokelick, 117 Willow street; one-story brick garage, 70x60.

Washington, D. C.; Thomas F. Medford, 1631 Third street; two-story reinforced concrete garage, 300x200.

Washington, D. C.; Miller-Dudley Co., 1625 14th street; tw-story fireproof service station and repair shop, 40x60; install machine shop equipment and electric testing apparatus.

Abington, Ill.; E. E. Terwilliger; one-story fireproof garage and filling station at 303 Pennsylvania avenue; $3000.

Arthur, Ill.; Fleming Brothers; one-story garage, 66x100.

Chicago, Ill.; C. Arnesen, 2106 North Karlov avenue; one-story frame garage.

Chicago, Ill.; Mrs. George Andrews, 2708 Fletcher street; one-story frame garage.

Chicago, Ill.; G. C. Anderson, 4447 North Seeley avenue; one-story frame garage.

Chicago, Ill.; C. R. Abbott, Jr., 4942 Kammerling avenue; one-story frame garage.

Chicago, Ill.; H. R. Blodgett, 1704 West 100th street; one-story frame garage.

Chicago, Ill.; Peter Buckelhaupt, 7918 Carpenter street; one-story frame garage.

Chicago, Ill.; Dr. Barnslick, 7247 Luella avenue; one-story brick garage.

Chicago, Ill.; George Bogoorch, 2129 21st street; one-story frame garage.

Chicago, Ill.; H. P. Bodett, 4748 Race street; one-story frame garage.

Chicago, Ill.; Z. M. Burzycki, 2052 North Carolina avenue; one-story frame garage.

Chicago, Ill.; Edward Borner, 5015 South Marshfield avenue; one-story frame garage.

Chicago, Ill.; L. Burwick, 4709 Bernice avenue; one-story frame garage.

Chicago, Ill.; James Carden, 4831 Washington boulevard; one-story brick garage.

Chicago, Ill.; James E. Clark, 6142 South Washington avenue; one-story frame garage.

Chicago, Ill.; P. Carengo, 733 South Robey street; one-story frame garage.

Chicago, Ill.; C. E. Conklin, 37 North Lotus avenue; one-story frame garage.

Chicago, Ill.; F. Connelly, 1944 West 34th street; one-story brick garage.

Chicago, Ill.; Louis Dreyfuss, 4934 Vincennes avenue; one-story frame garage.

Chicago, Ill.; Henry Dressler, 3304 North California avenue; one-story frame garage.

Chicago, Ill.; A. E. Dittirck, 5541 West Quincy street; one-story frame garage.

Chicago, Ill.; Mrs. Edward Doyle, 4239 Michigan avenue; one-story frame garage.

Chicago, Ill.; Carl Eben, 2325 Thomas street; one-story brick garage.

Chicago, Ill.; B. L. Engelke, 4845 Dorchester avenue; one-story frame garage.

Chicago, Ill.; Karl Ekberg, 5717 South Peoria street; one-story frame garage.

Chicago, Ill.; B. J. Fallon, 6239 Winthrop avenue; one-story brick garage.

Chicago, Ill.; Lila J. Fairbairn; one-story garage and service station at 735-737 South Clark street.

Chicago, Ill.; Henry Finault, 3552 Beach street; one-story frame garage.

Chicago, Ill.; J. Francis, 220 East 56th street; one-story frame garage.

Chicago, Ill.; W. E. Gittings, 5643 Drexel avenue; one-story frame garage.

Chicago, Ill.; J. Golden, 4715 West Adams street; one-story frame garage.

Chicago, Ill.; M. Goldstein, 1427 North California avenue; one-story brick garage.

Chicago, Ill.; John Granquist, 1417 Raecher avenue; one-story brick garage.

Chicago, Ill.; H. Griffith, 2518 Blaine place; one-story brick garage.

Chicago, Ill.; H. A. Hansen, 6559 Whipple street; one-story brick garage.

Chicago, Ill.; William G. Haupt, 6449 Glenwood avenue; one-story brick garage.

Chicago, Ill.; H. T. Hawkins, 7330 South Shore drive; one-story frame garage.

Chicago, Ill.; W. Heinewan, 916 North Lockwood avenue; one-story frame garage.

Chicago, Ill.; F. E. Hemstreet, 13 South Whipple street; one-story frame garage.

Chicago, Ill.; Arthur Hess, 835 Irving Park boulevard; one-story frame garage.

Chicago, Ill.; A. J. Huber, 7402 Kenwood avenue; one-story brick garage.

Chicago, Ill.; Joseph Hylek, 2639 Iowa street; one-story brick garage.

Chicago, Ill.; L. F. Jelnick, 2200 North Lamon avenue; one-story frame garage.

Chicago, Ill.; H. Johnson, 1052 North Mozart street; one-story frame garage.

Chicago, Ill.; W. S. Jones, 2432 West Jackson boulevard; one-story frame garage.

Chicago, Ill; C. Karl, 7237 Langley avenue; one-story frame garage.

Chicago, Ill.; Catherine Kelly, 4016 West Monroe street; one-story frame garage.

Chicago, Ill.; S. W. Kendall, 4922 Winthrop avenue; one-story frame garage.

Chicago, Ill.; E. Knox, 8327 South Carpenter street; one-story frame garage.

Chicago, Ill.; B. Kopeck, 5012 Sunnyside avenue; one-story frame garage.

Chicago, Ill.; W. R. Kopp, 4527 Christiana avenue; one-story frame garage.

Chicago, Ill.; Charles Kruspe, 6552 South Lincoln street; one-story frame garage.

Chicago, Ill.; Frank Kulack, 4329 Schubert avenue; one-story frame garage.

Chicago, Ill.; P. M. Kzycke, 3046 North Hamlin avenue; one-story concrete garage.

Chicago, Ill.; William Laube, 1016 North Hoyne avenue; one-story frame garage.

Chicago, Ill.; William Leland, 5421 Cottage Grove avenue; one-story frame garage.

Chicago, Ill.; E. C. Leonard; one-story garage and repair shop; $90,000.

Chicago, Ill.; Libery Dairy Co., 852 North California avenue; two one-story frame garages.

Chicago, Ill.; I. Lipschitz, 847 Leland avenue; one-story brick garage.

Chicago, Ill.; P. Lundgoot, 2440 Ballou street; one-story frame garage.

Chicago, Ill.; A. Lupon, 2516 South Claremont avenue; one-story brick garage.

Chicago, Ill.; Charles McHerney, 7417 Langley avenue; one-story frame garage.

Chicago, Ill.; S. Marks, 6133 Prairie avenue; one-story frame garage.

Chicago, Ill.; Bert Merian, 6529 Whipple street; one-story brick garage.

Chicago, Ill.; J. D. Mey, 4156 West Harrison stree; one-story frame garage.

Chicago, Ill.; R. M. Meyer, 2445 Warner avenue; one-story frame garage.

Chicago, Ill.; William Molitor, 9801 Avenue M; one-story cement block garage.

Chicago, Ill.; W. H. McGann, 1317 North Harding avenue; one-story frame garage.

Chicago, Ill.; L. W. Molner, 2334 Burling street; one-story frame garage.

Chicago, Ill.; J. W. Molener, 1835 Kenilworth avenue; one-story frame garage.

Chicago, Ill.; H. M. Monson, 4104 Atlgeld street; one-story frame garage.

Chicago, Ill.; William Moorhouse, 139 East 110th street; one-story frame garage.

Chicago, Ill.; C. Mosa, 1228 North Menard avenue; one-story frame garage.

Chicago, Ill.; A. C. Mueller, 4026 North Albany avenue; one-story brick garage.

Chicago, Ill.; N. E. Mueller 2313 Lunt avenue; one-story frame garage.

Chicago, Ill.; N. Murray, 7645 Maryland avenue; one-story frame garage.

Chicago, Ill.; H. Naebor, 4317 Palmer square; one-story frame garage.

Chicago, Ill.; Fry & Jacobson, 3969 Elston avenue; one-story garage and accessory station; $35,000.

Chicago, Ill.; E. C. Leonard, care of A. P. Dippold, 4747 Cottage Grove avenue; one-story brick public garage, 100x253; $90,000.

Chicago, Ill.; Look & Brandgenberg, care of L. J. Ohrenstein, 509 West Washton street; one-story brick and stone garage, 95x125, at Sangamon and Monroe streets; $40,000.

Chicago, Ill.; John K. Neebee, 2522 Aubert avenue; one-story public garage, 100x110, at Western and Montrose avenues; $45,000.

Chicago, Ill.; Mrs. M. O'Brien, 7605 Emerald avenue; one-story frame garage.

Chicago, Ill.; O. Olsen, 7654 Champlain avenue; one-story frame garage.

Chicago, Ill.; C. Palmer, 6107 Vernon avenue; one-story frame garage.

Chicago, Ill.; H. Pekin, 1105 South Richmond street; one-story brick garage.

Chicago, Ill.; Herman Peter, 6035 North Hermitage avenue; one-story frame garage.

Chicago, Ill.; C. Peterson, 7929 Princeton avenue; one-story frame garage.

Chicago, Ill.; Charles Popper, 5323 Race avenue; one-story frame garage.

Chicago, Ill.; E. M. Punce, 5523 West Monroe street; one-story frame garage.

Chicago, Ill.; A. W. Rakebrand, 4730 North Tripp avenue; one-story frame garage.

Chicago, Ill.; R. R. Rathschlag, 2643 North Kimball avenue; one-story frame garage.

Chicago, Ill.; Bertha Roesecke, 3013 South Kildare avenue; one-story frame garage.

Chicago, Ill.; James Roman, 5020 Ellis avenue; one-story garage and accessory shop; $2800.

Chicago, Ill.; Henry Roscher, 2154 Addison street; one-story frame garage.

Chicago, Ill.; H. L. Schiele, 4158 North Irving avenue; one-story frame garage.

Chicago, Ill.; J. Schuerman, 500 South Crawford avenue; one-story frame garage.

Chicago, Ill.; J. P. Sharpless, 7641 Merrill avenue; one-story frame garage.

Chicago, Ill.; H. C. Shaw, 10,936 Church street; one-story frame garage.

Chicago, Ill.; Michael Sodlicke, 1328 Byron street; one-story frame garage.

Chicago, Ill.; James Soffe, 7247 Ridgeland avenue; one-story cement garage.

Chicago. Ill.; M. Sohlman, 1413 North Maplewood avenue; one-story frame garage.

Chicago, Ill.; George H. Spirs, Monroe street and Wabash avenue; one-story garage and repair shop at 5411 Broadway; $60,000.

Chicago, Ill.; Charles G. Stach, 9339 Eberhart avenue; one-story frame garage.

Chicago, Ill; H. G. Stallwood, 5914 Race street; one-story frame garage.

Chicago, Ill.; Standard Oil Co.; one-story garage and service station at 1000-1004 Roosevelt road; $5000.

Chicago, Ill.; Gust Strauf, 1938 Bernice avenue; one-story frame garage.

Chicago, Ill.; C. W. Stradell, 4257 West Monroe street; one-story brick garage.

Chicago, Ill.; A. R. Sundstrom, 10,704 Avenue M; one-story frame garage.

Chicago, Ill.; V. L. Swager, 1912 West Kostner avenue; one-story frame garage.

Chicago, Ill.; Ivan Swislet, 1747 Barry street; one-story frame garage.

Chicago, Ill.; Joseph Szarek, 1301 Houston avenue; one-story frame garage.

Chicago, Ill.; A. H. Tennyson, 5425 Hadden avenue; one-story frame garage.

Chicago, Ill.; G. Themes, 1844 North Sawyer avenue; one-story frame garage.

Chicago, Ill.; C. E. Thorne, 373 East 88th street; one-story frame garage.

Chicago, Ill.; J. Torgoff, 2729 North Kimball avenue; one-story brick private garage; $3500.

Chicago, Ill.; N. Ungar, 4018 West Monroe street; one-story frame garage.

Chicago, Ill.; Joseph Unhock, 8423 Carpenter street; one-story frame garage.

Chicago, Ill.; H. Vicker, 7216 Princeton avenue; one story frame garage.

Chicago, Ill.; C. C. Watt, 12,131 Normal avenue; one-story frame garage.

Chicago, Ill.; A. P. Weber, 7927 Princeton avenue; one-story frame garage.

Chicago, Ill.; Charles Weiner, 4859 Barry avenue; one-story frame garage.

Chicago, Ill.; C. D. West, 22 East 45th street; one-story frame garage.

Chicago, Ill.; Margaret Whalen, 626 North Lotus avenue; one-story frame garage.

Chicago, Ill.; F. M. White, 1101 North Lorll avenue; one-story frame garage.

Chicago, Ill.; Dr. H. C. Will, 4865 Sheridan road; one-story frame garage.

Chicago, Ill.; F. Williams, 2219 Jackson boulevard; one-story frame garage.

Chicago, Ill.; William Wilson, 2255 North Kildare avenue; one-story frame garage.

Chicago, Ill.; Tony Witkowski, 1942 Webster avenue; one-story frame garage.

Chicago, Ill.; Adam Young, 5444 South Hermitage avenue; one-story frame garage.

Chicago, Ill.; C. Zurcy, 5533 Aberdeen street; one-story frame garage.

Decatur, Ill.; C. F. Howell, Lovington, Ill.; one-story garage and repair shop; $1250.

Elmwood, Ill.; George Fogotte; one-story garage and accessory shop.

Hoopestown, Ill.; William McFerren & Co.; one-story garage and accessory shop at Third and Main streets.

Hopedale, Ill.; Jules Mieville; one-story garage and accessory shop.

Jonesboro, Ill.; Curtis Hunsaker; one-story garage and repair shop.

McComb, Ill.; C. E. Asher; one-story garage and repair shop on West Jackson street; $8000.

Oak Park, Ill.; F. A. Hill, care of E. E. Roberts, 82 West Washington street; one-story garage and repair shop at 702 Madison street; $20,000.

Oregon, Ill.; Benie Motor Co.; one-story brick and reinforced concrete garage and repair shop; $20,000.

Strasburg, Ill.; Swigert Service Co.; one-story garage and repair shop.

Trilla, Ill.; D. F. Jones; one-story garage and accessory shop.

Waterloo, Ill.; Monroe County Auto Co.; one-story garage and accessory shop.

Argos, Ind.; W. L. Rudd Motor Co., Plymouth, Ind.; one-story brick commercial garage, 45x160; $15,000.

Bluffton, Ind.; Main Street Garage Co.; one-story garage and repair shop; $45,000.

Jeffersonville, Ind.; Gwin Motor Sales Co.; 120 East Maple street; two-story commercial garage and sales room, 50x153; $75,000.

Kokomo, Ind.; Dennis White Auto Co.; three-story brick garage and sales room, 75x144, at Buckeye and Jackson streets; $125,000.

Scottsburg, Ind.; Prosser's Garage; one-story brick repair shop, 80x90.

Terre Haute, Ind.; Vigo Auto Co., 114 North Seventh street; one-story garage and service station.

Centerville, Ia.; Appanoose Sign & Auto Co.; one-story repair shop.

Clermont, Ia.; J. P. Paulson; one-story garage and filling station, 120x60.

Caldwell, Kan.; Standard Oil Co.; one-story garage and filling station; $8000.

Fredonia, Kan.; Harry and Charles Singleton; one-story garage and service station.

Goff, Kan.; Goodrich Auto Co.; one-story garage and repair shop.

Holton, Kan.; Fred May and Frank Glen; one-story cement block garage.

Hutchinson, Kan.; Kirk Auto Sales Co.; one-story garage and repair shop.

Manhattan, Kan.; Holt & Nixon Tire Co.; one-story garage and tire repair shop, 308 Houston street.

Topeka, Kan.; F. W. Boettcher; one-story garage and repair shop, 910 West Sixth avenue.

Topeka, Kan.; W. R. Smith & Sons; one-story garage and repair shop at 118 North Kansas avenue.

Topeka, Kan.; West Side Garage & Supply Co.; one-story garage and repair shop at 910-912 West Sixth street.

Wichita, Kan.; Grant Electric Battery & Service Co.; 324 South Market street; one-story garage and repair shop.

Wichita, Kan.; A. M. Weinschen, 231 North Bluff avenue; one-story brick automobile building, 324-326 South Market street.

Louisville, Ky.; Prince Wells, 717 Fourth street, one or two-story brick fire-proof garage, 74x200.

Owensboro, Ky.; Lee Tire & Sales Co.; one-story brick garage and sales room, 50x130; $25,000.

Owensboro, Ky.; Smith Brothers and Frank Faith; one-story brick garage and repair shop, 80x120; $25,000.

Biddeford, Me.; Cleaves & Sawyer; one-story brick public garage and sales room, 112x58; $20,000.

Baltimore, Md.; Frank Molnaur, 531 South Ann street; one-story garage; 42x93; $10,000.

Boston, Mass.; Mrs. Gussie A. Lavine, care of S. H. Bowfsky, 25 Pemberton square; one-story public garage at 183 Roxbury street; $15,000.

New Bedford, Mass.; Motor Sales Co., 514 Pleasant street; two-story sales room and service station at Pearl and Purchase streets; $50,000.

Jackson, Mich.; Michigan Buick Sales Co., 104 East Washington street; two-story brick public garage and repair shop, 58x120; $25,000.

Kalamazoo, Mich.; F. E. Fair, 218 North Rose avenue; two-story brick garage, 100x175; $75,000.

Kalamazoo, Mich.; Kalamazoo Co.; one-story private garage, 60x80; $35,000.

Lansing, Mich.; Lansing-Nash Co.; one-story garage and repair shop, South Washington avenue; $40,000.

Muskegon Heights, Mich.; L. Drittenhofer, 200 North Western avenue; one-story brick garage; $50,000.

Pinconning, Mich.; Texico Oil Co.; one-story garage and gasoline station.

Duluth, Minn.; John Boch, 4023 West Sixth street; one-story frame garage.

Duluth, Minn.; C. J. Hanson, 4207 North Fourth street; one-story frame garage.

Duluth, Minn.; M. W. Lind, 425 17th street; one-story frame garage.

Duluth, Minn.; Christopher Miller, 4311 West Eighth street; one-story frame garage.

Duluth, Minn.; W. T. Moyer, 5770 Olney street; one-story frame garage.

Duluth, Minn.; J. E. Singleton, 319 Snively road; one-story frame garage.

Kasson, Minn.; I. B. Eidem; one-story frame garage.

Meriden, Minn.; Albert Stendel; one-story frame garage.

Minneapolis, Minn.; H. E. Blair, 4822 Columbus avenue; one-story frame garage.

Minneapolis, Minn.; J. A. Dunn, 2840 Humboldt street; one-story frame garage.

Minneapolis, Minn.; O. N. Dyste, 3232 Holmes avenue, south; one-story frame garage.

Minneapolis, Minn.; Dr. Thomas Peterson, 4000 Harriet avenue; one-story brick garage.

Pemberton, Minn.; Dudley Hawkins; one-story frame garage.

Quitman, Miss.; John S. Dobbs; one-story concrete garage, 50x120.

St. Louis, Mo.; Columbia Taxicab Co., 4689 Delmar avenue; one-story brick fire-proof garage, 150x150.

Camden, N. J.; Gordon Motor Car Co.; one-story brick and reinforced concrete garage and service station, 50x100.

Elizabeth, N. J.; William Lawry Hotel, 78 East Jersey street; one-story public garage at 80-82 East Jersey street; $12,000.

Jersey City, N. J.; Caswell Motor Co., 73 East 130th street; three-story brick and reinforced concrete garage and machine shop; $100,000.

Jersey City, N. J.; Lewis Max, 52 Greene street; one-story garage at Montgomery and Colgate streets; $30,000.

Newark, N. J.; M. J. McGowan, 320 Market street; one-story brick public garage at 263-265 Lafayette street; $20,000.

Newark, N. J.; H. Slifen, 468 South 10th street, New York; one-story public garage at 468 South 10th street; $5000.

Newark, N. J.; William F. Taylor, Adams and Thomas streets; one-story garage at 331 South street; $14,000.

Paterson, N. J.; New Jersey Bus Manufacturing Corporation, West 34th street and McBride avenue; one-story brick garage and machine shop at 737-739 Madison avenue.

Pleasantville, N. J.; Bertram Ireland, Guarantee Trust building, Atlantic City, N. J.; one-story brick and concrete public garage, 50x150.

Brooklyn, N. Y.; Frank Burnett, 167 Rockaway avenue; one-story brick garage; $30,000.

Brooklyn, N. Y.; J. Faraldo, 222 Old Woodpoint road; one-story brick garage, 29x102; $16,000.

Brooklyn, N. Y.; J. Friedman, 60 Tapscott street; one-story brick garage; $20,000.

Brooklyn, N. Y.; O. Goetz, 261 Stogg street; two-story brick garage, 22x100, $15,000.

Brooklyn, N. Y.; Joseph Paladino, 5901 13th avenue; one-story cement block garage and repair shop at 59th street and 15th avenue; $14,000.

Brooklyn, N. Y.; Realty Associates, 162 Remsen street; 32 one-story garages at 68th street and Sixth avenue; $22,000.

Brooklyn, N. Y.; Max Seidman, 1463 St. Mark's avenue; one-story brick garage; $35,000.

Brooklyn, N. Y.; E. Sockolof, 1202 Carroll street; one-story brick garage; $15,000.

Brooklyn, N. Y.; Harry Soellerberg, 1021 Atlantic avenue; one-story brick garage; $12,000.

Brooklyn, N. Y.; S. & R. Holding Co., 175 Bay 29th street; one-story brick garage; $60,000.

Brooklyn, N. Y.; H. Strongin, 1703 Pitken avenue; one-story brick garage at 806 Coney Island avenue; $30,000.

New York, N. Y.; H. R. T. Garage, Inc., 52 Vanderbilt avenue; two brick garages, one and 1½-story; $55,000.

New York, N. Y.; Marcus & Goldstein, 175 East 96th street; one-story brick and concrete garage at 161-169 East 119th street; $35,000.

New York, N. Y.; Marcus & Goldstein, 175 East 96th street; two-story brick and stone garage at 334 West 40th street.

New York, N. Y.; Sheffield Farms Co., Inc.; one-story brick and frame garage at 542-544 West 57th street; $10,000.

Schenectady, N. Y.; C. G. Van Rensselaer, 505 State street; one-story brick garage, 50x133, at 1538 Union street; $15,000.

Charlotte, N. C.; Motor Sales Co., 1100 South Tryon street; two-story sales room, repair shop and refinishing department, 99x150; $60,000.

Clemmons, N. C.; R. H. Hunter & Sons; one-story repair shop, 30x50.

Egeland, N. D.; William Deardoff; one-story frame garage.

Bellevue, O.; Biennen Brothers; one-story brick garage and sales room, 96x70; $25,000.

Cincinnati, O.; William Batton, 2600 Hoff avenue; one-story frame garage.

Cincinnati, O.; Cincinnati-Nash Motor Co., 836 Sycamore street; two-story brick garage and sales room, 80x200, at southeast corner Reading road and Morgan street; $100,000.

Cincinnati, O.; George Clements, 454 Considine avenue; one-story frame garage.

Cincinnati, O.; F. Davis, 3330 Morrison place; one-story frame garage.

Cincinnati, O.; Eugene Dirr, 3370 Everson avenue; one-story frame garage.

Cincinnati, O.; William B. Farrin Co., Chester and C. H. & D. railway; one-story frame garage.

Cincinnati, O.; Robert Gerard, Roxberry and Beechmont avenues; one-story frame garage.

Cincinnati, O.; Frank G. Louis, 650 East McMillan street; one-story brick garage.

Cincinnati, O.; E. Lyons, 2786 Sarita place; one-story frame garage.

Cincinnati, O.; Edward McManamann, 4322 Eastern avenue; one-story brick garage.

Cincinnati, O.; H. E. Oswald, 4315 Homer avenue; one-story frame garage.

Cincinnati, O.; C. Reinbold, Jr., 118 Lyons avenue; one-story frame garage.

Cincinnati, O.; Sophia Rusher, 6221 Coleridge avenue; one-story frame garage.

Columbus, O.; National Auto Supply & Tire Co.; one-story garage and repair shop at 122 East Long street.

Columbus, O.; Swift Estate; two one-story brick and stucco garages, 50x104 and 30x104; plate glass front.

Elyria, O.; Cadillac Garage; five-story brick sales room and service station, 50x250; $250,000.

Lorain, O.; Smith Motor Co.; two-story brick garage, sales room and service station, 100x120; $10,000.

Toledo, O.; B. Kaminski, 321 Beacon street; one-story cement block garage.

Toledo, O.; Toledo Fence & Post Co., 2907 Summit avenue; one-story frame garage.

Youngstown, O.; Homer Jardine, 138 Garland avenue; one-story frame garage.

Youngstown, O.; Mrs. John Mehlo, 527 Walter street; one-story frame garage.

Youngstown, O.; F. L. Zouck, 233 Lafayette street; one-story frame garage.

Janesville, O.; B. L. Huff; one-story brick garage and service station, 41 South Sixth street; $6000.

Tulsa, Okla.; Frank Seaman; one-story concrete garage; $35,000.

Gettysburg, Pa.; Peckham & Ott; one-story brick and concrete public garage, 60x180.

Kane, Pa.; William Gausz; one-story garage and repair shop on North Fifth street.

Lansdowne, Pa.; Dr. W. L. Rhoads, 11 East Baltimore avenue; one-story brick sales room, 46x55; $8000.

Olyphant, Pa.; Mrs. A. Evans; one-story brick public garage, 50x165; $35,000.

Philadelphia, Pa.; John E. Real; one-story garage, 24x90, at southeast corner Broad and Courtland streets.

Wilkes-Barre, Pa.; W. H. Roberts, 399 North Washington street; one-story brick public garage, 50x97; $20,000.

Providence, R. I.; H. P. Clark, 1 Laurel avenue; one-story brick public garage and service station, 20x21; $20,000.

Providence, R. I.; John H. Orr & Son; one-story brick public garage, 68x79, at South Main and Dellar streets; $20,000.

White Rock, S. D.; Frank Stoelbe; one-story frame garage.

Bristol, Tenn.; H. W. Reynolds; one-story public garage, 60x192; $20,000.

Houston, Tex.; Universal Car Co.; three-story brick, fireproof automobile building; site, 100x100.

Norfolk, Va.; Standard Oil Co.; one-story brick and reinforced concrete garage, 120x90.

Richmond, Va.; Advance Realty Corporation; one-story brick and frame garage; $45,000.

Huntington, W. Va.; D. A. and G. M. Mossmann; two-story brick and concrete sales room and service station, 45x200; pressed brick front, plate glass white tile; $20,000.

Wheeling, W. Va.; Hopkins Motor Co.; one-story garage; $6000.

Cochran, Wis.; J. L. Rohrer & Son; one-story frame garage.

Cornell Heights, Wis.; Harry Hetchler; one-story frame garage.

Manitowoc, Wis.; Clark Oil Co., 10th and York streets; one-story brick and concrete private garage and filling station, 60x100; $25,000.

Milwaukee, Wis.; F. W. R. Achen Co., 155 Oneida street; two-story brick and reinforced concrete sales room and service station, 120x150, at Oneida and Jackson streets; $200,000.

Milwaukee, Wis.; W. H. Krueger Motor Car Co., 485 Jefferson street; two-story brick and concrete garage, 40x120, at 499 Jefferson street.

Norwalk, Wis.; Zimmerman Brothers; one-story brick and tile garage and sales room, 54x96; $12,000.

Oconto Falls, Wis.; Oconto Falls Motor Co.; one-story garage and sales room, 90x120; $25,000.

Polar, Wis.; F. M. Jones; one-story frame garage.

Sheboygan, Wis.; Helming Brothers Co., 914 Ninth street; one-story garage and sales room.

Webster, Wis.; Moren Auto Co.; one-story garage and repair shop; $25,000.

CONTRACTS AWARDED.

Tuscaloosa, Ala.; J. L. Foster; one-story garage, 50x132, for Crescent Motor Co.

Washington, D. C.; E. H. Mosher, Munsey building; five-story garage, 50x135.

Atlanta, Ga.; Houser & Mangum, 456 Courtland street; one-story brick and tile garage; $12,500.

Byron, Ill.; George G. Myers; one-story garage and repair shop.

Chicago, Ill.; A. & E. Anderson, 19 South LaSalle street; one-story garage at 4805 Woodlawn avenue for Robert McDougel, 4804 Woodlawn avenue; $6000.

Chicago, Ill.; William Hammerstroem, 3038 Darwin street; one-story private garage, 59x42, at 2224 Augusta street, for Anton Race, Superior and Robey strets; $12,000.

Chicago, Ill.; Oscar Hanson, 4123 North Mason street; one-story garage and display room, 100x125, at Irving park and 59th avenue, for August F. Hallman, 10 South LaSalle street; $25,000.

Chicago, Ill.; H. C. Jensen, 4948 North Hamlin avenue; one-story public garage, 150x150, at 5411 Broadway, for George H. Spirs, Monroe street and Wabash avenue; $60,000.

Chicago, Ill.; H. Otterson, 2114 North Keeler avenue; one-story private garage, 36x56, rear 1143 West Chicago avenue, for Joseph Przbylo; $7000.

Moline, Ill.; Calvin and Charles Ainsworth; one-story garage and repair shop; $50,000.

Bluffton, Ind.; L. W. Kimmel; one-story garage and sales room for Board of County Commissioners.

Bluffton, Ind.; Charles Sanders, Portland, Ind.; one-story garage, 60x100, for O. E. Shafer, 510 South Morgan street; $10,000.

Carlos, Ind.; Thomas & Martin; one-story garage and repair shop.

Huntington, Ind.; C. J. Ellerman, 742 South Jefferson street; one-story private garage, 40x120, for Schacht Rubber Co.; $10,000.

Indianapolis, Ind.; Couder & Culbertson, 411 I. O. O. F. building; two-story salesroom, 100x190, at 11th and Meridian streets, for J. Rilus Eastman, 331 North Delaware street.

Indianapolis, Ind.; Hoosier General Construction Co., Connersville, Ind.; four-story garage and sales room, 70x300, at Meridian and Illinois streets, for Inland Motor Sales Corporation; $20,000.

Uniondale, Ind.; Lockwood & Son Garage Co.; one-story garage and repair shop.

Russell, Ia.; E. M. Johnson, Charlton, Ia.; one-story garage, 63x100, for R. F. Houston.

Topeka, Kan.; Page Milling Co.; three-story garage, 50x150, at 912 Kansas avenue; $65,000.

Franklin, Ky.; W. H. Winfield; one-story brick garage, 77x114.

Harrodsburg, Ky.; P. N. Wilson; one-story garage, 120x140, for J. T. Ingram.

Lexington, Ky.; Frank Corbin; one-story garage, 30x12, for C. N. Manning, president of Security Trust Co.; $30,000.

London, Ky.; T. J. Moren; two-story brick garage, 80x90.

Newport, Ky.; F. G. Ader Construction Co., Sixth and Saratoga streets; one-story garage and service station, 85x185, at 1028-1032 Monmouth avenue, for Standard Auto Garage Co., Sixth and York streets; $45,000.

Vine Grove, Ky.; Jenkins-Essex Lumber Co., Elizabeth, Ky.; one-story garage, 50x125, for Cooper Craycroft Co.

Vine Grove, Ky.; Service Garage Co.; one-story brick and concrete garage, 50x150.

Boston, Mass.; H. L. Gilman & Co., 34 School street; two-story public garage and repair shop, 200x75, for L. K. Aldntuck, 34 School street; $150,000.

Lawrence, Mass.; Collins Construction Co., Andover, Mass.; one-story public garage and repair shop, 50x70 and 25x25, for J. R. Haverty, Bay State building; $20,000.

Lowell, Mass.; Edwards & Monohan, 8 Beacon street, Boston; one-story public garage, 215x175, for G. R. Dana, 24 East Merrimac street; $100,000.

New Bedford, Mass.; James Cryer, 15 Peckham street; one-story public garage, 19x210, for Antone Kalish, 146 Bullard street; $10,000.

New Bedford, Mass.; Z. B. Davis Corporation, 688 Acushnet avenue; one and two-story garage; $40,000. Lessee, New England Telephone & Telegraph Co.

Quincy, Mass.; C. C. Temple Co., 40 Court street, Boston; one and two-story public garage, 75x150, at Quincy and School streets, for S. P. Xerxa.

Springfield, Mass.; E. F. Carlson Co.; 244 Main street; two-story private garage, 62x38, for M. S. Converse Co., 17 Harrison avenue.

Worcester, Mass.; H. W. Trulson, 35 Berkman stret; two-story public garage, 93x116, at Pleasant and Fruit streets.

Detroit, Mich.; J. H. A. Haberkorn Co., 280 14th avenue; one-story private garage, 60x25, at Brooklyn and Cherry streets, for S. L. Bird & Sons, 171 Woodward avenue.

Hudsonville, Mich.; Alvard & Schulmaster; one-story garage and service station; $10,000.

Kalamazoo, Mich.; F. E. Fair, 218 North Rose street; two-story garage, 100x175; $75,000.

Kansas City, Mo.; C. Schaper & Son, 5544 Forest avenue; one-story sales room, 50x122, for Fred Altergott, 606 East 12th street. Lessee, Frame-Brown Motors Co.

Kansas City, Mo.; Harvey Stiver, 402 Shukert building; two-story automobile building for D. C. Robertson, Marshall, Mo.

Kansas City, Mo.; Harvey Stiver, 402 Shukert building; one-story garage, 49x124, at 1424 Cherry street, for C. L. Smack, 706 Baltimore avenue; $15,000.

Omaha, Neb.; A. L. C. Bush, 543 Railway Exchange building; one-story garage, 41x45, at 2076-2078 Horney street, for N. P. Dodge, 206 Withnell block; $30,000.

Trenton, N. J.; James H. Morris, Broad Street Bank building; one-story public garage, 60x181, for E. Niedt, Ertle Motor Co., 214 South Clinton avenue; $500,000.

Albany, N. Y.; R. DiNova, 628 Central avenue; one-story garage 60x110, at 498-500 Delaware avenue, for Erasmo Foreina, 514 Delaware avenue.

Brooklyn, N. Y.; William P. McGarry Construction Co., 293 Freeman street; one-story garage for Veribest Improvement Corporation, 826 Manhattan avenue; $100,000.

Brooklyn, N. Y.; Nordi Construction Co.; one-story garage at 39th street, near Sixth avenue; $30,000.

Brooklyn, N. Y.; Square Lumber Co.; one-story garage at northeast corner 17th and Neptune avenue; $18,000.

Buffalo, N. Y.; Edward Grupp & Son, 125 Glenwood avenue; one-story sales room, 50x100, at Goodell and Demond place, for Jean Grosjean, 48 Demond place; $15,000.

Mariner's Harbor, L. I., N. Y.; John Milners Co., Port Richmond, L. I.; one-story public garage for Marines' Harbor Motor & Supply Co.; $15,000.

New York, N. Y.; M. Klein; one-story garage for Charles Watenberg, 2679 Eighth avenue; $20,000.

Schenectady, N. Y.; Colmer Construction Co.; one-story garage, 105x60, at 216 Crane street, for H. H. McMann, 330 Crane street; $18,000.

Staatsburg, N. Y.; Irving Staley, Rhinebeck, N. Y.; one-story garage; $5000.

Syracuse, N. Y.; James E. Heffernan, 721 South Salina street; two-story storage garage, 132x34, for Judd Express Co.; $22,000.

Charlotte, N. C.; R. L. Goode; two-story brick and cement automobile building, 80x120, for E. D. Lotta; $60,000.

Gastonia, N. C.; McAllister & Quinn; one-story filling and service station, 45x45, for Charles Ford and Benjamin E. Douglas.

Canton, O.; E. H. Landor, Renker building; two-story garage and show room, 60x153 and 50x153, at 509-511 12th street, for Schlemmer & Graber, 503 12th street; $70,000.

Cleveland, O.; Lehder Construction Co.; one-story garage, 49x91, for Cleveland Hardware Co.; $25,000.

Cleveland, O.; Schirmer & O'Hara, 2031 Euclid avenue; one-story garage, 60x100, at Fourth and Hamilton avenue, for Board of County Commissioners; $24,000.

Groesbeck, O.; E. T. Hounert; one-story public garage, 90x100, for H. Feiler; $12,000.

Toledo, O.; Culver Motor Sales, 421 Main street; two-story service station, 90x120; $75,000.

Tulsa, Okla.; R. E. Wilder; one-story concrete garage for Frank G. Seaman, 305 North Santa Fe street; $35,000.

Bethlehem, Pa.; Lewis M. Jones, Catasauqua, Pa.; one and two-story brick public garage, 53x150, for Robert R. Miller; $40,000.

Denver, Pa.; Samuel Snyder; one-story public garage, 50x103, for F. E. Line; $20,000.

Easton, Pa.; Sears & Bowers, Bank and Church streets; one-story public garage, 27x75; $12,000.

Easton, Pa.; R. T. & C. D. Stewart Construction Co., 26 Center square; two-story garage, 97x148, for John Neumeyer, care of Northampton National bank; $100,000.

Harrisburg, Pa.; E. W. Spangler, 910 18th street; one-story garage, 50x100, for George Croznic, 1116 Herr street; $10,000.

Johnstown, Pa.; Berkeville Brothers; two-story commercial garage, 66x152, for Twin Valley Motor Co., Inc.

Monessen, Pa.; C. A. Derby; two-story brick commercial garage, 48x100, for David Sider; $30,000.

Philadelphia, Pa.; W. H. Bunn; one-story brick garage, 9x20, at southwest corner 61st and Girard avenue, for John Gold; $1000.

Philadelphia, Pa.; Conneen Construction Co.; one-story stone garage, southeast corner Wayne avenue and Queen street, for D. F. Waters; $550.

Philadelphia, Pa.; Edward Frantz, 929 Chestnut street; one-story garage and service station, 25x178, at 2504 North Broad street, for Newbauer & Superwitz.

Philadelphia, Pa.; William J. Gruhler Co.; one-story garage, 25x20, east side Lawton street, south 69th avenue, for Charles H. Jacobs; $6100.

Philadelphia, Pa.; Simon Kaplan; one-story garage, 15x15, at 2641 North Fifth street, for M. Margolis; $1225.

Philadelphia, Pa.; Robert E. Lamb, 841 North 19th street; one-story garage, 50x124, at Swanson and Fitzwater streets, for Pennsylvania Warehousing & Safe Deposit Co., 113 South Third street.

Philadelphia, Pa.; William MacFarland; one-story garage at 3648 Frankford avenue, for George Murdoch; $5000.

Philadelphia, Pa.; J. W. Meekert; one-story brick garage, 16x78, at 5412 Springfield avenue, for Thomas Millell; $15,000.

Philadelphia, Pa.; M. Moister; one-story garage, 35x50, at 210-212 Courtland street, for Wyoming Manufacturing Co.; $3000.

Philadelphia, Pa.; Sydney Nasife; one-story brick garage at 3729 York road, for Nicholas Nasife & Sons; $20,000.

Philadelphia, Pa.; John Schnabel, Inc.; two-story sales and service station, 34x120, at 2207 Chestnut street, for R. H. Greenberg; $42,800.

Philadelphia, Pa.; William D. Wilson; one-story stone garage, south side Vine street, east 63rd; $8000.

Pittsburgh, Pa.; Fiat Motor Car Co., Union arcade; two or three-story garage and sales room, 75x100, at Cypress and Aspen streets.

Reading, Pa.; Samuel M. Sherman, 425 Spring street; one-story public garage, 50x100, at 11th and Marion streets, for Frantz & Luppold, 1060 Perry street; $20,000.

Woonsocket, R. I.; B. Goss; one-story garage, 30x50, at State and Dewey streets, for Julius Fleischer, 314 Spruce street.

Houston, Tex.; American Construction Co.; one-story hollow tile garage and service station for P. Barnes; $20,000.

Madison, Wis.; L. B. Gilbert, 16 Ellsworth building; one-story public garage, 66x150, for W. Brueske; $20,000.

Milwaukee, Wis.; William J. Fischer, 484 25th avenue; one-story garage, 67x18, at 231 Jefferson street, for Frank Jennaro; $25,000.

Milwaukee, Wis.; R. P. Hansen, 529 26th avenue; one-story garage, 100x160, at Ogden and Farwell streets.

Milwaukee, Wis.; M. G. Winter, 5029 North avenue; one-story garage and repair shop, 50x110, at Lisbon avenue and 35th street, for Adam Freiberger, 508 54th street; $15,000.

River Falls, Wis.; O. H. Ostness; one-story garage and repair shop, for Jenson & Halsted.

Sheboygan, Wis.; Helming Brothers, 914 Ninth street; one-story garage and sales room, 60x150.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN AUTOMOBILES, TRUCKS, TRACTORS, ETC.

Birmingham, Ala.; W. H. Maseroll Automobile Co.; $5000; W. T. Maseroll, president; Rose Maseroll, vice president; C. S. Estes, secretary.

Birmingham, Ala.; Packard-Birmingham Motors Co.; $4000; J. Mercer Barnett, president; W. Keese Dunwoody, vice president; J. W. Mercer, secretary-treasurer.

Birmingham, Ala.; Southern States Motors Corporation; $3000; W. W. Whyte, Welch, W. Va., president; R. B. Roundsville, Birmingham, vice president; L. A. Woodward, Cincinnati, O., secretary-treasurer.

Montgomery, Ala.; Southeastern Motor Co.; $100,000.

Helena, Ark.; Interstate Sales Co.; $100,000; E. S. Ready, S. L. Mundt, S. W. Tappan.

Malvern, Ark.; Rector Motor Co.; $10,000; W. C. Hudson, F. G. Smart, G. L. Rector, Jr.

Los Angeles, Cal.; Coast Motor Co.; $300,000.

Bridgeport, Conn.; Brearley, Inc., W. E., to deal in automobiles; $20,000.

New Haven, Conn; Hare's Motors of Connecticut, Inc.; $200,000.

Dover, Del.; Globe Motors Co.; $15,000,000; C. H. Blaske, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Mager Car Corporation; $20,000,000; C. H. Blaske, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Stahl, E. F., Inc.; $100,000.

Wilmington, Del.; Chicago Car Co.; $15,000,000; M. L. Rogers, W. G. Singer, L. A. Irwin.

Wilmington, Del.; $50,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; Economy Motor Sales Co.; $375,000; Walter N. Reed, Letitia M. Reed, Dushane C. Potter.

Wilmington, Del.; General Guaranty Co., to deal in automobiles; $4,000,000.

Wilmington, Del.; Jackson Motors; $500,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; Jackson Sales Corporation, Southern Division, to deal in and repair automobiles; $30,000.

Wilmington, Del.; Oakland Motor Sales Co. to deal in motor vehicles; $100,000.

Wilmington, Del.; Porto Rico Blue Line, Inc., to deal in automobiles, conduct sightseeing and tourists' business; $100,000.

Wilmington, Del.; Smith & Clark Co., to deal in automobiles, etc.; $100,000.

Wilmington, Del.; Wilmington-Nash Motors; $50,000; G. H. Reed, M. Toner.

Jacksonville, Fla.; American Motors Export Co., Inc.; $5,000,000.

Jacksonville, Fla.; Gray Motors Co.; $50,000; J. B. Gray, president; W. J. Harris, vice president; F. P. Wortman, secretary-treasurer.

Jacksonville, Fla.; Packard-Florida Motors Co.; $60,000; James D. Palmer, W. J. Forney, P. McLain.

Jacksonville, Fla.; Peninsular Motors, Inc.; $75,000; O. S. Ferson, president; J. W. Turner, vice president; D. L. Ryan, secretary-treasurer.

Atlanta, Ga.; Elliott-McGregor Motor Co.; $50,000; W. A. Elliott, Dave Patton, Jr.

Atlanta, Ga.; Red Diamond Motors, Atlanta National Bank building; $5,000,000; W. H. Seabrooke, president; Henry Short, secretary; R. E. Hicks, vice president; T. L. Hamilton, treasurer.

Macon, Ga.; Georgia Republic Co.; $50,000; T. E. Turner, R. M. Yatlin, J. L. Soyars.

Pocatello, Ida.; Pocatello Rebuilt Car Co.; $100,000.

Rockford, Ill.; Forest City Motor Co., to conduct automobile and accessory business at 226 South Church street; Harry C. and Z. A. Wickwire, Donald C. Aitchison.

Danville, Ind.; Citizens' Motor Co.; $150,000.

Indianapolis, Ind.; Bentz, Joe, Co., to conduct an automobile and accessory business; $10,000; William S. Goodell, Joseph, Alice and A. Bentz.

Salina, Kan.; Weinle Motor Co., to transact a general automobile business; $50,000; H. C. Weinle, president; James A. Stone, vice president; Charles Thompson, secretary.

Louisville, Ky.; Halley-Troutman Brothers Motors Co.; $1000; George Halley, Frank Troutman, W. J. Troutman.

Paintsville, Ky.; Paintsville Automobile Sales & Service Co., Inc.; $25,000; F. M. Hendel, I. B. Hendel, Edgar Kaee.

Plaquemine, La.; Blair Motor Co.; $25,000; Hugh Blair, president; Francis Rouse, treasurer.

Salisbury, Md.; Southern Sales Co.; $25,000; Walter C. Thurston, John Gunby, Florence W. Wheaton.

Boston, Mass.; Ajax Motors Corporation; $5,000,000; George Lyman Rogers, Walter M. Lowney, Boston; Chester I. Campbell, Quincy; Edgar F. Hathaway, Wellesley Hills; Frank L. Rawson, Portland, Me.

Fall River, Mass.; White Sales Co.; motor vehicles; $50,000; James E. Monahan, Joseph F. Monahan, Charles P. Ryan.

Lynn, Mass.; Lynn Auto Sales Co., Inc.; motor vehicles; $100,000; Frank E. Harris, William R. Hill, Lynn; George M. Faulkner, Brighton.

Saugus, Mass.; Wilson, C., Co.; automobiles; $50,000; Christian Wilson, Henry H. Burnett, Arthur R. Pitman.

Springfield, Mass.; Phelps Co., automotive vehicles; $200,000; Charles H. Bailey, Wendell H. Phelps, George R. Thurber.

Waltham, Mass.; Sales Expansion Co., to deal in automobiles and accessories; $100,000.

Port Huron, Mich.; Port Huron Oakland Co., to deal in automobiles, supplies, accessories, etc.; $2000.

Jackson, Miss.; Lucedale Automobile Co; $25,000; G. M. Luce, T. H. Byrd.

St. Louis, Mo.; McNiece-Hall Motor Co.; $150,000; Marion C. Early, attorney, Wainwright building.

Camden, N. J.; Oakland Spain Dreher Motor Co.; $30,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

East Orange, N. J.; Albey-Smith, Inc., 35 Marcy avenue, to conduct an automobile business; $100,000.

East Orange, N. J.; McManus Sales Corporation, to deal in automobiles, motorcycles, bicycles, parts, etc.; $100,000; Earl McManus, East Orange; E. H. Jewett, Jersey City; R. C. Stiles, Montclair.

Jersey City, N. J; S. G. S. Motor Sales Corporation, 15 Exchange place, to engage in a general automobile business; $100,000.

Newark, N. J.; Strain & Gentile Co., automobiles, etc.; $25,000; W. C. Strain, Kearny; Robert F. Gentile, R. S. Gentile, Belleville.

Phillipsburg, N. J; Hudson Street Garage, to conduct a general automobile and garage business; $125,000.

Rutherford, N. J.; Main Motors Corporation, 10 Ares avenue; general automobile business; $100,000.

Albany, N. Y; Albany Scripps-Booth Co., automobile sales agency; $10,000; H. F. Callan, F. L. Carrington, T. Southworth.

Brooklyn, N. Y; B. & B. Carburetor Co., Inc., to engage in automobile business, $100,000; Abram S. Bergen, 348 Jefferson avenue; T. Moores, T. I. C. Dunn.

Brooklyn, N. Y; Collins, E J. Co., motor vehicles; $5000; E. J. Collins, W. H. Bechmer, H. J. Fogarty, 22 Onderdonk avenue.

Brooklyn, N. Y.; Elm Auto Co.; $7500; E. Haas, E. E. Mears, S. S. Levy, 1083 Prospect place.

Brooklyn, N. Y.; Kemp Electric & Manufacturing Co., automobiles; $10,000; G. A. Dewey, R. G. Dunbar, F. S. Kemp, 2211 Nostrand avenue.

Brooklyn, N. Y.; Steiner & Steiner automobile business; $15,000; S. B. Rubenstein, A. Sobel, E. Steiner, 634 Fourth avenue.

Buffalo, N. Y.: Fina, Cray & Co., automobile business; $30,000; W. J. Elvin, L. R. Fina, J. R. Cray.

Buffalo, N. Y; Oliver Motor Truck Corporation; $50,000; F. W. Herson, H. K. and F. J. Oliver.

Buffalo, N. Y.; Tower Motor Sales Corporation of Buffalo; $30,000; G. G. Gregory, A. I. Hubbard, Jr., E. J. Schork.

Glen Cove, N. Y.; W. & C. Corporation; automobile business; $10,000; H. R. and A. Caplan, J. M. Whitty.

Greensburg, N. Y.; Westmoreland Motor Car Co.; $200,000.

Newburgh, N. Y.; Johnson, Howard E., Sales Co.; automobile business; H. E. Johnson, H. D. Chapin, C. M. Dillman, 692 Decatur street, Brooklyn.

New York, N. Y.; Cross Continent Manufacturing Corporation, Manhattan borough; automobile business and to deal in cereals, textiles, etc.; $250,000; A. E. Cohen, J. A. Aporta, G. Kulics, 140 Amity street.

New York, N. Y.; Gardner Motor Co., Inc., to deal in automobiles and parts; $1,500,000; R. Bennett, Jr., F. E. Sturgis, W. J. Ryan, 14 Wall street.

New York, N. Y.; Jereson Sales Co., Manhattan borough, to deal in automobiles and tractors; $5000; F. Joerissen, C. E. Travis, H. F. David, 99 Nassau street.

New York, N. Y.; Leindrof Motor Sales Co.; $100,000; Charles Warner, Edward M. Bernstein, Joseph E. Mantner.

New York, N. Y.; Lion Motor Corporation; $1,000,000; Charles Warner, Joseph E. Mintner, Ed. N. Bernstein.

New York, N. Y.; Manfeld Auto Sales Co., Manhattan borough; $10,000; Drinberg S. Feldstone, A. Mandel, 816 178th street.

New York, N. Y.; Maxwell Distributing Corporation, Manhattan borough, to conduct automobile business; $100,000; H. V. Poor, 80 Broadway.

New York, N. Y.; Rodiquez & Co., Manhattan borough; automobiles; $10,000; Dew C. Jones, F. W. Demuth, S. D. Ward, 26 Exchange place.

New York, N. Y.; Trans-Marine Motor Corporation, Manhattan borough; motors, boats and automobiles; $100,000; C. Sperling, J. A. Lee, G. Pfeil, 149 Broadway.

New York, N. Y.; Woods National Sales Co., Manhattan borough; automobile business and advertising; $100,000; L. I. Barst, C. F. Brooks, J. G. Woods, Hotel Pennsylvania.

Richmond, N. Y.; Richmond County Motor Co.; $20,000; C. V. and E. Dandnigo, H. F. Vogel, West New Brighton.

Rochester, N. Y.; Alward Motor Corporation; $10,500; H. P. Smith, F. and C. F. Alward, Buffalo.

Rochester, N. Y.; Overland Sheldon Co.; automobiles; $53,750; J. A. Tait; J. C. O'Brien, B. K. Sheldon.

Schenectady, N. Y.; Franklin J. Kalteux; automobile business; $25,000; J. J. Fittzpatrick, M. T Kalteux, E. J. Sharpley.

Saratoga Springs, N. Y.; White Star Service Corporation; automobile and advertising business; $50,000; A. Adams, R. Walton, C. H. Watson, Lake Placid.

Woodhaven, N. Y.; Naivete Motors; $100,000; G. H. and W. Dein, 539 Thropp avenue, Brooklyn.

Asheville, N. C.; Weaver Motor Co; $50,000; Arthur H. Adams, Guy Weaver.

Blandenboro, N. C.; Blandenboro Motor Co.; $50,000; S. S. Hutchinson, C. O. Bridges, C. L. S. Ingletary.

Kannapolis, N. C.; Fizall Motor Co.; $75,000; John W. Kimball, L. C. Bass, J. P. Price.

Kinston, N. C.; Motor Truck & Trailer Co.; $100,000; E. V. Webb, T. G. Hyman, A. D. O'Bryan.

Raleigh, N. C.; Balanced Six Motor Co.; $100,000.

Raleigh, N. C.; Mecklenburg Motor Co.; $100,000.

Stantonsburg, N. C.; Automobile Sales Co.; $10,000; T. E. Person, R. J. Crockett, R. A. Bailey.

Wilson, N. C.; United Motor Corporation; $100,000; S. A. Eure, H. V. Modlin, J. H. S. Hodges.

Cleveland, O.; H. B. Young Motor Truck Co.; $575,000.

Defiance, O.; Smith & Patten Motor Sales Co.; $200,000.

Muskogee, Okla.; Rike-Richardson Motor Co.; $25,000; C. C. Rike, Ray Richardson, Rufina Richardson.

Nowata, Okla.; Nowata Buick Co.; $25,000; J B. Yingling, S. C. Yingling, E. V. Yingling, Eldorado, Kan.

Oklahoma City, Okla.; Briscoe, W. M., Motor Sales Co.; $100,000; C. W. Johnson, R. F. Fasken, W. M. Briscoe.

Oklahoma City, Okla.; Davis-Wade Motor Co., Inc.; $25,000; A. M. Davis, R. E. Wade, W. W. Brown, Jr.

Oklahoma City, Okla.; Lambert-Jones Motor Co.; $15,000; C. T. Jones, Garland White, Oklahoma City; T. E. Lambert, Heldenville.

Paul's Valley, Okla.; Edwards-Clemens Motor Co.; $8000; R. A. McMurtray, John F. Clemens, S. C. Edwards.

Stillwater, Okla.; Hemme & Jones' Motor Co.; $20,000; Fred W. Hemme, James E. Jones, Joseph H. Hemme.

Greensburg, Pa.; Westmoreland Motor Car Co.; $200,000.

Philadelphia, Pa.; Fidelity Motors, Inc., 4830-4834 Market street; $250,000; Everett Cummins, president and treasurer; George C. Henderson, vice president and general sales manager; Floyd A. Shoemaker, secretary; board of directors, in addition to those mentioned, G. Harry Sawnfield, J. Howard Patterson.

Philadelphia, Pa.; Wood Quality Motors Co.; $75,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

Memphis, Tenn.; Standard Motors Co.; $10,000; P. K. Norman, Wood Woolwine, Ben Herring.

Dallas, Tex.; Packard-Dallas Motor Co.; $200,000.

El Paso, Tex.; Franklin Motor Car Co.

Fort Worth, Tex.; Twin Sister Motor Co.; $100,000; J. H. Garrison, F. G. Garrison, P. G. Dadmon.

Harper, Tex.; Citizens' Automobile Co.; $10,000; Henry Fischer, James Peril, R. B. More.

Houston, Tex.; Moon Automobile Sales Co., 1307 Main street; $50,000; W. H. Collins, president and manager.

Runge, Tex.; Runge Automobile Co.; $25,000; Charles Cook, A. W. Swanson, D. I. Patterson.

Sherman, Tex.; Leaman Brothers Automotive Co.; $10,000; D. W. Gulich, W. S. Leaman, R. G. Leaman.

Wichita Falls, Tex.; $30,000; S. A. Gaines, M. J. Gaines, R. G. Gaines.

Wheeling, W. Va.; Tri-State Motor Co.; $20,000; W. Radcliffe, H. A. Miller, M. B. Morgan, Bridgeport, W. Va.

MANUFACTURERS OF AUTOMOBILES, TRUCKS, TRACTORS, ETC.

Dover, Del.; Affordable Motor Truck Co, to manufacture automobiles, etc.; $1,000,000; M. L. Rogers, L. A. Irwin, W. G. Singer, Wilmington.

Dover, Del.; Missouri Motor Equipment Corporation, to manufacture and sell automobiles, engines, etc.; $300,000.

Dover, Del.; W. S. M. Tractor Corporation, to manufacture and sell power driven tractors and vehicles; $12,500,000; C. H. Blaske, M. A. Bruce, S. E. Dill, Wilmington.

Wilmington, Del.; Anderson Tire & Rubber Co., to manufacture and sell automobiles; $7,000,000.

Wilmington, Del.; Armington-Bradley Co., to manufacture automobiles, tires, etc.; $100,000.

Wilmington, Del.; Globe Motors Co., to manufacture and deal in automobiles, etc.; $15,000,000.

Wilmington, Del.; International Body Corporation, to manufacture and deal in automobiles, cars, tractors and all other vehicles; $1,000,000.

Wilmington, Del.; Iroquois Tire Corporation, to manufacture automobiles, etc.; $1,000,000.

Wilmington, Del.; Jackson Motors, Inc., to manufacture and sell automobiles; $500,000.

Wilmington, Del.; Rowe Motor Manufacturing Co.; $12,000,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; Wills, C. H. & Co., to manufacture and sell motor vehicles, etc.; $40,000,000.

Wilmington, Del.; Wright Battery Co., manufacture and sale of automobiles, etc.; $1,100,000.

Springfield, Mass.; Phelps Co., to manufacture tractive equipment for automobiles; $200,000.

New York, N. Y.; Gardner Motor Co., Inc., Manhattan borough; automobiles and parts; $1,500,000; R. Bennett, Jr.

Philadelphia, Pa.; Manypenny Motors Co., to manufacture, buy, sell and repair motor vehicles, including trucks, and all accessories thereto; Joseph P. Manypenny, Edwards F. Leiper, Jr., Leon J. Obermayer.

MANUFACTURERS OF PARTS, EQUIPMENT, ETC.

Dover, Del.; Anderson Tire & Rubber Co.; $7,000,000; L. Horty, M. C. Kelly, S. T. Mackey, Wilmington.

Dover, Del.; Granville Tire Co. of Delaware; $5,000,000; K. G. Laffitte, representative, 92 Broadway, New York, N. Y.

Dover, Del.; Meeley Magneto & Parts Co., to manufacture and sell automobile magnetos, generators, etc.; $100,000.

Dover, Del.; Sauzedde Manufacturing Corporation, to manufacture wheels for automobiles, etc.; $10,200,000.

Dover, Del.; Secanbee Tire & Rubber Co.; $10,000,000; M. M. Lucey, M. A. Davis, V. P. Lacey, Wilmington.

Wilmington, Del.; American Auto Axle Corporation, to manufacture axles of all kinds; $10,000,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; American Chemical Products Co., to manufacture and sell liquid motor fuels, etc.; $500,000.

Wilmington, Del.; American Compressed Air Motor Co.; $100,000; M. M. Lucey, M. A. Davis, V. P. Lacey.

Wilmington, Del.; Automatic Filling Station Co., to manufacture liquid fuels and lubricating oils; $250,000.

Wilmington, Del.; Automotive Accessory Co., to manufacture registering apparatus or gasometers; $500,000.

Wilmington, Del.; Barr Engine Corporation, to manufacture motors, engines, etc.; $1,000,000.

Wilmington, Del.; C. G. Spring Co., to manufacture springs, buffers, automobile parts, etc.; $2,000,000.

Wilmington, Del.; Dividend Auto Rim Co., Inc., to manufacture and sell automobile rims, etc.; $1,000,000.

Wilmington, Del.; Endurance Battery Corporation, to manufacture storage batteries, etc.; $10,000,000.

Wilmington, Del.; Ideal Tire & Rubber Corporation, to manufacture tires, tubes and casings for automobiles: $50,000,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; International Sterling Auto Supply Co., to manufacture cable locks, tols, etc.; $1,000,000.

Wilmington, Del.; Lyons Storage Battery Co.; $500,000; T. L. Croteau, M. A. Bruce, A. M. Hooven.

Wilmington, Del.; Manhattan Tire Stores, Inc., to manufacture tires, etc.; $1,000,000.

Wilmington, Del.; Mercury Body Corporation; $475,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; Parham Auto Patents Corporation, to manufacture wheels for automobiles, etc.; $500,000.

Wilmington, Del.; Service Spring Co., to manufacture springs for automobiles; $750,000.

Wilmington, Del.; Star Fender Corporation, to manufacture and sell fenders, etc.; $250,000.

Wilmington, Del.; United Carburetor & Manufacturing Co.; $500,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Baltimore, Md.; Baltimore Motor & Tire Co., 726 North Howard street; $50,000; Charles P. Hammond, Charles M. and Garland Linthicum.

Hagerstown, Md.; Maryland Automobile Products Co., to manufacture automobile parts; $50,000; James J. Doyle, John M. Hammersla, George E. Slaysbaugh.

Boston, Mass.; Ashton-DeVeer, Inc., motors of all kinds; $25,000; Harold W. DeVeer, Roslindale; Eugene J. Ashton, Atlantic; Joseph G., William D. and Herman J. Maier, Jamaica Plain.

Boston, Mass.; Auto Glare Remover Co.; $100,000; William W. O'Neill. Virgil A Charles, Harry Elsner, James A. Sweeney, William Schak, Garrett J. Barry and Lucius S. Carpenter of Boston; Frank E. Spellman of Malden and David Mitchell Lee of Winthrop.

Boston, Mass.; Massachusetts Signalite Sales Corporation; mechanical signals for motor cars; $100,000; Herbert L. Smith, Llewellyn D. Smith, Nashua, N. H.; David O. Smith, Winthrop, Mass.

Boston, Mass.; Walsh, J. J., Co., to manufacture and deal in automobile bodies, etc.; $150,000.

Springfield, Mass.; Auto Metal Body Corporation; $300,000; George Smith, Michael H. Smith, Edna M. Smith.

Jersey City, N. J.; Gaso-Meter Corporation, to manufacture machines and instruments for measuring gasoline in automobiles and other machines; $100,000.

Albany, N. Y.; M. & S. Radiator Co., automobile, tractor and aeroplane radiators; $5000; G. E. and A. N. Sperry.

Brooklyn, N. Y.; Aetna Tire & Rubber Co.; $360,000; O. C. Meyer, F. W. Hallam, F. Trautwein, Jr., 587 Manhattan avenue.

Brooklyn, N Y.; Cook Sure-Fire Commutator Co., Inc., to manufacture commutators and automobile accessories; $60,000; G. E. Cook, 45 Tihama street.

Brooklyn, N. Y.; Curran Detroit Motor Radiator Co. of New York; $10,000; J. W. and Z. L. Stevens, W. Buchanan, 1577 Atlantic avenue.

Brooklyn, N. Y.; No-Air Auto Tire Co., manufacturing goods, wares, merchandise, patents, etc.; $100,000; Ira Trautman.

Brooklyn, N. Y.; Windshield Corporation; $5000; M. Penn, W. Rosenblatt, J. J. Simon, 758A Madison street.

Buffalo, N. Y.; Bush Auto Tool Co.; $100,000; J. W. Wolf, E. J. Barth, C. J. Bush.

Buffalo, N. Y.; Kreinheder, Edwin J., Inc., to manufacture motor engines, cars, etc.; $50,000; Edwin J. Kreinheder, 108 Crescent avenue.

Buffalo, N. Y.; Opeo Co., to make batteries and operate garages; $25,000; W. O. Schields. S. N. Elsner, R. F. Kromke.

Canandaigua, N. Y.; Canandaigua Motor Parts Manufacturing Co.; $10,500; C. H. and A. W. White, C. O. Hallenbeck.

Freeport, N. Y.; Lowe-Elliott Corporation, to make batteries, tires and tubes; $50,000; M H. Lowe, W. J. Martin, M. A. Elliott.

New York, N. Y.; Automatic Mechanical & Novelty Corporation, Manhattan borough, to make animal traps, motors and air planes; $30,000; A. V. Rossell, A. Sullivan, C. W. Wood, 2251 Seventh avenue.

New York, N. Y.; Broadway Auto Radiator & Electro Plating Co., Manhattan borough; $15,000; D. D. Weinberger, W. Glickman, E. Williams, 130 Fulton street.

New York, N. Y.; D. L. K. Realty Corporation, to manufacture automobile bodies; $65,000; C. A. Hindman, R. Barnhart, G. A. Logan, 141 Broadway.

New York, N. Y.; Economy Bearing Corporation, Manhattan borough; automobile bearings; $10,000; I. Don, C. Zimmerman, E. Smiley, 375 East 199th street.

New York, N. Y.; Erie Cord Tire Co., Manhattan borough; $50,000; F. X. McFarland, J. J. Cosgrove, T. Lyons, 122 West 102nd street.

New York, N. Y.; Goebel Automotive Products Co., Manhattan borough; $15,000; A. Scheer, G. Luxner, H. Fleischer, 41 Union square.

New York, N. Y.; Motor Truck Radiator & Manufacturing Co., Manhattan borough; $55,000; D. DeW. Wever, G. W. Geiling, T. D. Hartigan, 2 Wall street.

New York, N. Y.; Promin Engineering Corporation, Bronx borough; mechanical engineers, manufacturing carburetors and automobile accessories; $250,000; J. Zelinski, 49 Railroad avenue, Neparo park, Westchester county; F. Peirano, A. Branski,, 414 East 155th street.

New York, N. Y.; Robe Rail Sales Corporation, Manhattan borough; automobile accessories; $300,000; M. and R. Robinson, B. C. Elliott, 1400 Broadway.

New York, N. Y.; Tru-matic Tire & Tube Co. of Delaware; $50,000; C. E. Little, representative, 106 Duane street.

New York, N. Y.; Universal Body Corporation, Manhattan borough; $160,000.

New York, N. Y.; Vim Electric & Motor Co., Manhattan borough; $10,000; S. Kassover, E. and Eva Victorson, 505 West 187th street.

New York, N. Y.; Young's Rubber Corporation, Manhattan borough; $100,000; S. A. Foot, A. R. Chisholm, M. A. Youngs, Mount Vernon.

New York, N. Y.; Zuan, H. C., Tire & Rubber Co., Inc., to manufacture automobile tires; $100,000; Harry C. Zuan, Queen's borough.

Oneonta, N. Y.; Traver-Blair Co., Inc.; to manufacture motors, machinery, wagons, boats and automobiles; $100,000; W. J. Blair, B. A. and A. Traver, 318 West 25th street, Manhattan borough, New York.

Syracuse, N. Y.; Aerotest Supply Corporation, to make motors; $25,000; R. L. Kincaid,(A. Tennant, J. G. Smith.

Watertown, N. Y.; Scharch-Atwood Top Corporation; automobile and motor boat tops; $100,000; C. L. Scharch, I. F. Atwood, F. K. Pursell.

Yonkers, N. Y.; Eastern Economy Co., Inc., manufacturing devices for automobiles, motor boats and gas engines; $100,000; N. A. Ball.

Lorain, O.; Lorain Auto Body Co.; $55,000; S. J. Wirtz.

Painesville, O.; Adrean Auto Supply & Tire Co.; $100,000; W. T. Adrean, F. P. Walther.

Philadelphia, Pa.; Meeley Magneto & Parts Co.; $100,000; W. E. Monahan, Michael J. Trochler, Raymond M. Waters.

Pittsburgh, Pa.; American Automobile Hardware Forging & Manufacturing Corporation; $500,000; Wilber A. McCov, Pittsburgh; W. I. N. Lofland, Frank Jackson, Dover, Del.

Seattle, Wash.; Crown Automatic Gear Shift Co.; $250,000.

GARAGES, SERVICE STATIONS, REPAIR SHOPS, ETC.

Little Rock, Ark.; 555 Tire & Service Co., 1100 Main stret; R. E. Steuben, president; Halcomb Gunn, vice president; R. C. Starks, secretary; F. V. Vanderberg, treasurer.

Wilmington, Del.; Union Auto Supplies Co., operating stores, garages, etc.; for automobile supplies; $1,000,000.

Davenport, Ia.; Weston Motors Co.; to conduct a garage and repair shop; $20,000.

Middlesboro, Ky.; Cumberland Garage & Sales Co.; $50,000; J. Frank White, L. R. Wells, R. L. Essary.

Newport, Ky.; Standard Automobile Garage Co.; $5000; Benjamin Pilzer, Sixth and York street.

Vine Grove, Ky.; Service Garage Co.; $18,000; J. H. Cooper, H. O. Craycroft, W. C. Peck.

Brookline, Mass.; Corey Hill Garage; $75,000; William H. McPherson, Brookline; James E. McPherson, Framingham; Louis Wolfson, Boston.

Flint, Mich.; Automotive, Inc., to conduct a garage and repair shop; $30,000.

Mason, Mich.; Parsons-Dean Co., to do general automobile repairing and handle accessories, etc.; $20,000.

St. Joseph, Mo.; Farmer Used Car Co.; to do motor car repair work and deal in second hand cars; $20,000; S. F. Farmer, F. M. Baldwin, B. H. Woolery.

St. Louis, Mo.; Olive Auto & Body Co.; to conduct a garage and repair shop; $2000; Morris Turk, C. Serkes, Meyer Serkes.

Garfield, N. J.; Belmont Park Garage Co.; $100,000; Joseph Bolcar, Passaic; Joseph Bolcar, Sr., Joseph Bolcar, Jr., Garfield.

Newark, N. J.; Smith's Garage, 790 Broad street; $10,000; Hyman and Florence Smith, Ed Citron.

Albany, N. Y.; Puncture Proof Interliner Corporation; $10,000; F. B. Witbeck, W. S. Hurwitz, E. Rosensweig.

Albany, N. Y.; Singer's Garage; $10,000; H. and F. L. Singer, R. Cohen.

Brooklyn, N. Y.; Alsace Garage; $10,000; M Cohen, W. Knecht, L. I. Gerber, 256 Broadway.

Brooklyn, N. Y.; Bernstein & Gross, garage; $25,000; S. and M. Bernstein, G. W. Gross, 265 Seventh street.

Brooklyn, N. Y.; D. and B. Auto Painting Co.; $30,000; E. and I. Danziger, B. Benson, 508 Herkimer street.

Brooklyn, N. Y.; D-B Garage; $75,000; Abraham Dunbrow, Samuel Dunbrow, L. Susman.

Brooklyn, N. Y.; Guaranteed Tire Filler Corporation; $50,000; J. and M. Stander, A. M. Chamow, 1092 President street.

Brooklyn, N. Y.; Hillhurst Garage; $35,000; H. T. Phillips, S. Sunetare, H. C. Nilssen, 516 West 125th street, Manhattan borough, New York.

Flushing, N. Y.; Long Island Auto Electric Service; repair shop; $5000; P. and S. P. DeLa Franier, J. F. Frantz.

Freeport, N. Y.; Freeport Batter & Auto Service Co.; $25,000; J. Y. McGhee, C. E. Spank, C. E. Bliss.

Mineola, N. Y.; Mauer Motor Sales Corporation; garage; P. H. and B. C. Mauer, E. P. Corwith, 260 Washington avenue, Brooklyn.

New York, N. Y.; Ambassador Garage, Manhattan borough; $10,000; M. H. Eisenberg, P. W. Winthers, E. Haas, 889 Fresh Pond road, Brooklyn.

New York, N. Y.; Ben Bau Garage Co., Bronx borough; $10,000; C. Baumohl, A. and M. Bender, 967 Kelly street.

New York, N. Y.; 546 West 55th Street Garage, Manhattan borough; $15,000; E. Unger, C. Greenstein, P. Stern, 1158 Broadway.

New York, N. Y.; Freed-Tar Garage, Manhattan borough; $10,000; S. and B. Tartero, J. Freed, 522 East 159th street.

New York, N. Y.; Garage Leasing Corporation, Bronx borough; $33,000; L. B. Glass, A. Hirschhorn, M. B. Siskind, 228 Audobon avenue, Manhattan.

New York, N. Y.; G. and H. Garage Corporation, Manhattan borough; $10,000; J. and S. Roth, J. Guralnick, 1483 Flatbush avenue, Brooklyn.

New York, N. Y.; Herald Square Garage, Manhattan borough; $25,000; W. Woodburn, J. W. E. Clarke, S. C. Whitbeck, 170 Broadway.

New York, N. Y.; Homecrest Garage, Manhattan borough; $12,000; C. Vogel, C. Brust, H. Schainman, 593 East 22nd street, Brooklyn.

New York, N. Y.; Horatio-West Corporation, Manhattan borough; garage; $50,000; S. J. Meyers, D. Berman, H. Berson, 248 East Broadway.

New York, N. Y.; Jane Ely Realty Corporation, Queens borough; realty and garages; $330,000; H. Hellman, F. F. Boehm, A. McDonald, 1800 East Ninth street, Brooklyn.

New York, N. Y.; Lafayette Garage, Manhattan borough; $5000; W. E. Malone, F. W. Thompson, J. Halpin, 452 West 49th street.

New York, N. Y.; Pan-American Garage, Manhattan borough; $50,000; W. Manne, J. and A. Schwartz, 53 West 119th street.

New York, N. Y.; P. D. Garage Corporation, Manhattan borough; $5000; H. Benoit, B. Siegel, J. Stahl, 911 Fox street, Bronx.

New York, N. Y.; S. and F. Garage Corporation, Bronx borough; $5000; M. and B. Schantz, P. Feffer, 170 Suffolk street, Manhattan.

New York, N. Y.; Southold Garage Corporation, Manhattan borough; $25,000; I. Feinberg, A. Berger, E. Levy, 220 Beverly road, Brooklyn.

New York, N. Y.; Wales Garage, Bronx borough; $20,000; L. Kirschenbeum, N. and M. Kropf, 1800 Madison avenue.

New York, N. Y.; West 158th Street Garage, Manhattan borough; $50,000; N. Trochman, R. Herman, J. Ganberg, 101 West 114th street.

Rochester, N. Y.; Rochester Auto Livery; $5000; M. R. and T. Rosenthal, M. I. Rumsey.

Westfield, Chateaugay County, N. Y.; $100,000; O. F. Bohman, P. B. and U. B. Card.

Raleigh, N. C.; Garrett's Service Station; $125,000.

Cleveland, O.; Heights-Coventry Tire Repair Co.; $5000; R. T. Murphy.

Pittsburgh, Pa.; Campbell Auto Truck & Service Co.; $100,000; Loudoun L. Campbell, James Coulter, Loudoun L. Campbell, Jr.

Charleston, S. C.; Bailey Vulcanizing Co.: Ralph C. Bailey, Jr.

Beaumont, Tex.; Service Motor & Repair Co.; $2400; H. B. Hildreth, G. E. Davidson, Ben De Spain.

Fort Worth, Tex.; Lone Star Gasoline Service, Inc.; $21,000; J. W. Milner, W. C. Blanchette, J. G. Blanchette.

Bluefield, W. Va.; Bluefield Garage Co., Inc.; $50,000; E. L. Bailey, Paul Bailey, H. R. Greever.

Madison, W. Va.; Madison Garage Co.; $2500; M. B. Mullins, I. L. Stewart, Dell Hill.

Sheboygan, Wis.; Black Auto Co., to conduct a garage and general automobile business; $50,000; Harry W. Black, Dr. Emil Gunther, Robert Gunther.

DEALERS IN ACCESSORIES, EQUIPMENT, ETC.

San Francisco, Cal.; U Wanta Tire & Rubber Co.; $250,000.

Dover, Del.; Missouri Motor Equipment Corporation; $600,000; D. D. Wharton, L. B. Phillips, A. J. Kingsbury.

Wilmington, Del.; Gasoline Service Co.; $100,000; M. L. Horty, M. C. Kelly, J. D. Frock.

Wilmington, Del.; Price-Rann Automotive Co.; $15,000; T. L. Croteau, M. A. Bruce, A. M. Hooven.

Wilmington, Del.; Union Auto Supplies Co., to operate stores and garages for automobile supplies; $1,000,000.

Jacksonville, Fla.; Southern Accessory Co., Inc.; $100,000.

Tampa, Fla.; Starr Tire Service Capital: $10,000; F. A. Cameron, president; E. S. Johnson, treasurer and general manager; H. O. Snow, secretary.

Atlanta, Ga.; Elder Automobile Electric Service Co.; $10,000; D. W. Webb, W. F. Elder, R. H. Elder.

Swampscott, Mass.; Swampscott Auto Painting Co.; automobile supplies; $25,000; Henry C. Farrell, Swampscott; Denton G. Brokaw, Salem; Maude G. Farrell, Swampscott.

Jersey City, N. J.; Granville Tire Co.; to sell automobile tires; $15,000,000; F. D. Buck, George D. Dillman, M. L. Horty, Wilmington, Del.

Brooklyn, N. Y.; Acme Auto Supply Co.; tires; $5000; E. and H. Weinstein, M. T. Rachtenberg, 237 South Second street.

Brooklyn, N. Y.; Gregg Sales Co.; automobile accessories; $25,000; W. B. Dalsiva, F. Van Blarcom, H. A. Gillies, 1 Madison avenue.

Brooklyn, N. Y.; Mead Rubber Co.; $100,000; J. F. Mead,, J. L. and A. P. Haga, 114 Prospect place.

Lockport, N. Y.; Hartigan, John D.; automobile accessories; $5000; J. M. Kennedy, E. J. Barnett, J. D. Hartigan.

New York, N. Y.; Auto Motive Appliances Association, Manhattan borough; $51,000; J. A. Dix, S. L. Fish, F. J. Tietsort, 11 Broadway.

New York, N. Y.; Brown & Green Ignition Sales Co., Manhattan borough; $10,000; G. Rosenthal, M. B. Siskind, A. Hirschhorn, 745 East 178th street.

New York, N. Y.; Canton Blackstone Sales Corporation, Manhattan borough; tires and rubber goods; $60,000; P. A. Proal, A. J. Ewald, A. E. Beckert, 530 West End avenue.

New York, N. Y.; Elektra Motor Appliances Corporation, Manhattan borough; accessories; $200,000; M. H. Hyatt, W. J. McBride, E. A. H. Watson, 22 William street.

New York, N. Y.; Erie Cord Tire Co., Manhattan borough; $50,000; F. X. McFarland, J. J. Cosgrove, T. Lyons, 122 West 102nd street.

New York, N. Y.; Manhattan Tire Stores; $1,000,000; Leonard J. Grossman, Sydney J. Sabath, Victor E. Krael, Chicago, Ill.

New York, N. Y.; Regent Tire & Rubber Co., Manhattan borough; $20,000; H. C. Kahan, J. M. Saunders, I. L. Jacobson, 8 Stuyvesant street.

New York, N. Y.; Trackless Transportation Corporation, Manhattan borough; deal in motors and trackless transportation equipment; $110,000; T. J. O'Connor, 216 West street.

New York, N. Y.; Vim Electric & Motor Co., Manhattan borough; $10,000; S. Kassover, E. and Eva Victorson, 505 West 187th street.

Poughkeepsie, N. Y.; Poughkeepsie Tire Sales Co.; $20,000; R. C. and S. J. Seevers, J. F. Snyder, 245 West 55th street.

Raleigh, N. C.; Medlin, J. R. & Sons Co., 133 East Martin street; to handle automobile accessories; $100,000; J. R. Medlin, F. A. Medlin, R. J. Medlin.

Salisbury, N. C.; Ricks Tire Co.; $10,000; John A. Ricks, R. R. Aicks, G. A. Benjamin.

Cleveland, O.; Henry's Auto Accessories Co.; $25,000; E. C. Wagnitz, D. M. Twiner.

Philadelphia, Pa.; Goodyear Rubber Co. of Delaware; $100,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

Dallas, Tex.; Standard Automotive Co.; $50,000; M. P. Alexander, W. H. Allen, Clay Preston.

Fort Worth, Tex.; Amalgamated Tire Stores Corporation; $100,000.

MISCELLANEOUS.

New Haven, Conn.; Garford Trucking Co.; $20,000.

Dover, Del.; Motor Finance Corporation; $11,000,000; C. H. Blaske, M. A. Bruce, S. E. Dill, Wilmington.

Wilmington, Del.; Automotive Finance Co.; $100,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; Burrill-Brune Airplane Co., Ltd.; manufacture and sale of air planes, etc.; $150,000.

Wilmington, Del.; General Motors Research Corporation, to acquire and develop patents; $100,000.

Wilmington, Del.; National Automobile Service Association; $10,000; Texas headquarters at Dallas; John De Nyce, agent.

Jacksonville, Fla.; American Motors Export Co., Inc.; $5,000,000.

Chicago, Ill.; Shaw Truck Lines; $1,500,000; Samuel C. Wood, L. B. Phillips.

Arkansas City, Kan.; Motor securities Investment Co., to handle automobile paper; $100,000; Read Farrell, president; Harry Lightstone, vice president; Walter Ames, secretary and treasurer.

Louisville, Ky.; Bluegrass Motor Transport Co., Inc.; $2000; J. R. Gilman, Leo Medley, E. J. Bacon.

Boston, Mass.; New England Automobile Racing Association: automotive contests; $50,000; William F. Aldrich, Cochituate; William Endicott, Wayland F. Dorothy, Frank J. Cunningham, Boston:

Newark, N. J.; Roseville Auto Business; to engage in auto bus, transportation, etc.; $100,000.

Trenton, N. J.; Automobile Finance Corporation of New York; $1,000,000; Wilfred Wilkes, Henry R. Dolan, Eva F. Kass, Newark.

Brooklyn, N. Y.; Abbott Auto Renting Co.; $5000; J. H. and J. Graham, B. Greenberg, 281 Henry street.

Coney Island, N. Y.; Sea Gate Subway Bus Line, freight and passenger transfer; $10,000; C. W. Bennett, M. L. Phelan, T. Farber, Mermaid avenue and West 17th street.

New York, N. Y.; Adey & Wagenbach Motor Transportation Co., Manhattan borough; trucking; $5000; H. A. Holstein, M. E. Braun, I. Adey, 714 East Fifth street.

New York, N. Y.; Diehl, William, Aircraft Corporation, Manhattan borough; $5000; E. H. Taussig, S. Harris, W. Diehl, Jr., 13 Crosby street.

New York, N. Y.; Electric Taxicab Corporation, Manhattan borough; $70,000; J. D. Este, C. Berg, N. Machie, 521 Park avenue.

New York, N. Y.; Gaillard Automobile Control Corporation, Manhattan borough; $1,000,000; J. H. O'Connell, R. Fina, M. Gaillard, Hotel Seville.

Galion, O.; United States Aeroplane & Motor Engineering Co.; $200,000.

Portland, Ore.; Motor Loan Association; $300,000.

Monessen, Pa.; Monessen Aero Co.; $15,000; David Ruse, Michael J. Skerpan, Dennis F. McCahill.

Pittsburgh, Pa.; Automobile Training School of Pittsburgh; $10,000; John Robinson, Frank E. Reisch, Harold L. Cloud.

Pittsburgh, Pa.; Globe Aerial Transportation Co.; $5,000,000; George K. Linderman, William P. Martin, George W. Muiry.

CAPITAL INCREASES.

Wilmington, Del.; Automobile Supply Co.; from $25,000 to $150,000.

Oldamar, Fla.; Oldamar Tractor Co.; $100,000 to $500,000.

Sullivan, Ind.; Mutual Truck Co.; to $5,000,000.

New Orleans, La.; Rex Motor Car Manufacturing Co.; $1,000,000 to $3,000,000.

Albany, N. Y.; Albany Motors; $25,000 to $100,000.

Glen Falls, N. Y.; Empire Automobile Co. of Glen Falls; $50,000 to $75,000.

Mexico, N. Y.; Mexico Motor Car & Supply Co.; $10,000 to $100,000.

New York, N. Y.; Brown & White Taxi Co., Manhattan borough; $25,000 to $50,000.

New York, N. Y.; G. M. S. Motor Sales Co., Manhattan borough; $4000 to $100,000.

New York, N. Y.; Practical Garage, Manhattan borough; $1000 to $50,000.

New York, N. Y.; Sinclair Rubber Co., Manhattan borough; $25,000 to $75,000.

New York, N. Y.; Universal Body Corporation, Manhattan borough; $200,000 to $350,000.

Southampton, N. Y.; Walter Motor Truck Co.; $100,000 to $1,000,000.

Cleveland, O.; Tourist Tire & Rubber Co.; $500,000 to $1,000,000.

NAME CHANGES.

Dover, Del.; Ford Motor Co. of Delaware to Ford Motor Co.

Amesbury, Mass.; Walker Wells Co. to Walker Body Co.

Nutley, N. J.; Compound Belting Co. to Maywald Rubber Co.

Brooklyn, N. Y.; Duffield Garage Co. to Pruzman Automobile Co.

Brooklyn, N. Y.; Hein Weber Lumber Co. to Weber Truck Lumber Co.

New York, N. Y.; Ajax Wire Wheel Corporation of America, Manhattan borough, to Ajax Wire Wheel, Ltd.

New York, N. Y.; American Auto Club to Tourist Hotel Garage; capital increased from $225,000 to $300,000.

New York, N. Y.; Prudential Rubber & Fabrics Corporation to Midwest Cotton & Rubber Co.

Ossining, N. Y.; Jackson, William H., Ford Service Station to William H. Jackson Auto Sales & Service Station.

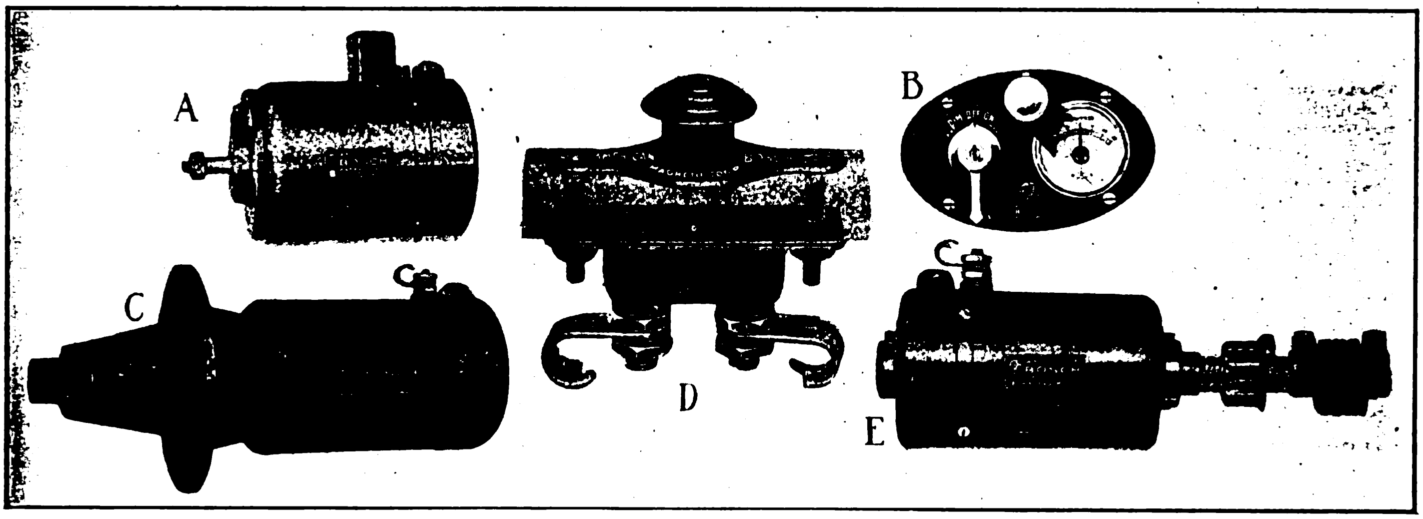
Eaton, O.; Union Motor Car Corporation to Washington Motor Co.

American Bosch Starting and Lighting System

THE American Bosch Magneto Corporation, Springfield, Mass., has recently perfected a new starting and lighting system that is creating considerable interest among automotive manufacturers and engineers. Elaborate tests and experiments carried out by the manufacturer have proved that the units are unusually efficient.

The generators and starting motors manufactured by the American Bosch Magneto Corporation are products of the highest quality and efficiency. Their design is especially good, being the result of years of experience in the manufacture of this type of automotive equipment, improved by special knowledge gained as a result of elaborate experiments and tests made in the company's laboratories during the past year. None but the finest materials are used in the manufacture of these instruments and they are made in a thoroughly modern plant by workmen who are experts in their respective lines.

The exceptional production facilities of the American Bosch Magneto Corporation make it possible to sell the generators and starting motors at remarkably low prices, considering their quality. The products cover practically all the requirements of the automotive field. The company's engineering and research laboratories are at the disposal of those manufacturers contemplating the incorporation of starting and lighting equipment on engines which they manufacture.



New American Bosch Starting and Lighting System: A, Generator Including Cut-Out Relay and Fuse Mounted on Top; B, Ignition and Lighting Switch, Including Ammeter and Dash Light; C, Starting Motor, Type 5M, Large Size; D, Starting Switch Placed on Floor of Car; E, Starting Motor, Small, Size, Type 4M.

Starting Motors.

The starting motors are made in two sizes. The outside diameter of the larger is five inches and it is designated as type 5M; the outside diameter of the smaller is four inches and it is designated as type 4M. Both motors may be furnished for operation with either six or 12-volt systems.

The stalling torque of these motors is exceptionaly high and the design such that power for starting is obtained with minimum output from the battery. Careful tests have proved that, although small in size, these starting motors develop sufficient power with the proper factor of safety for starting any of the standard automotive engines manufactured today.

The field coils and armatures are carefully wound with high grade wire and impregnated to insure perfect insulation and mechanical strength. All starting motors are equipped with Bendix drive, oilless, self-lubricating bearings, and are furnished for either inboard or outboard operation. They can be supplied for either cradle or flange mountings in accordance with S. A. E. dimensions. The motors with these flanges are self locating and require no support other than the flange.

These motors can readily be adapted for use on any of the standard makes of engines.

The starting switch is supplied with all starting motors. It is operated by the foot and is neat and conservative in design. The switch is sturdy in construction and made to assure minimum electrical losses.

Lighting Generators.

The lighting generators of the American Bosch Magneto Corporation are made in two sizes. The larger size has an outside diameter of five inches and is designated as type 5K; the smaller has an outside diameter of four inches and is designated as type 4K. Both generators can be furnished for either six or 12-volt operation.

Generators Are of Third Brush Type.

The generators are of the well known third brush type of regulation.

This assures a low cut-in speed, rapid rise to full output with increasing car speed, and decreased generator output with high speed driving. These generators are extremely simple and dependable. After their initial adjustment they require nothing in the way of outside control or attention.

Both sizes of the generators are of the four-pole type, wound with well insulated copper wire. The armature and all other windings are impregnated to insure perfect insulation.

Cut-Out Relay and Field Fuse.

The cut-out relay and field fuse are mounted on the top of the generator and are readily accessible. These two parts may well be termed the safety valve of the system—the cut-out relay protecting the battery from discharging when the generator is not running, and the field fuse protecting the generator winding in case of a broken battery connecting wire. The generators are equipped with the best ball bearings obtainable, drop forge pole shoes of liberal cross section and pressed steel frames machined accurately so as to give the maximum amount of flux with minimum field current.

The generators may be had equipped with all types of flanges and shaft extensions, details of which are given in the S. A. E. hand books. These generators are not adapted for systems not using a battery.

Lighting and Ignition Switch.

The lighting and ignition switch is of a plain, substantial design, and is mounted on an oval frame with the ammeter and dash light. The finish is black enamel with nickel trimmings. The switch controls the ignition and lighting systems and is provided with a key for locking. The ammeter is a standard Weston instrument and indicates accurately at all times the rate of charge and discharge of the battery. The light for illuminating the panel is operated by a self-contained switch and may be used as desired.

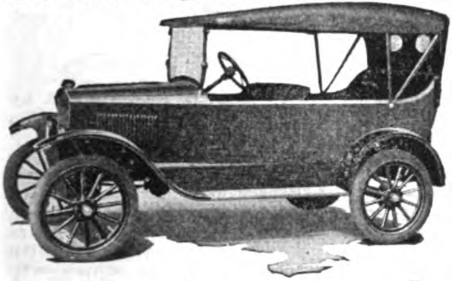
THE OIL GAUGE.

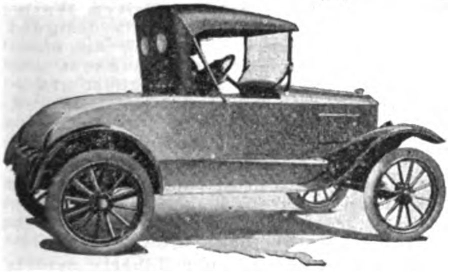
The oil pressure gauge furnishes an accurate means of determining the condition of the engine bearings. As the bearings wear the oil circulates more freely and the pressure naturally drops. If the oil gauge persistently shows low pressure it is reasonable to assume engine bearing wear providing the regulator is properly set.

ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The Dayton Classi-Body and Equipment for Fords has been developed to meet the demand for a specially built body of neat design which embodies features found in bodies of higher priced cars.

The bodies, as the trade name signifies, have been designed along classy lines, which make them very attractive. Special equipment is also included, such as a vacuum tank, ventilated windshield, one-man top, special radiator shell, extra tire carrier at the rear, apron across the front which ties the fenders, preventing them from rattling or working loose. Many other extras are included which makes this type of body very desirable.

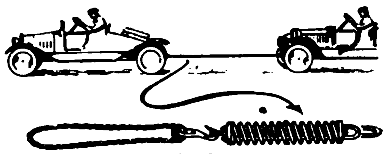




Classi-Bodies are made of the best of materials throughout and by skilled workmen, while the painting is stated to be on a par with higher priced bodies.

Manufactured by the Dayton Metal Body Co., Dayton, O. Prices and literature on request.

The Towline Shock Absorber for the use of service stations, garages and motorists in general embodies a new principle in tow line construction. Instead of a rigid rope or chain being used for the tow line, a spring is introduced between the towing car and the end of the tow rope, so that all strains are taken by the spring, relieving both the towing car and the car being towed from unnecessary strains.

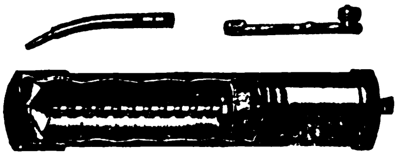


The spring and its parts are constructed especially for this class of work and are made from the best of tempered steel, while high grade malleable iron castings are used for the other parts.

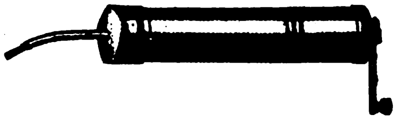
It is stated that the Towline shock absorber can be used equally as well for towing trucks or passenger cars, as the device is made unusually heavy.

Manufactured by Zimmerman Manufacturing Co., Valparaiso, Ind. Price and literature on request.

The Horton Positive Self-Filling Grease Gun fills a long felt want for a positive filling gun that can be filled without soiling the hands and that will force the grease into the mechanical parts of the chassis with assurance that the grease will reach the part for which it was intended.



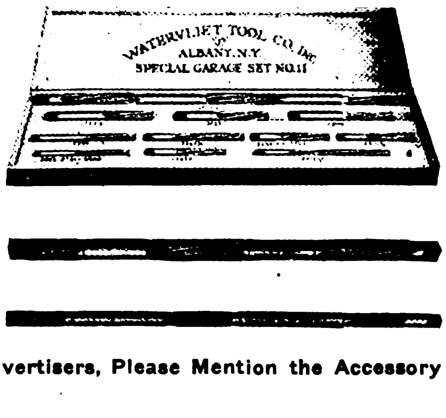
The Horton grease gun differs from the conventional form in the way that the grease is sucked in or expelled from the gun barrel. A coarse threaded rod runs the length of the barrel, having a bearing provided in the cap. A handle to operate the rod fits the upper end, fitting squarely on the rod. A plunger travels on the thread from the top to the bottom of the barrel, actuated by the handle, while a three-bladed fan is fitted at the lower end of the rod, which either draws in the grease or expels it as the operator desires.



The barrel is made of seamless tubing, 10½ by two inches, is finished in brass and holds nearly one pound of grease.

Manufactured by Kent E. Lyman, 813 American Trust building, Cleveland, O. Prices on request.

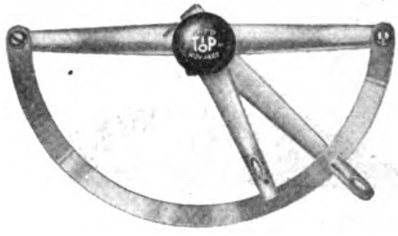
Watervliet Spiral Reamers for Fords are highly finished from the highest grade of tool steel and carefully machined with special equipment. They are scientifically heat treated in furnaces fired with manufactured gas, which runs uniformly, while each furnace is equipped with a Brown pyrometer. In grinding the reamers are held to size, every one which varies more than one-half thousandth of an inch being discarded. These reamers can be purchased singly or in sets and represent the latest development in reamers for the Ford car.



Manufactured by the Watervliet Tool Co., Inc., Albany, N. Y. Prices and literature on request.

The Benjamin Tip Top Buttons have been developed principally for the manufacturer of automobiles, but can also be purchased and used by the motorist when the horn button on his car fails.

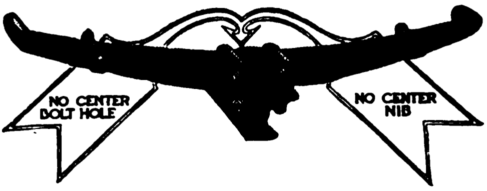
Tip Top buttons fit the top of the steering post in the center of the spark and throttle levers and operate the horn through electrical connections. Various styles of buttons are manufactured, so that they may be placed in different locations on the car and operate the horn from the most convenient location.



Tip Top buttons are claimed to be proof against water, dirt, grease and the shock of use. If the contacts become tarnished a downward press and twist will clean them and they cannot be dismantled or tampered with unless deliberately broken, the manufacturer states.

Manufactured by the Benjamin Electric Manufacturing Co., Chicago, Ill. Prices and literature on request.

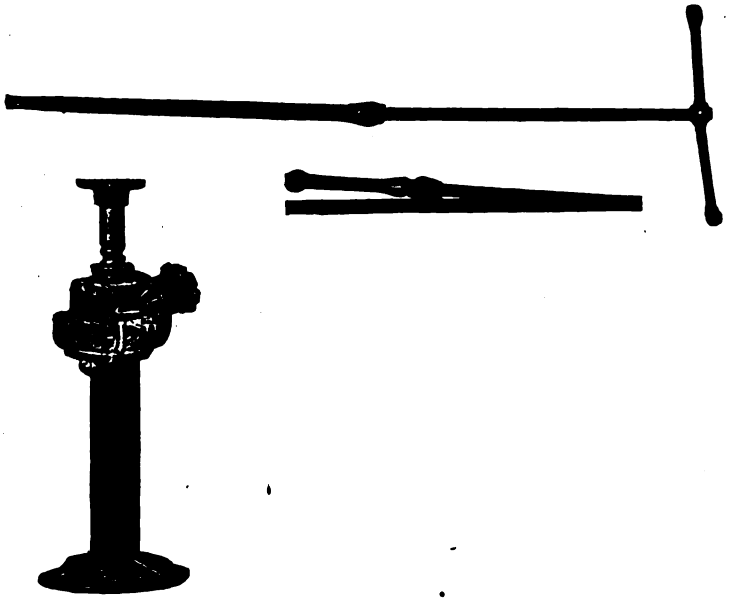
Titanic Semi-Elliptic Springs offer for replacement purposes many features not usually found in automobile springs. Chief among these is the arch, which answers two purposes, that of keeping the leaves in place on the axle and strengthening the leaves at their weakest point. The arch, it is stated, eliminates the necessity for boring holes in the leaves, and does away with the use of a bolt fastening.



The Titanic spring is made of the best of steel obtainable for the purpose and is guaranteed to be 100 per cent. strong from end to end. The springs are ready to fit when received and are a definite assurance against future trouble, it is claimed.

Manufactured by the Tuthill Spring Co., 760 Polk Avenue, Chicago, Ill. Prices and literature on request.

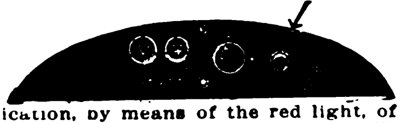
The "Reliable" Jack is manufactured especially for the motorists who wishes a jack that is built unusually strong, that is simple in operation and that occupies but little space in the car when it is folded.

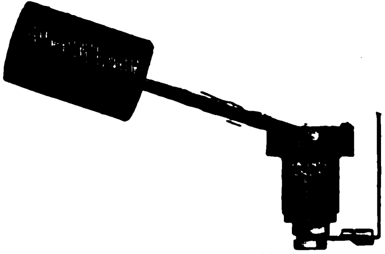


The Reliable jack operates on the screw principle, actuated by a turning motion of the jack handle, transmitting the power of the operator through bevel gears to the screw. The handle is collapsible and folds into small space, yet is very strong and is claimed to lift the heaviest car with ease. A full line of these jacks is made, each adapted to a special use, varying from light to heavy passenger cars, trucks and tractors.

Manufactured by the Elite Manufacturing Co., Ashland, O. Prices and literature on request.

The Dunn Electric Gasoline Signal is a new device that should prove of interest to motorists from the fact that it shows on the dash, by means of a red electric light, when the gasoline supply falls to two gallons or below. A small push button is located on the dash within easy reach of the operator, which gives an indication, by means of the red light, of the condition of the gasoline supply, while the unit which operates the light is located in the main gasoline tank and consists of a cork float fastened to a rod which is attached to the unit. Electrical connection is made in the unit, when the cork float reaches a level equivalent to two gallons remaining in the tank, causing the light on the dash to indicate the fact, when the button is pushed up.



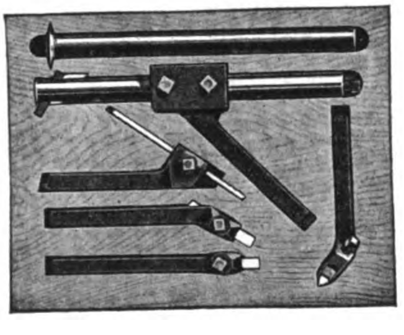


The device is easily installed by any garage repairer and once in place is claimed to eliminate the danger of running out of gasoline while driving.

Manufactured by the Dunn Motor Device Co., Indianapolis, Ind. Price, complete, $7.

The Red-E-Style "G" Set has been especially designed for the average garage and small machine shop where only one or two lathes are in use, and contains a complete set of tools for all lathe work. The outfit consists of a straight and left-hand off-set turning tool with an off-set cutting-off and threading tool giving the necessary implements required for outside work, while the boring bar and holder, with internal threading bar to be used in the same holder, gives complete equipment for all inside turning and threading.

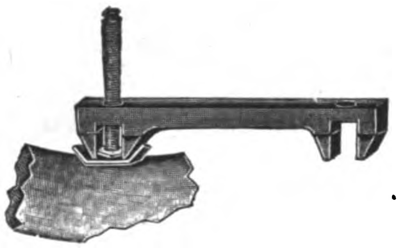
The set will prove very handy to the mechanic as the tools are fastened to one container board, which can be kept near the lathe ready for instant use while, if a tool has been taken off and become mislaid, its absence is immediately noticed and the tool can be looked up at once and replaced.



The set includes five tools and the container board. The sizes of tools vary from ½ inch to one inch inclusive. The cutters are made from high speed steel, with the exception of the threading cutters, which are made from carbon steel.

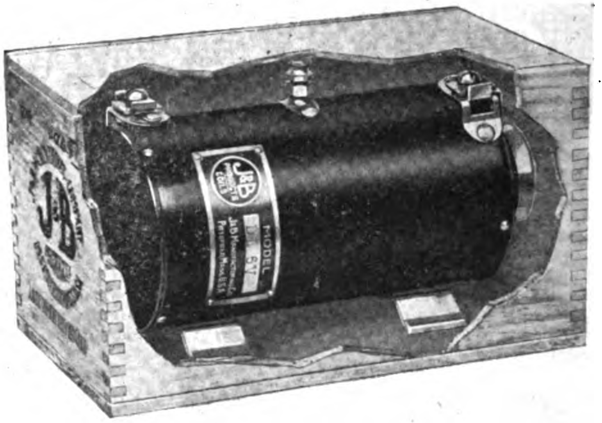
Manufactured by the Ready Tool Co., Bridgeport, Conn. Prices and literature on request.

The Perfect Valve Wrench is especially designed to tighten the nuts which fasten the valve stem to pneumatic inner tubes. Two ends are provided, each a different size, to accommodate the two sizes of nuts in common use on inner tubes. It is made of metal and in such a manner that the wrench slips over the valve stem, assuring a firm hold for the jaws.



Manufactured by the Lewsen Manufacturing Co., Portland, Me. Price, $1.35.

J & B Replacement Coils are designed especially for the garage and service station trade wishing to carry as small a stock of coils as possible and still be in a position to fit new coils to any make of car equipped with battery, coil and distributor systems.



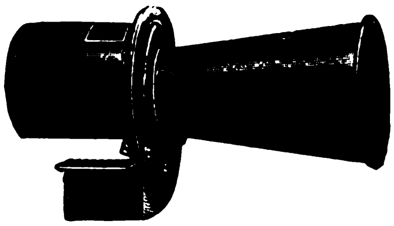
Special brackets have been supplied by the manufacturer which will adapt this coil to any car, and all that is necessary for the dealer to carry in stock is a line of the brackets and a few coils. Each coil is tested before leaving the factory and is shipped in a strong wooden box, which protects it from damage. Jobbers throughout the country are supplied with coils and a stock of brackets which will fit any car.

Manufactured by J & B Manufacturing Co., Pittsfield, Mass. Prices through nearest jobber.

The Model EA Electrical Driven Warning Signals have been especially designed to withstand hard service. They are made of the best of materials throughout and the workmanship is of the highest grade, while a wide variety of signals is offered, making it possible for the motorist to choose the one best adapted to his particular needs.

The signals are of attractive design and every horn is carefully made and assembled and tested under expert supervision and all parts are made interchangeable.

It is stated that the new Liberty models recently added to the line are particularly serviceable for trucks or heavy cars where continual pounding of the chassis is experienced, as they have been designed to operate under the most exacting conditions.



The E. A. warning signals are tested under conditions more strenuous than will ever be experienced in actual service. The manufacturer absolutely guarantees materials, construction and workmanship, and if, upon examination, any defect due to faulty workmanship is found, the horn may be returned properly packed to the manufacturer by parcel post and the fault will be corrected free of charge.

Manufactured by the Automobile Supply Manufacturing Co., Myrtle Avenue and Spencer Street, Brooklyn, N. Y. Prices and literature on request.

Peters' Metallic Filler is a brass compound which becomes plastic at 300 degrees Fahrenheit and at this low temperature entirely eliminates, it is claimed, the possibilities of warping or distorting the casting. After the filler is applied it has all the qualities of brass, it is stated, including its hardness, density and appearance, while it can be machined and, in scored cylinder repairs, will sustain any piston speed.

The method of applying is simple as the crack is widened by chipping as in welding, and is then filled with the metallic filler, using a spatula or hack saw blade to work the metal into the crack while in a plastic state. Heat from a blow torch is necessary to keep the metal plastic while it is being worked into the crack. After the crack is filled any filler adhering to the sides is scraped off, while the patch is rolled down solid, with a small roller, till the crack shows an unbroken appearance. After the filler has cooled for about five minutes the patch may be dressed off with a file.

Peters' metallic filler can be used with equally good results in scores in the cylinders, being applied in a similar manner as for filling cracks in the outer casting, after which it is rolled with a special roller, which fits the walls of the cylinder, applying a firm, even pressure to the filler, seating it firmly in the score.

PETERS' METALLIC FILLER

It is stated that Peters' metallic filler meets a long felt want in garages and service stations, enabling the repair work to be done in a much shorter time than formerly required, and that the job when finished has the appearance of high class workmanship.

Manufactured by the Aluminum Brazing Solder Co., 1303 Widener building, Philadelphia, Pa. Price, large size, repair man's package, $5.50; consumer's package, $3. Sold through jobbers and dealers.

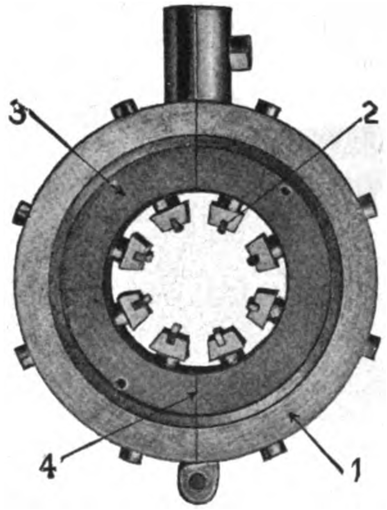
The Peters' Crankshaft Grinder is claimed to possess all the qualities which an expensive machine, specially built for the purpose, cannot surpass.

The difficulty of truing up a crankshaft lies in centering the crankshaft pins, which are eccentric to the main bearing pins. The shape of a crankshaft is such that spring action is unavoidable, say up to a quarter of a thousandth of an inch.

This newly invented crankshaft grinder is stated to eliminate all this trouble and enables anyone, without mechanical knowledge, to perform a first class job in a few minutes.

The tool consists of a chuck-like housing, made of aluminum, 1¼ inches wide, to go between any size bearing now used in the motors of automobiles or motor boats. The housing is split and hinged to allow the tool to go around the pin, thereby eliminating any centering. The tool has eight high-speed steel cutters which work toward the center and which are operated by means of a screw plate which moves all of the cutters to and from the center universally. The cutters extend far enough to prevent the chips from clogging, which would scratch the surface of the pin.

To operate, open the tool and place it around the pin; turn the screw plate with the spanner wrench until the cutters start to cut. A few complete turns of the tool will remove the high spots, leaving a perfectly round, smooth surface. The entire operation takes but one-fifth the time ordinarily required on a lathe, it is stated.

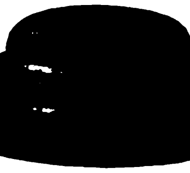


Peters' Crankshaft Grander eliminates rebabbitting of bushings because of its sensitive adjustment. Eccentric or egg-shaped bearings can be trued without taking off an excess of metal, as is the usual occurrence when regrinding by the old method. This tool can be adjusted to 1/5000 of an inch.

Peters' Crankshaft Grinder is unreservedly guaranteed by the manufacturer against all physical defects for a period of one year.

Manufactured by the Aluminum Brazing Solder Co., 1303 Widener building, Philadelphia, Pa. List price, $75.

The Universal Push Button is adapted to all types of electric operated horns and can be located in any convenient place about the car. The button is well made of high grade material, while its connections to the electrical system of the car are easily made in a few minutes time. The button connector is simple in construction, is spring actuated and gives a positive connection between the ends of the circuit when the button is depressed either at the sides or in the center. The cover of the button is made of metal, while the button itself is composed of a composition which will resist moisture and will, it is stated, stand hard usage.



The insulated portion of the button, to which the wires are attached, is composed of fiber, which completely insulates the wire ends, preventing the horn from blowing except when the button is depressed.

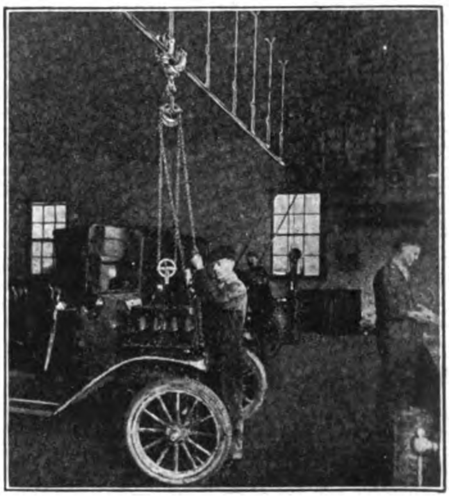
Manufactured by the General Phonograph Manufacturing Co., Elyria, O. Price, 30 cents each.

The Buckeye Standard Bumpers have been developed after many years of experimenting to fit all makes of cars. Special equipment is required in order that bumpers may be fitted to certain makes of cars, and these fittings are also supplied by the manufacturer of Buckeye Standard bumpers. All bumpers and fittings are of the highest grade steel and iron and made by workmen skilled in this special branch. In ordering bumpers the purchaser should mention the name of his car and the year and model number, as many cars require special fittings on account of the splash pan, which is located between the side frame at the front. A new catalogue, No. 15, has just been issued by this company, which shows the line in detail.

"BUCKEYE" STANDARD
PAT.
Mfg. By The C.B.&F.Co. Springfield, O.

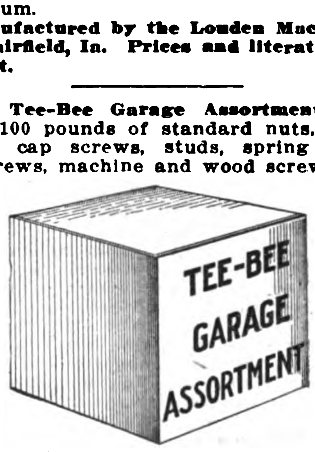
Manufactured by the Central Brass & Fixture Co., Springfield, O. Prices and literature on request.

The Louden Garage Equipment Carrier is particularly practical for all around service in any department of the garage or service station. It is especially adapted for hoisting an engine from the car frame and transferring it to the work bench or anywhere within the scope of its trackage. With this equipment it is stated that it is possible to lift either end of a car or truck, in case of necessity, to make repairs. The carrying capacity of this carrier is specified at 500 pounds, although in actual performance considerably greater loads have been handled, it is stated. A 500-pound lift fulfills the needs of the average service station, although equipment can be had with a much higher capacity. The track is made of high grade carbon steel. The shape is such that that all unnecessary friction is eliminated, while the rolls operate on roller bearings, which reduce friction to a minimum.



Manufactured by the Louden Machinery Co., Fairfield, Ia. Prices and literature on request.

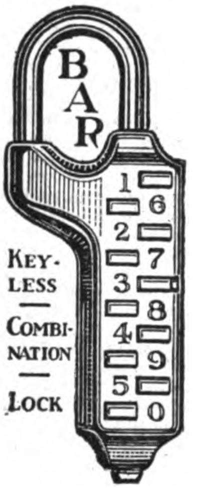
The Tee-Bee Garage Assortment contains 100 pounds of standard nuts, bolts, rivets, cap screws, studs, spring bolts, set screws, machine and wood screws and other articles necessary in the daily conduct of the successful garage.



Service stations and garages will find this assortment very useful, as it contains just the desired assortment, sizes and quantities of each that are desirable in average service station work.

Manufactured by T. B. Moore, 376 Grand River Avenue, Detroit, Mich. Price, $7.50 f. o. b.

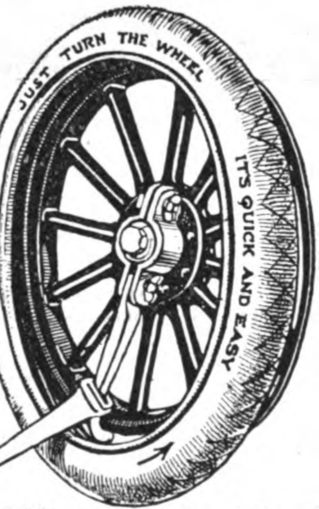
The B-A-R Combination Lock for locking automobiles, spare tires, motorcycles, etc., is claimed to be made of non-rusting material, very hard and tough, and is cast in a water cooled die under a pressure of 350 pounds, thus insuring a smooth, solid block free from mechanical imperfections.



The shackle is made of 5/16-inch steel, case hardened and made rust proof by a process that makes steel impervious to the elements. The 10 bars of the lock are cast in a die, similar to the body of the lock, are all uniform in size and are interchangeable, it is stated.

Manufactured by the Iowa Lock & Manufacturing Co., Burlington, Ia. Price, $2.25 each; per dozen, $27.

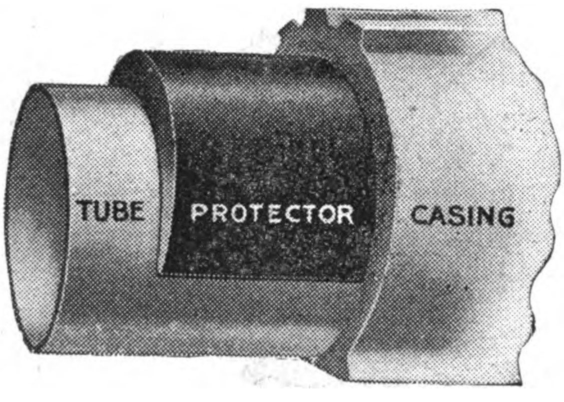
The Case Tire Tool for Clincher Tires is claimed to be the quickest device known for removing and replacing clincher tires on a rim. The device consists of a special tool which fits the edge of the rim and is provided with a turned edge, which fits in back of the bead of the tire. One end of the tool has an adjustable socket, fitting over the hub of the wheel, and adustable to the radius of the wheel. After the tool is positioned the second tool of arm is slipped over the first at a point near the tire and acts as a lever to roll the tire from the rim. The handle is also used to pry the tire from the rim in order that the tire remover or tool may be inserted. The device is made throughout of the best of material and will, the manufacturer states, last indefinitely.



Manufactured by the Handy Manufacturing Co., Cincinnati, O., and St. Paul, Minn. Price, $4.25.

The Coffield Tire Protector is constructed entirely of firm and elastic rubber, wrapped around a steel core. The device is placed in a tire between the tube and tire, protecting the tube from punctures and prolonging the life of the tire. The manufacturer states that punctures are eliminated and that stone bruises are prevented by the use of these tire protectors.

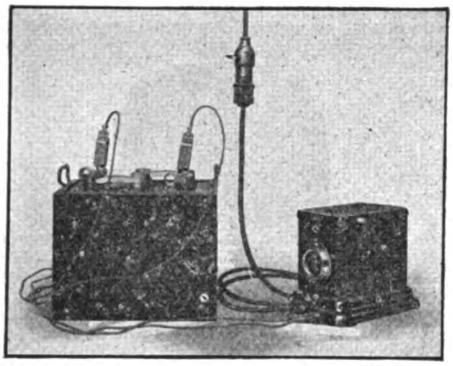
The Coffield tire protector is covered by United States patents and aside from preventing punctures, etc., is claimed to support and protect the fabric of the tire, keeping it from becoming weak and eventually blowing out.



Manufactured by the Coffield Tire Protector Co., 117 West Court Street, Dayton, O. Prices on request.

The King Battery Charger. A number of attempts have been made, from time to time, to produce a satisfactory electrical device for changing alternating current to direct, to be used for charging batteries. The King battery charger, it is claimed, complies with all requirements.

This instrument is of the mechanical type and is designed for taking a 60-cycle alternating current from an ordinary lighting lamp socket and transforming it into direct current. When the battery is completely down the charger will throw the current into the battery at eight to 10 amperes, and as the battery becomes charged the number of amperes will be correspondingly reduced, making the device self-adjusting, and should the battery charger be left running for 12 hours or longer, after the battery is fully charged, no damage will be done.

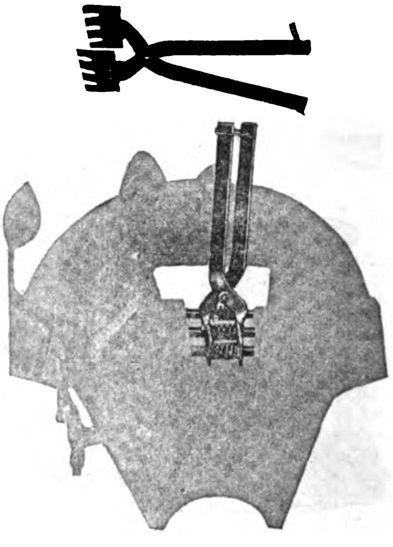


By the use of this battery charger batteries can be charged at any time and the life of the battery will then be extended, as in the case where the automobile user leaves his battery until it is no longer possible to start the engine with it. By keeping the battery fully charged there will be a considerable saving in fuel, due to the fact that it insures a hot spark at all times. It is unnecessary to remove the battery from the car, as sufficient electrical cord is supplied to place the charger on the running board and connect it to the battery and from the charger to the electric light socket. It is impossible to charge a battery in reverse. In the event of the current going off while the battery is being charged, during the period it is not operating, the battery will not be discharged. It is immaterial how the clips are attached to the terminals, so any inexperienced person may charge his own battery without danger of injury. By the use of the individual battery charger the battery can be charged from time to time, even though not in use, particularly in the winter, as a fully charged battery will not freeze at 50 degrees below zero. With this device a battery can be charged at a cost of from five to six cents.

In this type of battery charger there are no expensive parts to break or wear out, no chemicals or electrodes to renew. Renewals of carbon can be purchased at the factory at 30 cents each. The current consumed in charging a battery 10 hours amounts to from five cents to eight cents.

Manufactured by the King Electric Manufacturing Co., Inc., 20-26 North Niagara Street, Tonawanda, N. Y. Prices and literature on request.

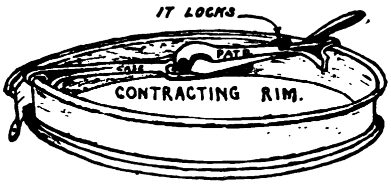
The Roberge Ford Transmission Band Spring Compressor is designed to facilitate the removal or replacement of the bands in the Ford transmission. The device consists of two compressors, joined to two handles and fastened by a rivet at one end. Slots are provided in the compressors which allow them to fit over the studs to which the bands are fastened, while a link is supplied at the top, which enables the operator to hold the hand in the compressed position while the adjusting nuts are being loosened.



The device is made of high-grade material throughout and will prove a very handy tool for the service stations catering to Ford trade.

Manufactured by Harry Knight Co., 805 Southwestern Life building, Dallas, Tex. Price, $3.

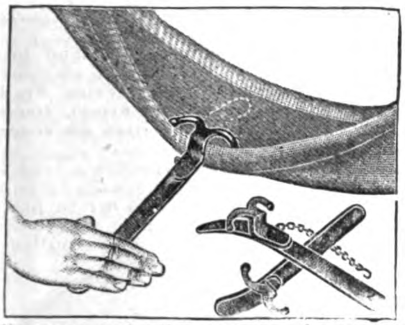
The Case Rim Tool for Demountable Rims consists of suitable arms provided with hooked ends, which fit over the edge of the rim. One of the arms is provided with an adjustment at the inner end, while the second has a pin to which a lever is fastened. An extension is placed on the pin which fits into the adjustment of the first arm at the center, allowing the arms to contract the rim and hold it in this position while the tire is being removed or placed on the rim. By placing the tool across the rim with the split in the center, the tool can be used to expand the rim.



The device is made of the best of material throughout and is claimed to do the work in quick time and in a satisfactory manner.

Manufactured by the Handy Manufacturing Co., Cincinnati, O., and St. Paul, Minn. Price, $4.25.

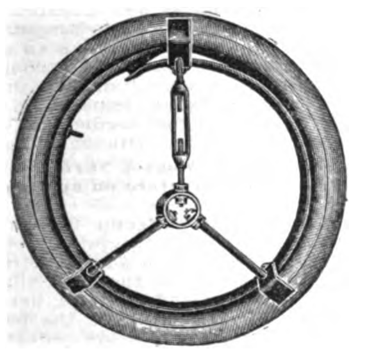
The Lewsen Tire Spreader and Tire Iron No. 1-S combines a tire iron with a tire spreader which can be used by the motorist to good advantage when inspecting the inner surface of the tire for stone bruises, nails, cuts and other causes of punctures. With this device one bead is spread open at a time, giving ample room for inspecting the inner portion of the tire. It is small in size, still is powerful enough to open the stiffest bead, the manufacturer states.



Manufactured by the Lewsen Manufacturing Co., Portland, Me. Price, $2.

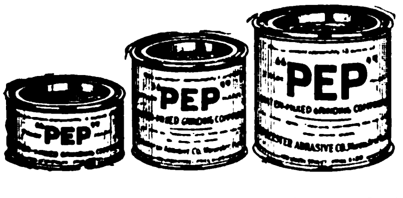
The Lewsen Quick Rim Spreader is designed to facilitate the quick removal or replacement of tires on demountable rims. The device consists of three arms, two of which are fastened to the center ring.

The ends of the arms terminate in clamps which fit over the rim, giving a firm purchase for the arms when contracting the spring rim. The turnbuckle arm is attached to the rim at the split portion and turning the turnbuckle opens or closes the rim as desired. The device is construucted of metal throughout and is guaranteed to give satisfaction.



Manufactured by the Lewsen Manufacturing Co., Portland, Me. Price, $7.50.

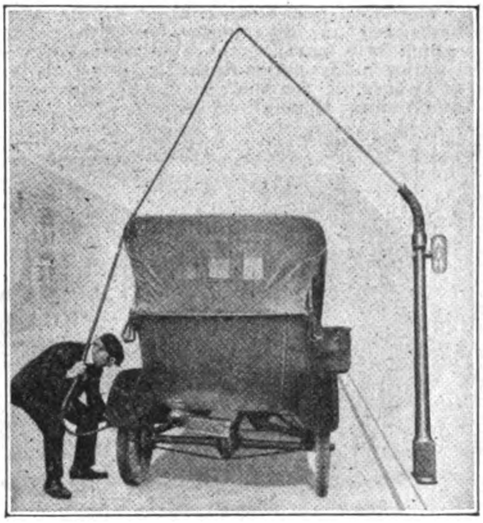
"Pep" Water-Mixed Grinding Compounds have been developed to meet the demand for a more perfect abrasive to be used in garages, service stations and machine shops where a large amount of grinding work is handled. Pep, as its name implies, is claimed to be an unusually rapid grinding compound, which is capable of finishing a bearing surface or a valve to a perfect seat in a fraction of the time ordinarily consumed. Water is used instead of oil as a solvent, the advantage claimed being that water works better with this special abrasive than does oil, and that the abrasive is prevented from entering the pores of the iron or steel. Three sizes of containers are used in shipping, each size adapted to the needs of the station purchasing the abrasive.



Manufactured by the Worcester Abrasive Co., 1662 Broadway, New York City. Prices and literature on request.

The Double-Service Air Hose Stand is designed for serving motorists with the two requisites so necessary to the successful operation of the motor vehicle, namely, air and water.

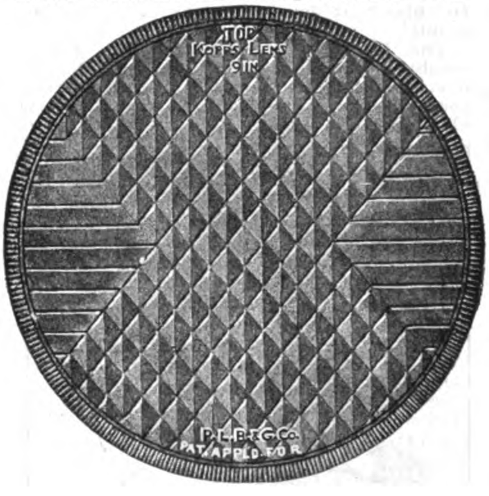
The outfit occupies a small amount of space at the curb and by means of the extension pipe at the top of stand and the length of rubber hose attached, a wide range of use is gained. The column is artistically formed from cast iron and is provided with a cast iron door at the bottom for attaching the hose and service pipe, also the water pipe connection.



The outfit can be fitted with an electric light globe, bulb and cord at nominal expense, adapting the outfit to night as well as day service.

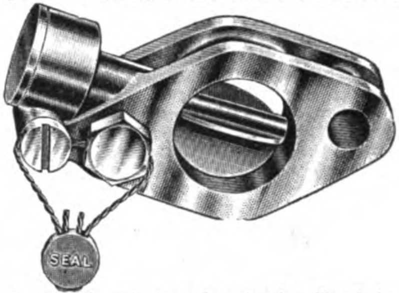
Manufactured by the Devices Industry, Oshkosh, Wis. Prices and literature on request.

The "Kopp" Lens is a new head light glass which is claimed to be a decided improvement over previous devices of this nature, and is said to eliminate the excessive glare of the head lights while driving at night and to provide a light which is free from the disagreeable features found when driving in fog or mist. It is stated that the light is kept down to the ground, and that the predominating colors are green, yellow and orange, which have proved less harmful to the eyes and are the colors that show strongest; while red and blue rays are practically eliminated. Kopp lenses are said to comply with the law as defined in many states, as the light is kept below a 42-inch level, throwing the light 75 feet in front of the car and illuminating the road to a width of 25 feet.



Manufactured by the Pittsburgh Lamp, Brass & Glass Co., Pittsburgh, Pa. Prices and literature on request.

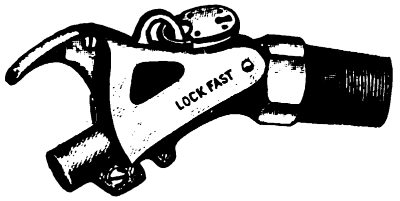
The Dell Governor is a practical device which may be attached to the engine of the Ford truck; it can be set at any desired speed, and will, its maker claims, stay set at that speed until changed. The device is of small size, can be fitted by anyone with slight mechanical knowledge, and once located and set, the Ford truck can be operated no faster than the governor will allow. The device is fitted between the flanges of the intake manifold between the carburetor and the manifold and, after setting, is sealed so that the driver cannot tamper with it without detection.



The Dell governor comes packed in a neat box containing full instructions for attaching, a few minutes' time being all that is required to fit it to the engine.

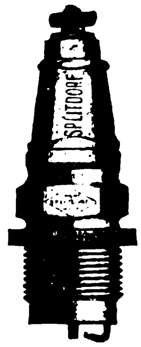
Manufactured by Dell & Co., Majestic building, Detroit, Mich. Price, $15.

The Stearns "Lock Fast" Oil Gates are especially designed to fill a long felt want both in public and private garages and service stations where quantities of light and heavy oil are stored in either steel or wooden barrels. The device consists of a cast iron spout, fitted with a suitable shut-off, which is claimed to stop the flow of oil without dripping and has the added feature that it can be locked with a padlock when in the closed position. It is stated that one of these gates will quickly pay for itself in the possible saving of oil.



Manufactured by E. C. Stearns & Co., Syracuse, N. Y. Prices and literature on request.

The Splitdorf Spark Plug P-163 is designed principally for use with the Splitdorf Aero magnetos in four and six-cylinder engines, but may be employed with equally good satisfaction with any ignition outfit. The insulator of the plug is made from stone, while the shell and center electrode are of high-grade steel, which will withstand the high temperatures in the combustion chambers of internal combustion engines. It is stated that the plug is a high-grade article, and that nothing but the best of material enters into its construction.

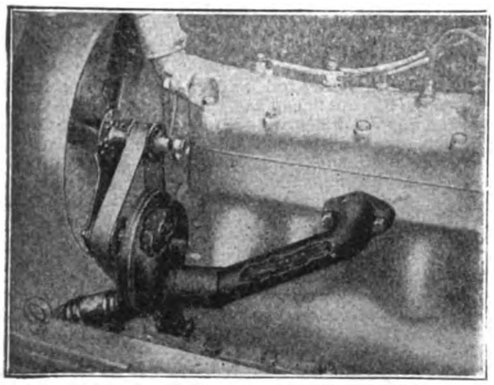


Manufactured by the Splitdorf Electrical Co., 98 Warren Street, Newark, N. J. Prices and literature on request.

The Centrifugal Water Circulator for Ford Cars consists of a centrifugal water pump, which is fitted to the intake water pipe between the radiator and the side of the engine, driven by a pulley attached to the pump shaft by a belt connected to the crankshaft of the engine and also driving the fan.

The pump is made of the best of materials and is fitted with a compression grease cup which supplies lubrication to the pump shaft bushings. The pump is of ample size and will, it is stated, keep the Ford engine cool in the hottest summer weather.

Water circulators of this type are used on Fords equipped for racing purposes only and the manufacturer of these cars reports that they can recommend them very highly as to their efficiency and simplicity of installation.



The device may be easily installed by any mechanic in a few hours time and the manufacturer states that troubles due to overheating, carbon accumulation, etc., are practically eliminated.

Manufactured by the Standard Auto Accessories Co., 127 South Green Street, Chicago, Ill. Prices and literature on request.

The Baseline Autowline has been developed after many years of careful experimenting on the part of the manufacturer, and is claimed to be the best article of its kind for cars that cannot be operated on their own power, for pulling stalled cars out of the mud and for many other purposes for which a strongly made tow line may be used.

The Baseline Autowline consists of a 20-foot yellow strand wire rope, equipped with a patented snaffle hook at each end, and two Manila slings. These slings are to be used around the rear axle of the towing car and around the front axle of the towed car, so as not to mar the paint. The patented snaffle hook fastens to the loops of the Manila rope at each end, holding the Autowline in place with no chance of the hook slipping off.

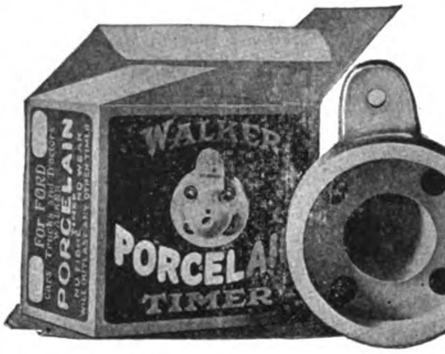
BASLINE AUTOWLINE
REG. U.S. PAT. OFF.

The Autowline is strongly made of the highest grade of steel wire and is guaranteed to handle with ease either passenger cars or trucks under the most adverse circumstances.

Manufactured by Broderick & Bascom Rope Co., St. Louis, Mo. Prices and literature on request.

The Walker Porcelain Timer is designed and built to give utmost satisfaction to the Ford car owner. The shell is made of the highest grade porcelain, which is the best known insulating material. The timer is not affected, it is claimed, by either oil, water, heat or cold, thus eliminating all possibility of short circuiting the current. It is stated that due to the rugged construction of the timer it will give unlimited use.

The hardened steel contact points are embedded in a smooth porcelain race, which is a part of the shell, thus overcoming many commutator troubles, as it is impossible for the race to become soft and bumpy through wear.

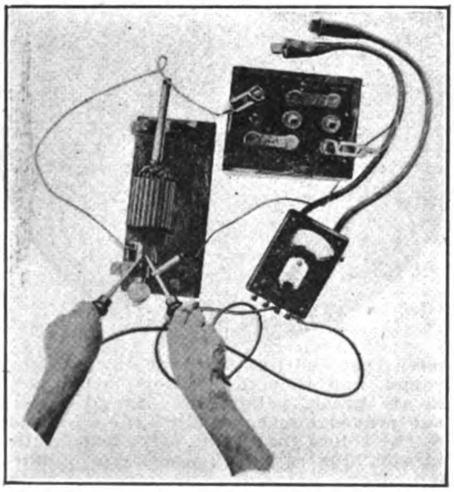


The rotator assembly is made of the finest grade steel and is of the brush or magneto type, being sufficiently strong to give long service. Due to improved design it gives a light, but well balanced assembly. Contact is made by the hardened steel brush wiping contact points, embedded in the porcelain race and produces a clean, hot spark which guarantees a quick start, so essential to the Ford engine.

Manufactured by the Walker Accessories, Inc., 1991 Broadway, New York City. Price, $1.75. Dealer and jobbing trade solicited.

The Hydrate Electro Trouble Detector has been developed for the garage and electric service station repairer who wishes to make quick tests of electrical troubles that develop in the modern automobile.

The Hydrate Electro Trouble Tester combines five instruments in one. It is so designed that a series of simple tests, readily made and requiring no special electrical training, will enable anyone, the manufacturer states, with this instrument to discover the cause of any defect or failure in the generator, starting motor, lights, horn, switches, wiring, battery or ignition apparatus.



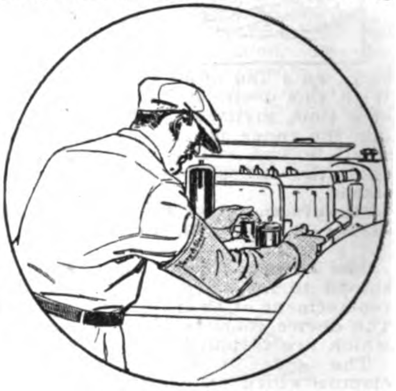
With this detector is furnished the most complete and easily understood instruction book, which has proved an excellent text book for wiring, electrical troubles, etc.

The instrument is a combined voltmeter and ammeter, with three-volt and two-ampere scales for accurately testing electrical pressure or flow of current found in automobile equipment.

With the detector are furnished leads, prods, clips and cadmium test electrode.

Manufactured by the Service Station Supply Co., 30 East Larned Street, Detroit, Mich. Prices and information on request.

The Save-A-Sleeve Glove fills a long felt want among motorists who wish to do the work necessary to keep the car in perfect condition. The glove is made with a long, protecting sleeve, which can be pulled up and over the shirt or coat sleeve, thoroughly protecting it from contact with parts of the engine that may be oil coated.

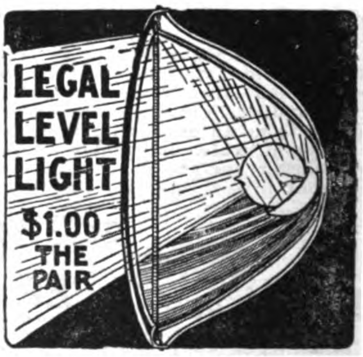


Save-A-Sleeve Gloves are claimed to be as easily put on and taken off as an ordinary glove; they are made of a strong and durable khaki-colored duck, double-stitched for firmness, are impervious to oil and grease, are cut full to the size of the hand and stay in place without slipping.

Manufactured by Moss & Naylor, Marion, Ind. Prices and literature on application.

The Legal Light Deflector is stated to be the most efficient non-glare device on the market. The reason advanced is that more light is given on the road than by the plain reflector and that its use does not prevent the utilization of the balance of the light's rays, which are reflected at each side of the car, thoroughly lighting the sides as well as the front, and eliminating the glare feature so common in the ordinary head light.

The device consists of a small reflector which is located under the light bulb, the duty of this reflector being to throw the light upwards against the larger reflector of the head light. This action of the small reflector cuts off the rays of light which would ordinarily strike the lower part of the head light reflector and shine in the eyes of oncoming drivers. It is claimed to eliminate this glaring feature and makes a safe light at small expense for night driving. Full instructions for attaching and focussing the lights are packed with each set.



Distributed by the Monroe Auto Specialty Co., 203 State Street, Rochester, N. Y. Price, $1 a pair.

The Sattler Recorder is designed especially for use on motor trucks and consists of an instrument containing a movable paper dial divided into 24 hours which keeps an accurate record of the speed, stops and mileage made by the truck during the 24-hour period. The dial record is made by a suitable driving mechanism connected to the driving part of the car, and by a clock-like device which turns the dial through the 24-hour period. Two lines on the dial are made by the connection to the moving part of the car, while the third line, which is a check on the first two records, is actuated by the side sway of the vehicle and protects the device from being tampered with. It is stated that although the driving mechanism may be tampered with by the operator of the truck, the third record will invariably give a complete record of the doings of the truck during the length of time that it is in use.

The Sattler Recorder
HANS SATTLER

The records are changed by the owner of the truck or one of his representatives, and he is thus able to inform himself at a glance just what the car has been doing.

The Sattler recorder is substantially built and, it is stated, will last for years. It is fully guaranteed for one year against defective material and workmanship and to work correctly.

Manufactured by Hans Sattler, Sheboygan, Wis. Price, f. o. b., $75, complete with 50 charts.

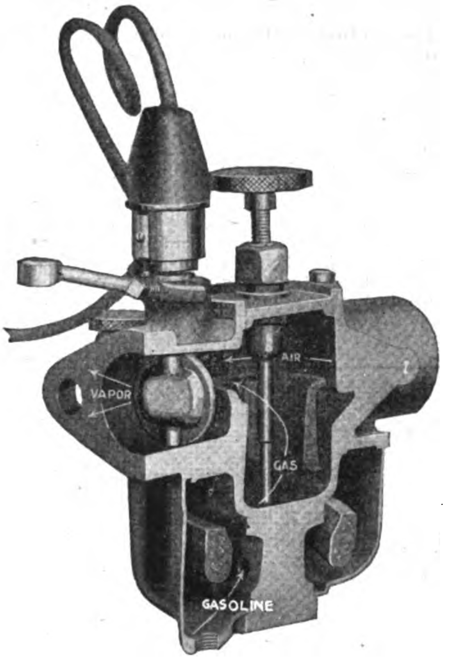
Duraco Compressed Asbestos Sheet Packing is manufactured especially for the automotive trade and for the internal combustion engine where heat has to be taken into consideration.

The packing may be used with satisfaction for making intake, exhaust, valve cap and carburetion gaskets, and is claimed to be heat and oil resisting. The ease with which the packing can be cut appeals to the repairer, and the absence of wire assures an even edged finished gasket. Gaskets cut from the sheet have an advantage; it is not necessary to carry a large stock of varying sizes, as gaskets to fit any need can be easily cut.

Other articles manufactured are graphited asbestos rope packing for centrifugal water pumps and Duraco in tube packages for the convenience of the jobber when selling less than full sheets.

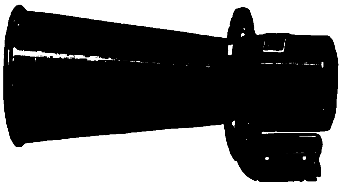
Manufactured by the United Asbestos Packing Co., Chicago, Ill. Prices and literature on request.

The Electrical Heated Throttle Valve offers a unique method of heating the gas mixture before it reaches the combustion chamber of the internal combustion engine. It is stated that the device may be easily attached to any make of carburetor in a few minutes time by simply removing the old throttle and substituting the electrically heated valve in its place. The device consists of the regulation throttle valve, to which is attached a heating unit. enclosed in such a manner that the moisture of the vapor will not affect it. It is connected to the storage battery by means of a wire and switch suitably located. It is stated that only 30 minutes time is required to make the installation. In ordering state size and make of carburetor.

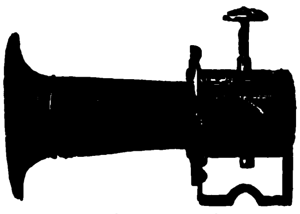


Manufactured by the Instant Starter Co., Inc., Kokomo, Ind. List price $9 complete with wire and switch.

The E. A. Model 9 Driven Horn for Ford Cars consists of a direct current motor driven signal device that may be attached to the engine of the Ford car in place of the regular buzzer horn. Removing the bolt on the left side of the third cylinder allows the horn to be securely fastened, while the only other change in installing is the moving of the connection of the horn button wire from the first to the second wire on the terminal block on the dash.



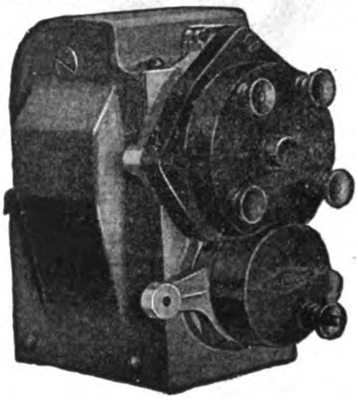
The horn is made throughout of the best of material and shows a high degree of workmanship, all metal parts being finished in black enamel. Adjustment of the horn is made by a small screw at the end of the armature; a lock nut is also provided, making the adjustment positive.



Manufactured by the Automobile Supply Manufacturing Co., Myrtle Avenue and Spencer Street, Brooklyn, N. Y. Prices and literature on request.

The Splitdorf Four-Cylinder, Five-Spark Magneto answers the heavy fuel problem for automotive vehicles, as engineers have developed several fuel heating devices for obtaining better fuel vaporization. In some cases these are built into the carburetor. In others, an auxiliary device is attached to or surrounds the intake manifold. But in either case an extra ignition spark in the heating chamber is required to start and maintain the partial combustion of the fuel.

When these devices first appeared it was common practise to use a series spark plug in the heating device, leading the spark from this plug to another in one of the cylinders. Thus one spark was required to do double duty. In theory this worked well, but in practise it was difficult to find a series type of spark plug which could be relied on.



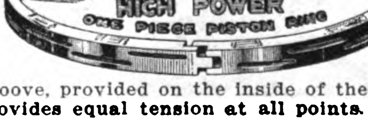
Splitdorf engineers were asked to produce a magneto which would furnish hot, correctly timed sparks for the cylinder ignition and also sparks for the fuel heating chamber. Since in the Splitdorf-Aero magnetos only the negative sparks are utilized for cylinder ignition, it was a simple matter to modify the standard four-cylinder aero magneto to produce four sparks per revolution instead of but two, and to lead the four extra positive sparks through a fifth distributor terminal to the extra spark plug in the heating chamber.

This magneto, known as the Splitdorf-Aero model 480, has been given extensive field as well as laboratory and breakdown tests and is now in production and ready for delivery. It may be furnished with or without the Splitdorf enclosed automatic impulse starter and is therefore

Manufactured by the Splitdorf Electrical Co., Newark, N. J. Literature on request.

The Harward One-Piece Piston Ring consists of a single ring having patented features which the manufacturer states eliminate many engine troubles which are found in the gasoline engine. Pockets are provided in the face of the ring which retain oil, providing positive lubrication to the cylinder walls, while the joint between the ends of the ring is interlocking and underlapped across the entire surface of the joint, preventing the gases or oil from leaking past.

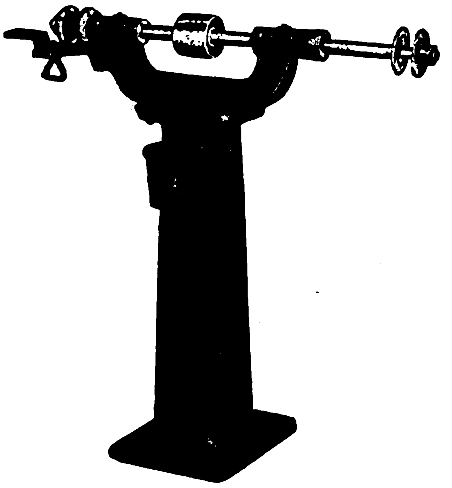
The ring is concentric in form and fits the walls of the cylinder with a uniform pressure at all points, while an eccentric groove, provided on the inside of the ring, provides equal tension at all points. The rings are made from three to six inches in diameter and for all makes of engines. When ordering give diameter of cylinder and width of groove.



Manufactured by the Harward Manufacturing Co., 3939 Magnolia Avenue, St. Louis, Mo. Prices and literature on request.

The No. 17 Polishing and Buffing Lathe has been but recently placed on the market to meet the demands of the vulcanizer and the tire repair man for a moderately priced buffer, which at the same time was well built and in every way practical for the work. Many garages use them, as they will do the work of a regular grinder and at the same time it equips them for tire repair work if in the future they want to do it.

Both the stand and the frame are heavy, the frame being reinforced by a double rib which gives it added strength and the whole machine steadiness in running. The bearings are 5½ inches long, which not only gives a large wearing surface, but also tends to keep the spindle running true. Each bearing is adjusted by four nuts, which allow taking up wear.



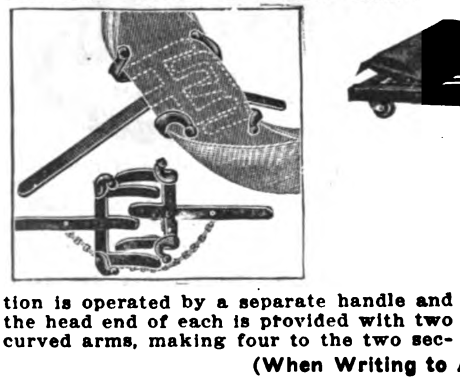
The left side of the spindle is generally used for the rasp, during which operation the arm and rest can be entirely removed. On this end may also be placed an ordinary emery wheel, as large as 2 by 10 being used for general grinding and tool sharpening. The right end of the spindle has a 7½-inch extension, which gives sufficient clearance for handling any size of automobile tire.

The height from the floor will be found to be such as to put the least strain on the operator in handling any size of tire both in buffing as well as in using wire brushes. As an added convenience when sharpening tools a small water pot is fastened to the stand. The emery wheel can be supplied with a guard and the spindle may be equipped with either single pulley, or tight and loose pulley. When furnished with a single pulley one of the No. 1½ countershafts should be included.

Manufactured by the Columbia Manufacturing Co., Belleville, Ill., which is the manufacturer of a complete line of grinders and buffers; machines which have stood the test of time, Crescent grinders having been in use for 36 years. Prices and circulars on request.

The Lewsen Quick Tire Spreader No. 3-D is designed especially for tire repair service stations where it is often necessary to turn a tire inside out to effect the repair.

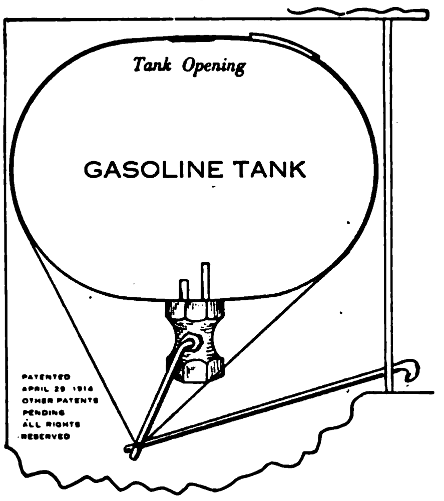
The device is in two sections, which fit over each other at the center. Each section is operated by a separate handle and the head end of each is provided with two curved arms, making four to the two sections, which fit over the bead of the tire, two at either side. When the handles or levers are opened outward, the arms fitting over the beads, open the tire, turning it inside out, so that repairs can be made to the inside. The levers in the open position support the tire on the floor while repairs are under way.



Manufactured by the Lewsen Manufacturing Co., Portland, Me. Price, $7.50.

The McIntyre Hi-Lo Gasoline Valve for Ford Cars fills a long felt want among motorists who many times find their gasoline tank empty miles from a source of supply. The device consists of a triple valve which fits the gasoline tank at its lowest opening and takes the place of the regular well, the fuel pipe and strainer being fitted similarly as when the well is used.

Two tubes pass upward into the gas tank, one tube being somewhat shorter than the other and fastened at the lower end to the valve housing. The valve rod extends out at one side of the housing and is connected to a second rod passing forward to the edge of the seat, allowing the driver to open the emergency valve when the gasoline in the tank has reached the lever of the longer tube.



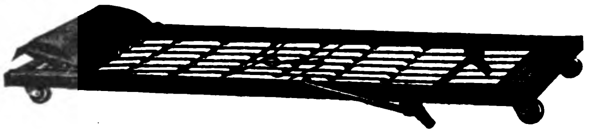
APPLIED TO A FORD

It is claimed the length of the shorter tube is correct and will allow the driver ample time to reach a source of gasoline supply under ordinary conditions.

The device is easily attached in a few minutes time by anyone handy with tools and once attached the danger of running out of gasoline on the road is reduced to a minimum.

Manufactured by A. C. Clark & Co., 1035 East 76th Street, Chicago, Ill. Price, $3.50.

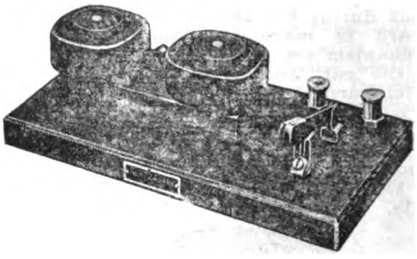
The Foster Auto Repair Creeper has been designed especially for garages and service stations and as it is made throughout of metal, which is practically indestructible, it will stand hard usage. The bed of the creeper consists of a link spring, which affords some degree of comfort to the user. Ball bearing casters are provided which facilitate moving of the creeper about the garage, while an anchoring device is attached to the frame, which prevents the creeper from moving after it has been placed in position under the car.



Manufactured by Foster Brothers Co., Utica, N. Y. Price, $5.

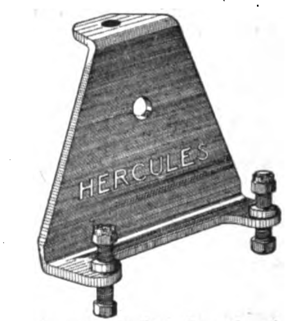
The Phillips No. 101 Magnetizer or Magnet Charger consists of two magnets and a single-throw switch mounted on a wooden base. The base is also provided with two binding posts for connection to a storage battery or dry cells for current supply.

Magnets that have become weak through long continued use may be revived with this instrument, it is claimed, and made to develop their full amount of energy. The recharging process is simple and full instructions accompany each instrument, explaining how weak magnets are remagnetized.



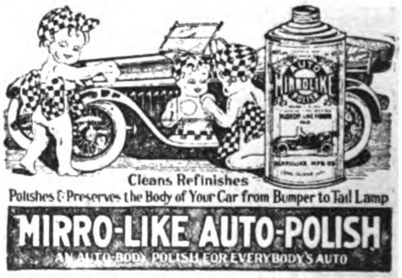
Sold by H. E. Phillips & Co., Union City, Ind. Price, $7.50.

The Hercules Master Repair Arm for Ford Cars is designed for emergency use in repairing the Ford crankcase arm in case of accident or breakage. The repair arm is constructed of the highest grade frame steel obtainable and is guaranteed to fit all model Fords up to and including 1920 models. Nuts and bolts are provided, so that the repairer is not obliged to hunt special nuts and bolts for the job. It is stated that a repairer can easily attach the arms to a Ford crankcase in less than an hour's time and that, once in place, the repair arm is much stronger than the original. The Hercules repair arm is guaranteed forever by the manufacturer against breakage from any cause.

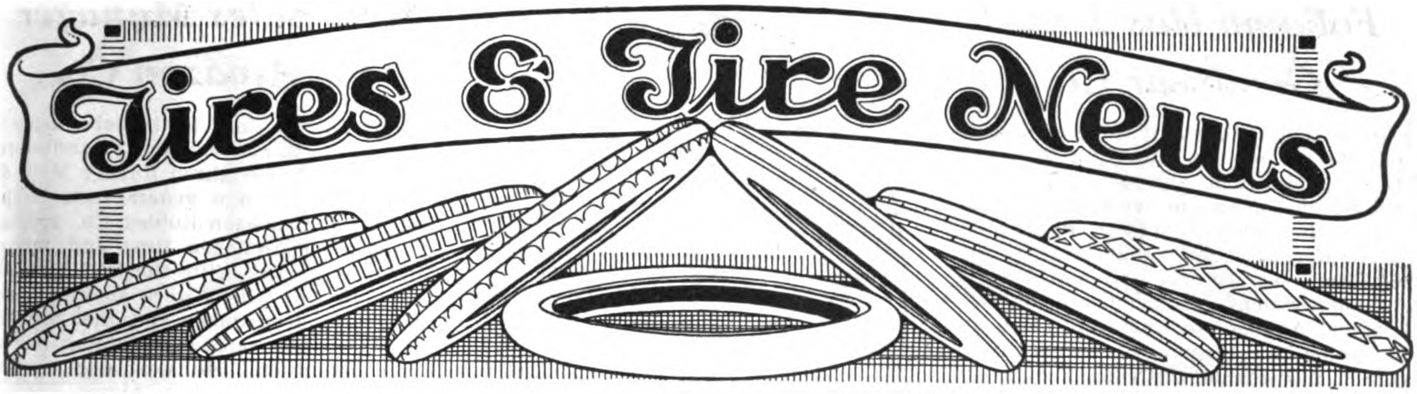


Manufactured by the Lake Erie Accessories Co., Cleveland, O. Price, $1.25, except in Canada.

Mirro-Like Auto-Polish is stated to be a correct combination of ingredients noted throughout the motor world for their beneficial qualities, which will preserve the brilliancy of the finish of the car. Mirrolike Auto Polish can also be applied to the leather upholstery of the car with good success, it is stated ,and not only restores the finish of the cushions, top, etc., but prolongs the life of the leather material, making it flexible. Clothing, it is claimed, is not injured or stained by coming in contact with cushions that have been cleaned with Mirrolike, as the polish, when rubbed, becomes absolutely dry, without leaving a greasy or oily surface.


AUTO
MIRROLIKE
POLISH
Cleans Refinishes
Polishes & Preserves the Body of Your Car from Bumper to Tail Lamp
MIRRO-LIKE AUTO-POLISH
AN AUTO-BODY POLISH FOR EVERYBODY'S AUTO

Manufactured by the Mirrolike Manufacturing Co., Inc., Long Island City, N. Y. Prices and literature on request.



Stability of Rubber Tire Industry

There is no better indication of the stability of the rubber tire industry and the continued growth and prosperity of the rubber manufacturing concerns in Akron, O., which produce 66 per cent. of the world's total output of tires, than recent announcements by nearly all rubber companies in Akron to the effect that sales are maintaining high levels and are greatly in excess of the 1919 figures.

In a bulletin just issued by the Akron Chamber of Commerce, seven past presidents of that body, including President F. A. Seiberling of the Goodyear Tire & Rubber Co., and E. E. Workman, vice president of the National Real Estate board, give interviews in which they express optimism and the opinion that the present lull in business is merely transitory. All coincide in the view that Akron, the rubber center of the United States, will suffer comparatively little from the effects of the curtailment of credits.

Mr. Seiberling, in the Chamber of Commerce bulletin, says: "Six years ago the Kaiser put a match to the bomb that rocked civilization and incidentally catapulted prices to the highest plane ever known. The dust and debris reached its zenith within the past year and is now, through the influence of natural forces, steadily settling back to normal.

"The existing plane of values is certain to be lowered until it reaches proper balance, and this will not be finally accomplished in a month, or a year, but will take many years. So far as Akron is concerned we have reached the bottom in the production of tires. Abnormal stocks over the country are being steadily absorbed and the curve of production within a few months will be steadily upward."

F. A. Seiberling, President Goodyear Tire & Rubber Co., Akron, O.

Mr. Seiberling also reports that gross sales of Goodyear products for July were $17,185,113.06, which shows a substantial increase over the same month last year, when sales totaled $15,989,349.08. Further indication that sales for 1920 will top those of last year, is shown in the company's sales for the nine months of the 1920 fiscal year, amounting to $162,202,467.21. Inasmuch as Goodyear sales for all last year were $168,914,982.83, it can be seen that the company up to Aug. 1 had done but $6,712,515.62 less business in nine months than they did for all of 1919. Officials estimate that even if sales for the next three months are put conservatively at $15,000,000 monthly—below last year's figures—Goodyear sales for 1920 will be in excess of $200,000,000. These figures bear out Mr. Seiberling's assertion that within a few months the extreme pressure of restricted credit will be removed, that the curve of production soon will be upward and that now is the time for sensible optimism toward the rubber industry, whic is unsurpassed in bright prospects.

CONVENTION OF TIRE EXPERTS.

The truck tire experts of the United States Tire Co. recently held a three-day conference, opening at Hotel Astor, New York city, in the afternoon, followed by a banquet and theater party in the evening. The company then proceeded to Providence, R. I., where the truck tire manufacturing activities of the company are centered.

The first day at Providence was devoted to a study of solid tire subjects, under the chairmanship of C. K. Whidden, manager of the solid tire department. The next day's programme constituted an equally intensive discussion of pneumatic truck tires, with W. V. Logan, manager of the pneumatic truck tire department acting as chairman.

The members of the conference who were assembled from every state east of the Rockies, spent considerable time in inspecting the company's new Colt plant, equipped with the most modern truck tire machinery, and built with a view to rapid expansion to meet the needs created by the rapid growth of the motor truck industry.

Group of Truck Tire Experts of the United States Tire Co. Taken at Their Recent Conference at Providence, R. I.

Foljamb Has Joined Goodyear Co.

E. S. Foljamb, widely known throughout the automotive industry as editor of trade publications and as an official of the Society of Automotive Engineers, has joined the Goodyear Tire & Rubber Co. of California at Los Angeles as a special representative of the motor truck tire department. A member of the Society of Automotive Engineers since its inception, he became a vice president and a member of the council of 10 in 1916. He also holds many honorary memberships in various automobile and trade associations. Being well versed in all angles of the automotive industry he will make a valuable addition to the California Goodyear organization, taking part in educational "motorize the farm" campaigns, and will also engage in special sales promotional work.

Because of its increased business in the aeronautic field, and the need of special increased supervision in this line of work, the Goodyear Tire & Rubber Co. of California has established an aeronautic department with P. K. Coe as manager. A government sales department has also been established simultaneously and will likewise be under Mr. Coe's supervision. The new manager of Goodyear's Pacific coast aeronautic activities has had wide experience along similar lines with the Akron organization. In addition he was in the navy aviation service during the war and holds a pilot's certificate from the Aero Club of America. Since his arrival in Los Angeles in April he has staged many unique exhibition flights and has greatly stimulated aviation along the Pacific coast.

E. S. Foljamb, Truck Tire Department, Goodyear Co. of California.

"THE GOODRICH DEALER," A NEW HOUSE ORGAN.

"The Goodrich Dealer," a house organ of the B. F. Goodrich Rubber Co., Akron O., is one of the latest publications to enter the automotive field. It is an eight-page, seven-column newspaper, which will be published semi-monthly. It contains interesting features pertaining to the tire business, news of the automotive industry, write-ups of successful dealers, etc. All Goodrich dealers are on the mailing list of the new publication, which is edited by D. A. Donovan.

The publication's division of the Goodrich advertising department also puts out the Circle, a weekly magazine for the employees of the company, and the Goodrich Druggist, a monthly magazine published in the interests of the concerns who handle the Goodrich line of drug sundries.

NEW BRANCH MANAGERS FOR THE UNITED STATES TIRE CO.

E. F. Kidder, New England sales manager of the United States Tire Co., has announced a number of important changes in the personnel of the company's selling forces in his territory. J. P. Haney, formerly branch manager at Boston, has been promoted to the position of district manager at Boston. A. C. Crocker, formerly branch manager at Providence, R. I., will succeed Mr. Haney at Boston; E. T. Richardson, formerly branch manager at Portland, Me., will go to Providence as branch manager, and F. J. Nute, salesman at Portland, succeeds Mr. Richardson as branch manager in that city.

DENMAN-MYERS CORD TIRE CO.

The Denman-Myers Cord Tire Co., a $2,500,000 corporation with a new plant at Warren, O., has filed a certificate of the change of its name from D. & M. Cord Tire Co. It has also been conducting a contest for a prize of $50 for a trade slogan or phrase to be used in marketing Denman cord tires.

A. H. Leavitt, New General Sales Manager, Amazon Rubber Co., Akron, O.

New Sales Manager for Amazon Co.

A. H. Leavitt, long in the sales department of the B. F. Goodrich Co., and more recently with the Akron Rubber Mold & Machine Co., is now general sales manager for the Amazon Rubber Co., Akron, O., maker of Amazon tires and tubes. Mr. Leavitt was with Goodrich for 11 years, two of which were spent in the production department and the remaining nine in the sales organization in various capacities. He was also in the sales department of the Akron Rubber Mold & Machine Co., and is thus well qualified to assume the duties of his new position with the Amazon Co.

NEW DISTRIBUTORS FOR STANDARD FOUR TIRE.

Under its new and more extensive sales policy, announced some time ago, the Standard Four Tire Co., Keokuk, Ia., is rapidly establishing new distribution points throughout the country. Following close on the statement of the appointment of several new connections in the South comes news of five important distribution allotments in the East, as follows:

McGraw Tire Sales Co., with headquarters in Buffalo, N. Y.; Wagner-Tracy Auto Supply Co., Inc., 222 Central, Albany, N. Y.; Hauck Brothers, Mechanicsburg, Pa.; Dawson Tire & Supply Co., Newark, N. J.; Combination Ladder Co., wholesale automobile supplies, Providence, R. I.

F. R. Eyer, general sales manager, announces that the company will continue opening up new territory in direct proportion to its increased production facilities. The Standard Four Tire Co. is now, Mr. Eyer says, producing more tires per day than ever before in its history.

LAMBERT STORE IN BOSTON.

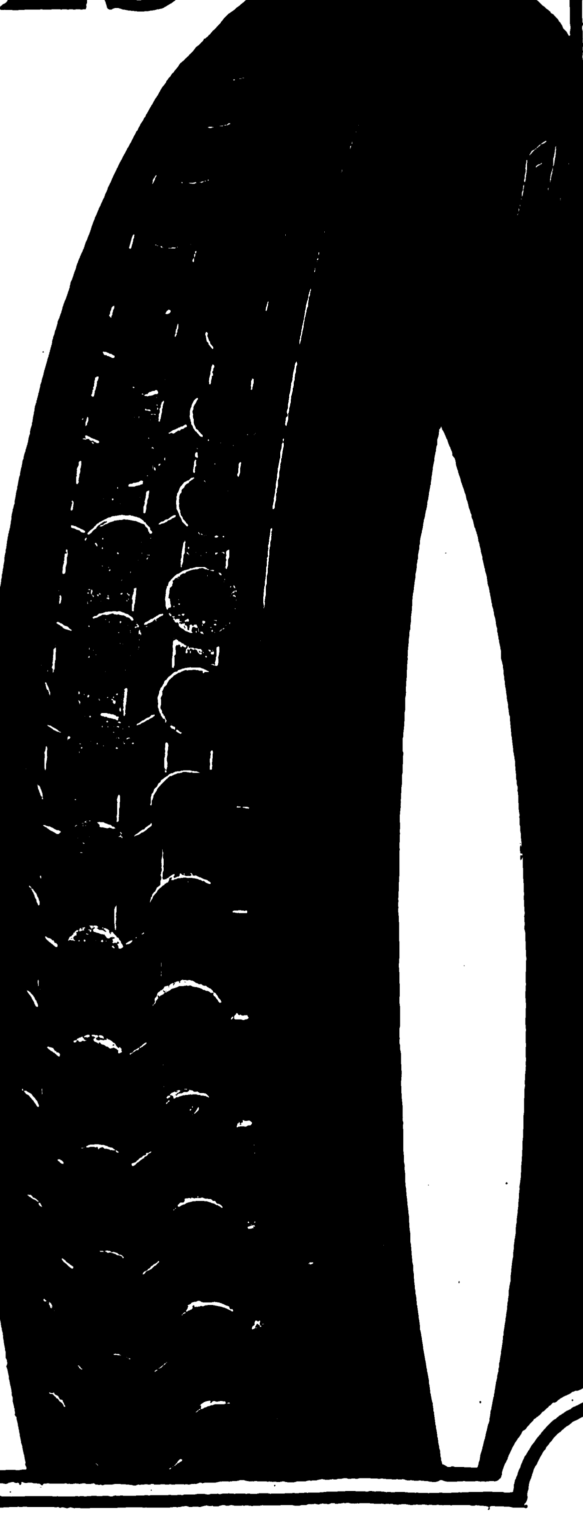
The Lambert "Trublpruf" Tire Co. recently opened a store at Boston, at 823 Boylston street, in charge of A. J. Millward, James J. O'Brien and L. H. Plummer, its territory comprising practically all of the New England district. The Lambert "Trublpruf" cord tire is manufactured by the Lambert Tire & Rubber Co., Akron, O., and this rapidly growing concern already has large wholesale and retail stores in Brooklyn, Washington, D. C.; Denver, Peoria, Dallas, Minneapolis, Atlanta, Vancouver and other cities.

McGINNES JOINS INDIA TIRE CO.

J. E. McGinnes, widely known in the tire field, has been placed in charge of sales promotion work for the India Tire & Rubber Co., Akron, O. He was formerly branch manager for the Firestone Tire & Rubber Co. in Milwaukee, and also established a wide acquaintance with the trade as manager of tire sales for the General Tire & Rubber Co., Akron.

Fisk Rubber sales, first six months, 1920, were in excess of $27,000,000.

FISK TIRES



The Fisk Message is told everywhere

ON highways through the land —in publications of largest national circulation — in many newspapers — you will find the Fisk message of dependable tires.

It's an honest message and you can profit by it to the fullest extent because it is in no way exaggerated.

The message is based upon the Fisk Ideal, "To be the best concern in the world to work for and the squarest concern in existence to do business with."

And in every Fisk ad there appears "Next time—BUY FISK from your dealer."

Trade Mark Reg U S Pat Off

Time to Re-tire?
(Buy Fisk)

Goodrich Sells Stock to Employees

The B. F. Goodrich Rubber Co., Akron, O., has afforded an opportunity to its employees to share in its profits by becoming holders of common stock. This will be sold to employees for $65 a share on weekly payments of 25 cents, each employee being allowed to buy one share for each $300 of his annual earnings. Stock will be sold in this way only to employees who have been with the company three months or longer. The period of payments will be three years and 24 weeks, the payments totalling only $44.98 a share, accumulated stock dividends and service credits making up the difference between this amount and the stock purchase price plus interest.

Every time the company pays a dividend on its common stock it will credit a like amount toward the payment of each share of stock on which employees are making payment. At the present dividend rate, such dividends will amount to $21 per share during the payment period.

The employee will receive through the service credit plan an additional credit of $6 on the payment of each share purchased. This service plan provides $1 credit on each share a year from date of first payment, $2 at the end of the second year, and $3 at the end of the third year. The service credits will be given even after the stock is paid for. At the end of the fourth year, $4 cash will be given on each share held and at the end of the fifth year, $5 cash. This will reduce the net amount cash paid for the stock of $35.98 per share.

AUTOMOBILE TRAFFIC CENSUS.

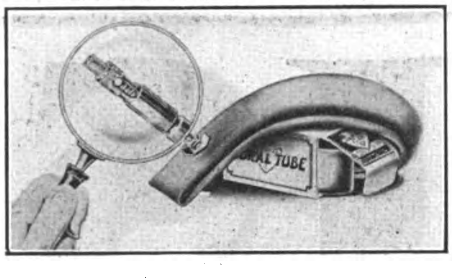
The Travel and Transport bureau of the B. F. Goodrich Rubber Co. recently took a 24-hour traffic census on the Akron-Cleveland road at Stow Corners, 10 miles north of Akron. This showed that during the past two years truck transportation increased 171 per cent., passenger car traffic showed a gain, during the same period, of 27 per cent., while horse drawn traffic decreased 52.5 per cent. Traffic of all kinds increased 45 per cent. During the 24 hours under observation, 2891 vehicles passed, including 2033 passenger cars, 798 motor trucks, 15 motor buses. This compares with 1599 passenger cars in 1918, 295 motor trucks and 97 horse-drawn vehicles. More than 100 of the passenger cars observed this year were new machines being driven home from factories by distributors.

McGRAW PREFERRED DIVIDEND.

The McGraw Tire & Rubber Co., East Palestine, O., has declared a quarterly dividend of 1¾ per cent. on the outstanding preferred stock of the company.

QUALITY TIRE FACTORY SITE.

The Missouri Quality Tire Co. is reported as having purchased 20 acres of land in Smelter Hill, Nev., for a site for its new automobile tire factory.



Whistler, the Automatic Pressure Regulator, is Standard Equipment on Dural Tubes.

DURAL TUBES TO BE EQUIPPED WITH WHISTLERS.

An agreement has been made between the Dural Rubber Corporation and the Automatic Safety Tire Valve Corporation whereby Whistlers, the automatic pressure regulators manufactured by the Automatic Safety Tire Valve Corporation, will be included as the regular equipment with all Dural tubes. This device will add only 35 cents to the cost of each tire, whereas they cost $1 each when bought separately.

This new arrangement is appreciated by dealers and jobbers, as the demand for Whistlers, which has grown since they were put on the market three years ago, combined with the success of Dural tubes, makes the Dural Whistler combination attractive for motorists.

GOODYEAR TIRE & RUBBER SALES FOR HALF YEAR.

The sales of the Goodyear Tire & Rubber Co., Akron, O., for the first half of the current year show an increase of about 60 per cent. over those for the corresponding period of 1919. The total gross sales in 1919 amounted to $169,000,000 as compared with less than $10,000,000 in 1910, an increase of $159,000,000 in 10 years.

G. M. Stadleman, vice president, states that the production of tires and other rubber articles in this country consumes more than 45,000,000 pounds of cotton fabric and 108,000,000 pounds of crude rubber annually.

ECONOMY OF PNEUMATICS.

The Goodyear Tire & Rubber Co., Akron, O., calls attention to a recent motor truck trip from York, Pa., to Detroit, Mich., as expressive of the economy of fuel and oil due to the use of pneumatic tires. The truck in question was a 2½-ton Standard stripped chassis, equipped with Goodyear cord tires. The run of over 600 miles was made on 50 gallons of gasoline and 1¼ quarts of oil.

STEPHENS TAKES OVER KANSAS CITY PLANT.

The A. J. Stephens Rubber Co., which plans a total output this year of goods valued at about $3,000,000, has taken over the plant of the Kansas City Tire & Rubber Co., Fourth street and Kansas avenue, where, it is reported, the manufacture of Stephens tires and inner tubes will be concentrated.

Marvelous Record of Oldfield Tires

It is stated that the use of Oldfield tires has helped make possible the victory of every speedway winner so far the present season and, in addition, that many of the other money-winning positions have been held by cars similarly equipped with this product developed by the well known "Old Master," Barney Oldfield, and manufactured by the Oldfield Tire Co. of Cleveland, O., of which he is the active head.

Gaston Chevrolet's victory at Indianapolis was won on Oldfields without a tire stop, the first time the feat has ever been performed. In that event, Oldfields also won second, third, sixth and eighth places.

Milton's wins at Uniontown and Tacoma furnished two more stars for the Oldfield banner. The Tacoma returns are still further notable in the fact that of the 16 Oldfields on the first four cars to finish, but one tire had been replaced during the race, and this because of a puncture.

On account of the excellent test opportunity afforded by such events, President Oldfield has been giving personal attention to the tires used in these races. "Naturally I'm pleased at the result of our speedway tests," he admits. "And they mean something, too, for every Oldfield tire used in racing carried our stock red tube, in a strictly stock carcass.

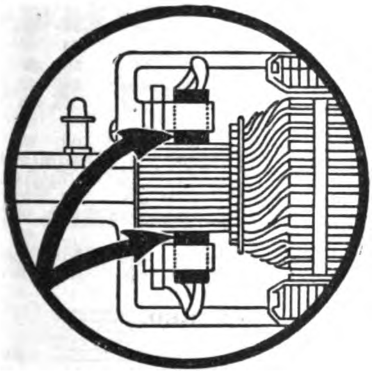
"I'm glad, too, that these have been competitive victories, with other tires liberally represented. A limited number of the starters in any race is all we have ever wanted."

McGRAW'S NEW SALES MANAGER.

Announcement has been made of the appointment of C. E. Pumphrey, formerly assistant sales manager of the McGraw Tire & Rubber Co., Cleveland, O., to be general sales manager of that company in the place of H. M. Bacon, resigned. Mr. Pumphrey has been associated with the company for the past seven years.

Coincident with this announcement comes word of a number of other appointments in the company's sales personnel. W. H. Hurley, manager of the New York branch, is made assistant sales manager with headquarters at Cleveland, and W. A. Brady, who has been connected with the New York branch, assumes the management of that territory. G. E. Bovis, manager at Cleveland, goes to Chicago to fill the vacancy caused by the transfer of H. G. Couturier to the general office headquarters in the capacity of sales promotion manager, a newly created department. R. I. Winterringer of Boston takes charge of the Cleveland territory, while W. P. McGlynn will assume the Boston post.

It is stated that during the first six months of the present year the business of the McGraw Tire & Rubber Co. has shown a very substantial growth and the outlook for the remainder of the year, according to President Morgan, is most promising.



Reliable Starting and Lighting depend on correct Brushes

EXPERT ADVICE

Begets Confidence and Increases Profits

NEARLY every car needs at least two new replacement brushes annually. You can get the profits from this easily.

Columbia

PYRAMID BRUSHES

are made for any and all automobile starting and lighting equipment. The correct brushes for every system are specified in the Columbia Brush Blue Book, which we furnish to each dealer.

Columbia Pyramid Brushes for starting and lighting equipment are designed, made, and recommended with the same care as the brushes we supply for the largest electric motors, generators, and converters.

Take advantage of this opportunity to increase your profits through expert advice and the furnishing of "exact" brushes.

Write your distributor today

Look for this Mark

N C C

on Your Brushes

NATIONAL CARBON COMPANY
Incorporated
Cleveland, Ohio San Francisco, Calif.

Canadian National Carbon Co., Limited, Toronto

7720

Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK MARKET.

Week Ended Aug. 21, 1920.

	High	Low	Last	Net Change
Advance-Rumely	31	30	30⅞	+ ⅜
Advance-Rumely, pfd	60½	57½	58½	—1⅞
Ajax Rubber	50	48	50	+1¾
Allis-Chalmers Mfg	31	29	31	+ ⅜
Allis-Chalmers Mfg., pfd	71	70⅛	71	+ ½
American Bosch Magneto	86½	82	86	—2
Amer.-La France Fire Engine	10	9⅞	9⅞	+ ⅜
Auto Sales	4⅝	4⅝	4⅝	+ ½
Bethlehem Motors	15⅜	9½	10	—5½
Case, J. I., Plow	11	11	11	+1
Chandler Motor	87½	79½	87	+1⅜
Emerson-Brantingham, pfd	71	71	71	—2¼
Fisk Rubber	27½	26¼	27⅛	— ¾
General Electric	142	138¾	142	— ⅓
General Motors	22	20⅝	22	+ ⅛
General Motors, 7% Deb	80	79½	79½	—1½
General Motors, 6% Deb	68⅞	68	68	—1½
Goodrich, B. F	56	51⅞	56	+3¾
Goodrich, B. F., pfd	85½	85½	85½	+1
Hupp Motor Car	15	13¾	15	+ ¾
International Harvester, new	125	122	125	....
International Har. new, pfd	104	104	104	+ ¾
International Motor Truck	44¾	41¾	42½	— ¼
Interna. Motor Truck, 1st pfd	75½	75	75	—2
Interna. Motor Truck, 2nd pfd	64¾	64¾	64¾	— ¼
Kelly-Springfield Tire	78	71¾	77	+1
Kelsey Wheel	52½	50	50	—5
Keystone Tire & Rubber	18½	15⅝	18½	+2¼
Lee Rubber & Tire	22	21¼	21¼	— ¼
Martin-Parry	21	20⅛	20⅝	— ⅜
Maxwell Motors	12¼	10¼	11¾	+1⅛
Maxwell Motors, 1st pfd	21⅜	19¼	21⅝	+2¾
Mullins Body	33	32	32	—1
Pierce-Arrow	40½	36½	39½	....
Pierce-Arrow, pfd	88¼	88¼	88¼	— ¾
Republic Motor Truck	39	35⅛	36⅛	—2⅜
Saxon Motor	7	6⅝	7	+ ¼
Stewart-Warner Speedometer	34½	31½	34½	+2
Stromberg Carburetor	75½	64½	75½	+6½
Studebaker Corporation	63⅞	58¾	63⅝	+ ⅛
Times Square Auto Supply	27	26	26¾	— ¾
United States Rubber	86⅝	82⅝	86¼	+ ⅜
U. S. Rubber, 1st pfd	104	101¼	104	+1
Westinghouse Elec. & Mfg	47⅛	46⅝	47⅛	+ ⅛
White Motors	47¾	45½	47¾	....
Willys-Overland	16⅞	16	16	— ¼
Willys-Overland, pfd	81	81	81	+1

AKRON RUBBER PRICES.

	July 15		Aug. 2	
	Bid	Asked	Bid	Asked
Amer. R. & T. com	83	88	..	80
Amazon Rubber	..	96	..	95
Firestone T. & R. com	152	156	120	128
do 6 per cent. pfd	90½	91½	99½	93
do 7 per cent. pfd	92	92½	86	88
General T. & R. com	800	900	..	700
do 7 per cent. pfd	..	98	93	97
B. F. Goodrich, com	63½	66	54½	56½
do 7 per cent. pfd	89½	90½	86½	87½
do 5 yr. 7 per cent. notes	94⅛	95⅛	93½	95
Goodyear T. & R. com	132	136	112	114
do 7 per cent. pfd	87	88	84½	85
India Rubber com	175	190	..	165
do 8 per cent. pfd	..	93	..	80
Mason T. & R. com	24	27	..	20
do 7 per cent. pfd	..	70	65	70
Marathon com	..	50	45	50
Miller Rubber, com	..	160	120	125
Mohawk Rubber	..	300	..	285
Portage Rubber com	80	90	75	80
do 7 per cent. pfd	..	80	69	75
Republic Rubber com	2½	3	1½	2
do 7 per cent. pfd	..	65	..	40
do 8 per cent. pfd	20	30	20	25
Rubber Products	..	110	..	100
Star Rubber com	160	175	..	150
do 8 per cent. pfd	..	100	..	100
Swinehart com	..	75	..	75
do 7 per cent. pfd	..	80	69	80
Phoenix Rubber com	..	22½	..	20
do pfd	..	90	..	90
Standard Tire com	175	185	..	175
do 7 per cent. pfd	..	90	..	90

CRUDE RUBBER, NEW YORK PRICES.

	July 21 Cts. Per Lb.	Aug. 5 Cts. Per Lb.
Para—Up-river fine	.34½ @ .35	.33½ @ .34
Up-river medium	.31½ @ .32	.31½ @ .32
Up-river coarse	.24 @ .24½	.21½ @ .32
Caucho ball	.25½ @ .26	.22½ @ .23½
Islands fine	.35 @ .35½	.32½ @ .33½
Islands coarse	.17½ @ ..	Nominal
Cameta	.20 @ .21	.19 @ .20
Ceylon—Smoked sheets, ribbed	.31½ @ .32	.29¼ @ .30
Smoked sheets, plain	.30 @ .31	.28½ @ .29½
Maderia, fine	.37 @ .39	.37 @ .39
Knapsack	.45 @ ...	.44 @ .44½
First latex pale crepe	.32½ @ .33	.30 @ .30½
Amber crepe	.33 @ .34	.28 @ .31
Clean brown crepe	... @ ...	... @ ...
Rio Nunez string	... @ ...	... @ ...
Palembang	.13 @ .13½	.09 @ .10
African	... @ ...	Nominal
Prime Surinam sheets	.84 @	Nominal
Centrals—Corinto prime	.22 @ .23	.22 @ .23
Esmeralda, prime	.22 @ .22½	.21¼ @ .22¼
Balata sheets	Nominal	... @ ...
Guayule, wet	.26 @ .27	Nominal
Balata, block, Panama	.45 @ ...	.45 @ ...

DIVIDENDS DECLARED.

Company	Rate	Period	Payable	Stock of Record
Advance-Rumely, pfd	1½%	Quart.	Oct. 1	Sept. 15
Ajax Rubber	$1.50	Quart.	Sept. 15	Aug. 31
American Bosch Magneto	20%	Stock	July 15	July 3
American Bosch Magneto	$2.50	Quart.	July 1	June 15
Brunswick-Balke-Collender	150%	Stock	October	......
Brunswick-Balke-Collender	1¾%	Quart.	......	......
Chandler Motor Car	$2.50	Quart.	Oct. 1	Sept. 10
Continental Motor, pfd	1¾%	Quart.	Oct. 15	Oct. 6
Deere & Co., pfd	1¾%	Quart.	Sept. 1	Aug. 14
Erie Tire & Rubber, pfd	7%	......	......	July 1
Fairbanks-Morse, pfd	1¾%	Quart.	Sept. 1	Aug. 21
Goodrich, B. F	$1.50	Quart.	Nov. 15	Nov. 5
Goodrich, B. F., pfd	$1.75	Quart.	Oct. 1	Sept. 15
Goodyear Tire & Rubber	2½%	Quart.	Sept. 1	Aug. 14
Hupp Motor Car, pfd	1¾%	Quart.	Oct. 1	Sept. 20
International Harvester	12½%	Stock	Sept. 15	Aug. 20
International Harvester, pfd	$1.75	Quart.	Sept. 1	Aug. 10
International Motor Truck, 1st and 2nd pfd	$2.33	......	......	......
Moline Plow	1¾%	......	Sept. 1	Aug. 18
Moline Plow, pfd	1½%	......	Sept. 1	Aug. 18
Rainier Motor, pfd	2%	Quart.	Sept. 1	July 15
Sterling Tire Corp., 7% pfd	1¾%	Quart.	July 21	July 6
Sterling Series B, pfd	2%	Quart.	July 20	July 6
Sterling com	1%	Quart.	July 20	July 6
Westinghouse Elec. & Mfg	$1	Quart.	July 31	June 30
Willys Corp., 1st pfd	$2	Quart.	Sept. 1	Aug. 20

STOCK DIVIDEND FIGURES.

Following are the dividends declared by some New England corporations since the decision of the Supreme court making stock dividends non-taxable under the old income tax:

Hood Rubber Co., 66.6 per cent., on $2,000,000 capital.

Autocar Co., 40 per cent., $1,200,000 on $3,000,000 capital.

Columbia Motors Co., 70 per cent., $3,500,000 on $5,000,000 capital.

Continental Oil Co., 200 per cent., on $3,000,000 capital.

Crucible Steel, 50 per cent., $12,500,000 on $25,000,000 capital.

Federal Motor Truck Co., 100 per cent. on $1,000,000 capital.

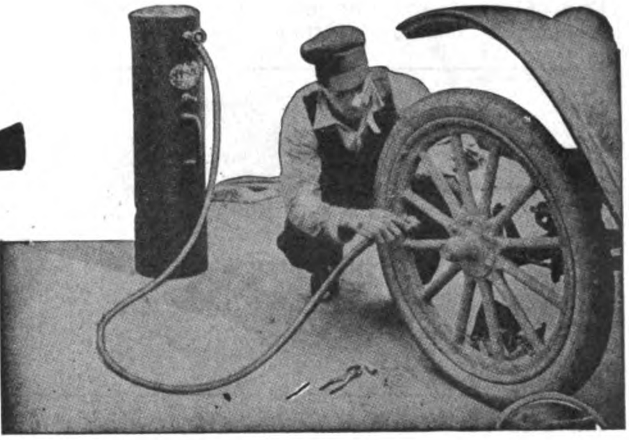
Stutz Motor Co. issued 80,000 new shares on 120,000 shares capitalization, and the stock recently sold for more than $700 a share.

FAILURES IN UNITED STATES IN JULY.

According to reports of R. G. Dun & Co., there were more commercial failures in this country during the month of July than in any other month since December, 1918. July also showed the heaviest indebtedness, except for June of this year, of all months back to January, 1916. There were 681 failures in all in July, 1920, carrying total liabilities of $21,906,412. In July, 1919, there were 452 insolvencies, involving a total sum of $5,500,000. A distinctive feature of the July statement is the marked increase in large failures, those for $100,000 or more in each case numbering 48 and aggregating [illegible]1,937. Most of the large insolvencies were in manufacturing industries.

KEEP COOL

-you'll save time & labor too, if you use



ATSCO

Reduce Your Labor

PORTABLE AIR TANKS

Increase Your Profits

You wouldn't fill a gas tank with a quart measure. Then why bother with an ordinary hand pump to inflate a tire when it can be done the Atsco way?

For outside emergency calls, just throw the Atsco in the car. In the garage an Atsco is ever useful. No time wasted, no unnecessary labor—simply open the valve and—all done. Easily refilled from any compressor system.

The initial cost is moderate and soon forgotten in the increased revenue secured, and this income is continuous. Every Atsco tank will give this service for years.

Atsco tanks are 36 inches long by 10 inches in diameter, making a light, easily handled labor-saving unit. Built of steel with copper brazed seams and joints, tested for 500 pounds, and giving a working pressure of 250 pounds.

Completely equipped with standard tire filling valve, the best pressure gauge made, protection valve cap for filling at compressor system and eight feet of hose. The tank is easily carried by the side handle. Any one can operate it.

List Price $40.00 F. O. B. Pittsburgh, Pa.

Producing garage pressure tanks is our specialty, and we carry in stock or build to order tanks of any size and pressure requirement. Most producers of compressors and air storage systems use Atsco tanks. They know.

The genuine copper brazed construction makes seams and joints far stronger than the stock metal. They will not crystallize or crack and are guaranteed air-tight.

We make pumps and pressure tanks for all purposes

Correspondence solicited

AIR TIGHT STEEL TANK COMPANY

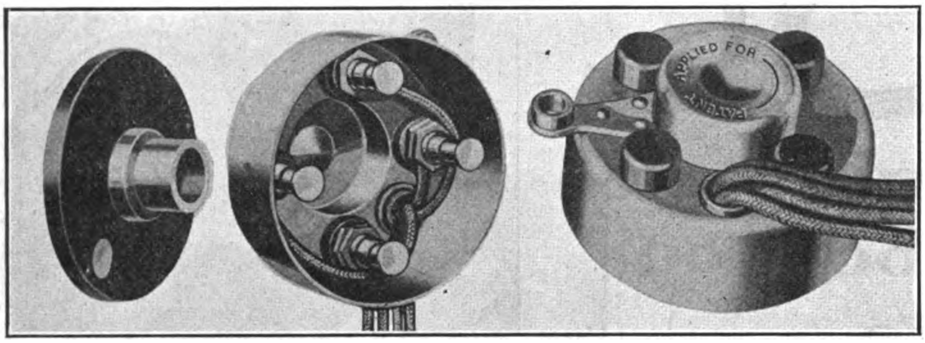
OFFICE AND WORKS

PITTSBURGH, PENNSYLVANIA

TANK MAKERS FOR NEARLY THIRTY YEARS

Features of the Schofield Timer

The Schofield Manufacturing Co., 1919 East 61st street, Cleveland, O., has brought out an improved timer for Ford cars, the "Schofield," a distinguishing feature of which is the fact that all the electrical connections are inside, none of the terminals being exposed, thus eliminating, it is stated, any danger of short circuits by reason of accumulated oil and dirt, and removing the possibility of the terminal connections working loose from vibration. The terminal binding posts are of rigid and substantial construction and are provided with springs which keep the terminal in close contact with the rotating member. In fact, it is stated that this timer provides for an end play of a quarter of an inch in the camshaft and an eighth of an inch side play.



Improved Schofield Timer for Ford Cars: At Left, the Rotating Member; at Center, the Interior, and at Right, the Outer Shell of Timer.

The rotating member carries an oversize hardened steel contact which is set into a fiber disc and by this construction it is claimed that the effect of centrifugal force is avoided and the wear reduced to a minimum as the contact area wipes across the heads of the posts with only sufficient pressure to insure a perfect electrical contact. It is stated that the presence of oil in no way affects its operation, although provision is made for draining off excess oil that may accumulate.

Attention is called to the fact that every detail of the construction of this device conforms to the standard employed in high grade magnetos. It is easily and quickly installed. No special fittings are required and as the wiring is furnished already connected, it is only necessary to bolt the rotator to the camshaft and attach the timer shell in the usual way.

It is sold complete with wires at $4 retail with the usual liberal discount to the trade.

PERFECTION HEATER CO.'S EXTENSIVE PUBLICITY CAMPAIGN.

The Perfection Heater & Manufacturing Co., 6545 Carnegie avenue, Cleveland, O., is to inaugurate an extensive publicity campaign which will undoubtedly greatly stimulate the demand for its product the coming season. A selected group of magazines with a nation wide circulation will be used, through the medium of which at least 11,565,000 people will be reached this year.

A very attractive "broadside" has been prepared for this company by the Akron Advertising Agency Co., Akron, O., in which the covers of the prominent publications to be used in this advertising campaign are featured in their distinctive colors, among them being Accessory & Garage Journal and the Motor Truck.

Throughout the entire series of advertisements which have been prepared emphasis will be given to the value of warmth and comfort to automobile owners and to create a desire to have such installation in their cars. The slogan is to be "The Heat Is There—Why Not Use It?"

STILES ROLLSEMOUT FENDER STRAIGHTENER.

Stiles "Rollsemout Fender Straightener" is a tool recently perfected and now sold generally by jobbers and direct, which is designed for repair shop and service station use. Claim is made that any intelligent worker can with this tool restore the original contour of any form of sheet metal used in power vehicle construction, this including flat and curved surfaces, beading, rims, flanges, etc., and curves and angles.

The tool will do work uniformly and completely, which is not possible with rolling or hammering, and equal to press pressure. With it dented or bent or twisted metal of bodies, cowls, doors, hoods, aprons, shields, pans, guards can be restored quickly and without damaging the paint or enamel.

The tool is in effect a clamp, consisting of two arms hinged at one end to form a U. The arms are slotted longitudinally and the lower is notched on the outside. A rod with a short tee head and a rack end extends through the slots, with a block carrying a shaft and small pinion that meshes with the rack. The shaft is actuated by a long lever.

Rolls of different widths and blocks of different forms are placed in sockets in the ends of the arms and pressure is exerted by turning the pinion on the rack with the hand lever. By movement of the arms and the tools and with varying pressure the metal can be shaped as desired.

Restoration of sheet metal is very important work in any shop or station and with this tool can be specialized and made very profitable. The tool is manufactured by the Stiles Manufacturing Co., St. Louis, Mo.

Peerless Fenders for Fordson

The lives of tractor operators are often endangered by the possibility of their becoming entangled in the mechanism if accidentally thrown from the seat while the machine is in service. The Corcoran Manufacturing Co., Cincinnati, O., is producing fenders, which are listed as No. 8 Peerless Guaranteed Fenders for Fordson Tractors, and which are designed for the protection of the driver in such a contingency.

These Peerless Fordson tractor fenders are built of 20-gauge automobile sheet steel throughout and are finished in two coats of lustrous black enamel, baked on, giving them a durable and handsome appearance. The entire base of the fender is reinforced with angle iron, making a strong, solid construction, able to withstand long, hard service. Steel braces, ⅜ by 1¼ inches are furnished with all fenders, which assures rigid attachment to the tractor. The complete equipment includes all necessary bolts, nuts, etc., insuring easy and quick installation on any Fordson tractor.

An inquiry to Department F will bring a detailed description of the Corcoran Co.'s Peerless fenders for Fordson tractors, as well as of its other meritorious products, radiators, hoods, fenders and tool boxes for Ford cars.

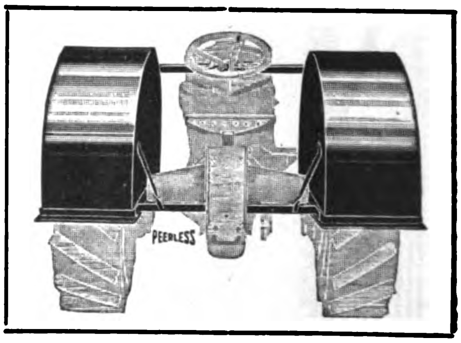
DESIRES TO REPRESENT AMERICAN MANUFACTURERS.

It is announced that A. H. Snyder, 10 Place St. Denis, Liege, Belgium, desires to represent American manufacturers of automobile accesories in Belgium. Mr. Snyder would like connections with manufacturers of tires, spark plugs, motorcycles, fire extinguishers, etc. It is stated that he is responsible and can give good banking references.

EXIDE BATTERY GARAGE.

The Exide Battery Depots, Inc., has bought a lot, 115 by 122, at Spring and Clark streets, New York city, as a site for a two-story garage to cost $225,000.

Persons engaged in motor car and truck plants number 300,000, the annual pay roll being $374,933,856; including those engaged in making parts and accessories, the number is 651,450, and the pay roll $813,731,856.



Peerless Fenders for Fordson Tractors, Made by Corcoran Manufacturing Co.

The ACCESSORY and GARAGE JOURNAL

VOL. X. PAWTUCKET, R. I., SEPTEMBER, 1920 No. 5

Increasing Utility and Popularity of Motor Vehicles

Ninety Per Cent. of All Passenger Cars Now Used for Business Purposes—Efficiency Increased 57 Per Cent.

AN INDEX of the increasing utility and popularity of the motor car in the United States is afforded by a conservative estimate of the total cost of their upkeep for 1920, which is placed at approximately $6,020,000,000, a sum nearly equal, if not exceeding, the total amount which, it is figured, will be expended this year for railroad transportation throughout the country.

The total registration of motor vehicles in use in the United States on July 1, 1920, is placed at 7,904,271, representing an increase of more than 1,500,000, or nearly 25 per cent., over July 1, 1919. These figures will give a motor vehicle for every 13.52 persons, or one for every 2½ families. The total value of these 7,904,271 cars, considered conservatively at $1200 each, would be $9,485,125,200, and 20 per cent. depreciation would be $1,897,025,040. Interest at six per cent. would aggregate $389,107,512. Among the estimated figures for cost of upkeep in round numbers are the following: Gasoline, $1,550,000,000 lubricating oil, $729,000,000; tires, $1,000,000,000; accessories and new parts, $621,730,000; license fees, $70,000,000; insurance premiums on 60 per cent. of the cars, $329,340,000; garaging, storage and service, $1.372,240,000; cost of labor on repairs, etc., $310,190,000.

A large proportion of this vast expense for upkeep and operation can be justly charged to business purposes, as has been demonstrated by estimates based on answers to thousands of questionnaires recently directed to passenger car users of the United States by the National Automobile Chamber of Commerce. The replies received indicate that of all the passenger cars represented, about 90 per cent. are used generally for business, while of the few owners whose chief purpose in the purchase of a machine was recreation, half use their cars instead of the trolley car, while 50 per cent. of the remainder state that the passenger car has solved their housing problem by permitting them to take homes farther away from the business district where they are employed.

Multiplication of Man Power.

Of the actual mileage of cars on which figures were obtained, about 60 per cent. was for strictly business purposes, not including the use of cars in the place of trolley or steam cars or for shopping. The average increase in business productivity due to motor cars was 56.7 per cent. Translated into working capacity, as is pointed out by President Charles Clifton of the National Chamber, this means that the cars in daily use in America add every day the equivalent of over 3,800,000 workers to the nation's productive forces. This is equal to nearly a sixth of all the wage earners in America. Thus it will be seen that the automobile industry has increased the man power of the United States by one-sixth at a time when man power is the world's most serious problem.

To carry this line of reasoning a step further, since the number of men employed in the sale and manufacture of passenger cars, including the making of parts and accessories, is about 800,000, the industry can fairly claim to have contributed to the nation four times as much as it has cost in man power. That this ratio is approximately correct is shown by also arriving at it from another angle: The number of passenger cars produced last year was 1,650,000, or the equivalent in working capacity of more than 935,550 workers. The number of persons engaged in making them was 232,000. Again the ratio is four to one.

If one were to add the productive efficiency of the 750,000 motor trucks now in use, a still greater gain would be shown. The largest gain in productivity has been in farm life.

FACTS IN REGARD TO USE OF AUTOMOBILE.

(Compiled by National Automobile Chamber of Commerce from Answers to Questionnaires.)

Ninety per cent. of all cars are used more or less for business.

Sixty per cent. of the average car mileage and 78 per cent. of farmer car mileage is for business.

Thirty-four per cent. of average mileage is from use of cars in place of trolley or railroad, or where there is no other means of communication.

Living conditions of 37 per cent. of car owners are improved because of the automobile.

The average car owner adds 57 per cent. to his output through use of the motor car; the farmer adds 68 per cent. to his efficiency.

There are 2,367,000 farmers owning cars, and the answers to the Chamber of Commerce questionnaires from them revealed a 68 per cent. increase in productivity of the owners, or an addition equivalent to 1,600,000 hired men. Perhaps no other industry can show such a tremendous dividend in productive force as this. Only the most advanced production methods of American genius make it possible.

Increase in Nation's Wealth.

"As for the direct value of the passenger car to the nation in dollars and cents," continues Mr. Clifton, "any estimates which may reasonably be made reach into figures of a size which only a world accustomed to war finance could understand. More than $1,000,000 is devoted to the manufacture of vehicles alone. The capital invested in the manufacture of parts, accessories and tires will total about twice as much. Since the nation's wealth is some $250.000.000,000, the automobile investment itself is less than two per cent., but it is in the effect which the use of the car has wrought that its real part in the economic and banking fabric of the country is disclosed.

MOTOR CAR REGISTRATIONS.

	July 1, 1920.	July 1, 1919.	Per Cent. Increase Since July 1, 1919.	Per Cent. Increase Since Jan. 1, 1920.
Alabama	72,426	55,042	31.58	22.97
Arizona	29,803	24,298	22.68	2.85
Arkansas	56.862	42,238	31.53	14.98
California	421,327	349,734	20.47	*—17.12
Colorado	111,907	88.315	26.71	7.22
Connecticut	100,550	85,200	18.02	*—5.02
Delaware	16,600	14,200	16.90	2.77
District of Columbia	43,329	37,928	14.24	123.47
Florida	67,118	48,598	38,10	19.31
Georgia	137,129	115,454	18.77	8.34
Idaho	46,360	35,817	29.44	10.96
Illinois	497,318	401,371	23.90	3.94
Indiana	302,308	246,000	22.89	9.19
Iowa	405,182	319,500	27.17	11.52
Kansas	253,896	206,033	23.23	11.06
Kentucky	94,065	75,259	24.98	4.51
Louisiana	61,967	46,120	34.28	23.96
Maine	51,783	43,656	18.60	4.82
Maryland	75,700	75,590	.14	*—23.44
Massachusetts	233,258	210,063	11.04	*—23.50
Michigan	351,762	273,396	28.66	18.68
Minnesota	295,898	229,570	27.58	13.93
Mississippi	57,000	39,399	44.67	26.56
Missouri	258,478	201,484	28.28	12.58
Montana	52,100	53,420	*—2.47	*—10.35
Nebraska	212,130	183,000	15.92	6.08
Nevada	9,383	8,153	15.10	.84
New Hampshire	30,415	26,230	15.95	1.36
New Jersey	195,258	144,763	34.88	3.21
New Mexico	20,300	16,875	20.60	1.50
New York	486,262	436,932	11.29	*—12.50
North Carolina	123,000	79,475	54.75	12.84
North Dakota	76,953	73,015	5.40	*— 7.15
Ohio	567,000	464,826	21.76	13.19
Oklahoma	181,200	124,501	45.53	19.77
Oregon	89,933	65,417	44.20	7.93
Pennsylvania	506,085	407,923	24.06	3.21
Rhode Island	44,000	26,112	24.80	11.21
South Carolina	80,562	59,600	36.54	14.85
South Dakota	114,408	91,808	24.61	9.35
Tennessee	90,774	84,000	8.06	12.87
Texas	298,234	249,346	19.60	13.25
Utah	37,261	30,760	21.13	6.03
Vermont	26,636	22,094	20.51	11.31
Virginia	105,000	82,000	28.04	10.52
Washington	143,561	125,219	14.64	*—17.12
West Virginia	70,088	45,019	55.67	39.60
Wisconsin	280,452	212,490	32.00	18.35
Wyoming	21,250	18,200	16.75	*— .57
Totals	7,904,271	6.395,873	24.32	9.26

*Decrease.

"The great steel furnaces find a new market for their product in the production of the motor vehicle, which now uses four per cent. of the country's output. Other raw materials, such as rubber, lumber, leather, cotton, and a score more, are used in like amount, the percentage in each case being an inconsiderable part of the total, but in the aggregate adding immeasurably to the industrial activity of the nation. The automobile industry has been a great aid in the development of our natural resources, such as oil and gasoline. The heavy market which it has created is enabling oil companies to introduce improved refining methods which will in many cases double the amount of gasoline which can now be obtained from oil. Great oil explorations are being carried on in South America and other undeveloped countries. Attention is also being given to the great supplies of shale rock in our western states, which can be converted to fuel if the needs of the automobile industry should demand it.

"Another major national resource which has been developed by the growth of the automobile industry is crude rubber. Its output has grown from 70,500 tons in 1910 to 290,000 tons in 1919. Sixty per cent. of the total rubber output is used for the manufacture of tires for motor vehicles. The price of raw rubber, as a result of this great output, has fallen from over $3 in 1912 to about 30 cents in the summer of 1920. There has been a steady reduction in price in the past six or eight years, due largely to the huge production of plantation rubber."

Other Benefits Due to Use of Motor Car.

Among the other benefits cited, that are due more or less directly to the increasing use of the motor car, may be mentioned briefly the following:

It has opened to the banking institutions of the country a new line of business which has been uniformly profitable. More than 100,000 passenger cars are used daily by physicians and surgeons whose actual spheres of labor are thus immeasurably increased.

Conditions of farm life are greatly ameliorated. According to the Farm Journal 2,366,475 passenger cars, or about one-third of all the motor vehicles in the United States, in June, 1919, were owned and operated by farmers. More important is the fact that nearly two-thirds of all the new cars made are sold in the rural districts. These cars nearly double the farmer's productive force. Contentment on the part of the farmer's family and his laborers follows in the wake of the motor car in the country. Community, school and religious life are all stimulated by the greatly increased radius of accessibility afforded.

Thousands of salesmen now use cars and the territory covered by each is greatly increased and in like measure the cost of distribution is cut down. The banker, the big business man, the professional man find their value to themselves and others increasing because of the saving in the costly element of time. Engineers engaged in highway work, reclamation surveys and sanitary operations have saved literally millions of dollars to taxpayers through the motor vehicle, and its use constantly increasing.

Housing Problem Solved and Crime Checked.

The ultimate solution of the great housing problem of the modern city may be found to lie in the passenger car, and the slums will ultimately disappear before the blast of the automobile horn. The community posse no longer depends upon the horse, and the use of the passenger car in pursuit of criminals has been of tremendous value. Indirectly the effect in promoting education and breaking down isolation is gradually eliminating the individual, inherently honest, but whose loneliness has brought about morbidity, followed by actual insanity and crime.

From the standpoint of recreation the passenger car has done more than any other modern agency to promote healthful outdoor life. By carrying the worker to outlying districts it has caused him to become interested in gardening and farming. It has given him the opportunity to take up various sports, such as golf and tennis, and other pursuits calculated to promote health.

NOTES OF TRADE AND INDUSTRY

Fairbanks to Handle Marvel Products

The Marvel Machinery Co., Minneapolis., of which George S. Loudon is the sales manager, has entered into an arrangement with the Fairbanks Co. of New York City for the exclusive sale and distribution of its principal product, the Marvel cylinder reboring machine, in the United States and all foreign countries. Mr. Louden states that the Marvel reboring machine is more than an accessory; that it is rather an absolute essential in any machine shop where any attempt is made to work on gas engine cylinders. With this machine, backed by a distributing organization such as the Fairbanks Co., he points out the fact that every live repair man in the world can now enjoy the big profits which are to be made from the reboring of gas engine cylinders.

The Marvel Machinery Co. also manufactures the Marco finished and semifinished replacement pistons, and, in order to give prompt service to repair men, the company has decided to enlarge this branch of its business, and also to engage in the manufacture of pistons on a production scale. With this purpose in mind the company has recently purchased several acres of land in the manufacturing district of Minneapolis, and plans are being drawn for a standard and practical factory building in which the executive offices of the company will also be located. New machinery has been ordered and, as soon as the building is completed, the output of Marvel cylinder reboring machines and Marco pistons will be materially increased.

"BETTER" BUMPER SHIPMENTS ABROAD.

The New Era Spring & Specialty Co., Grand Rapids, Mich., has just made an unusual shipment of "Better" spring bumpers in a car load for foreign customers located in 10 different ports, as follows:

Algoa Bay, Gold Coast and Africa: Durban, Africa; Sydney, Australia; Port Elizabeth, Africa; Buenos Aires, Argentina, South America; Manila, Philippine Islands; Batavia, Oceania; Tauranga, New Zealand; Bogota, Colombia, South America; Nicaragua, Central America.

HARE'S MOTORS ISSUES BOOKLET.

Hare's Motors, Inc., New York City, has issued an attractive booklet explaining the organization, plans and ideals of that concern. The history of the amalgamation of the Mercer, Locomobile and Simplex interests in one efficient organization is briefly outlined. The purpose is stated to be to provide a complete assortment of the highest grade of passenger and freight transportation units, and to increase materially and immediately the output of all the plants under its control. The motto "We Shall Keep Faith," which has been adopted by Hare's Motors, Inc., briefly expresses its policy, of which quality is the keynote.

Hare's Motors, Inc., 16 West 61st street, New York City, will gladly send copies of this brochure to anyone interested.

THE INDUSTRIAL REPUBLIC.

Paul W. Litchfield, vice president and factory manager of the Goodyear Tire & Rubber Co., Akron, O., is the author of a little work on "The Industrial Republic; a Study in Industrial Economies," just brought out by the Houghton Mifflin Co., Boston and New York; list price, $1.

The industrial republic plan has been in force at the big plant of the Goodyear Tire & Rubber Co., Akron, since the spring of 1919, and Mr. Litchfield has thus had opportunity to supplement in the actual working out of the system there the knowledge gained of his subject by exhaustive research. An idea of the scope of the treatment may be gained from a citation of the table of contents, as follows: Expansion of Political Democracy; the Labor-Capital Opposition—Genesis and Growth; Present Status of the Labor-Capital Opposition; Clues to the Solution; Rights Involve Duties; the Industrial Republic: Industrial Citizenship; the Goodyear Representation Plan.

George S. Loudon, Sales Manager, Marvel Machinery Co., Minneapolis.

Magnitude of the Nash Plant

An indication of the area covered by the main factory of the Nash Motors Co. at Kenosha, Wis., is given by a contract recently signed for washing the windows and skylights at a cost of $6000. Most of the buildings of the Nash plant are of saw-tooth construction with glass roofing and a heavy coating of carbon deposited by smoke, dust, etc.. accumulates in time, considerably decreasing the quantity of light admitted, and it is this deposit that it is desired to have removed. It is estimated that the total area of glass is approximately 300,000 square feet, there being over 34,000 square feet of glass roofing in the foundry alone.

ART METAL CATALOGUE.

Shepard Art Metal Automobile Hardware Co., Detroit, Mich., issues a very neat catalogue, showing a few of many articles which it manufactures for the closed and open car trade. Among the articles shown are dome and reading lights of heavy bevelled plate glass, set in a silver mounting, regulator handles for raising and lowering the glass in the doors and windows, rotary lever lock handles, switch plates of different designs, both single and double, lever locks for the side windows, robe rails and lever lock escutcheon plates and fancy and cut glass dome light glasses. Ladies' toilet cases and gentlemen's smoking sets are also shown, made of silver and contained in a neat leather covered case which fastens to the door or back of the front seat of the car. All of the articles are of the highest grade and exceptionally well finished. A copy of this catalogue can be obtained by addressing the manufacturer, who will also be pleased to quote prices.

UTILITY TIRE-MAKING MACHINERY.

The Utility Tire Machinery Co., Fourth and Pennsylvania streets, Joplin, Mo., which is engaged in the manufacture of machinery for the making of automobile tires, is reported as adding to its equipment so that it will be enabled to turn out complete tire making installations of various sizes for tire supply houses, garages, repair shops, etc.

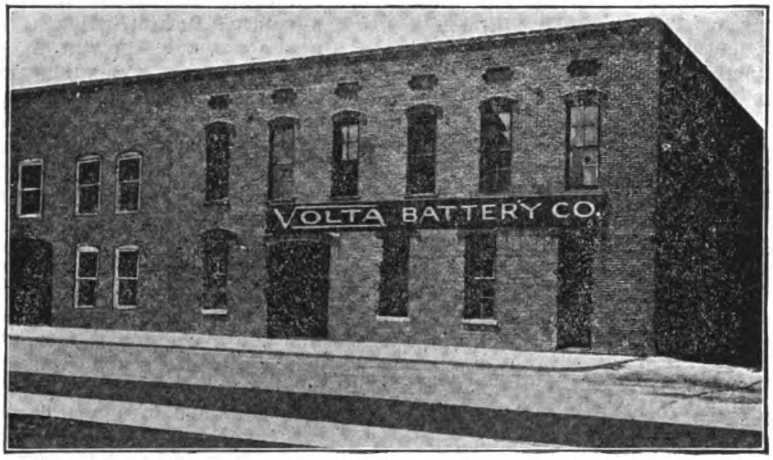
WOLKE LEAD BATTERIES CO.

The Wolke Lead Batteries Co., Louisville, Ky., which is probably one of the largest battery manufacturers in the South, now has a capacity of about 400 batteries a day and uses about 500 car loads of pig lead a year. The Wolke Co. has been very successful in placing its product in the principal cities throughout the United States.

NEW FACTORY FOR VOLTA BATTERY CO.

To take care of its rapidly increasing business, the Volta Battery Co. has acquired about 2½ acres of land, with the factory buildings thereon, on the line of the Pennsylvania railroad at Martinsville, Ind. These enlarged manufacturing facilities will admit of a daily production of about 500 automobile storage batteries.

The Volta Battery Co. also intends to enter the farm light battery field, large orders for which have been offered the company. The Volta battery has been made for the past four years in a limited way in Indianapolis, during which time they have proved their reliability for service.



New Factory, Volta Battery Co., Martinsville, Ind.

OUTLINE OF NEW KLAXON SERVICE PLAN.

In order to reduce charges for repairs made by its authorized service representatives, the Klaxon Co., Newark, N. J., has inaugurated a service plan which calls for fixed minimum charges for such minor repairs as cleaning, adjusting and replacing diaphragms on its products. Should electrical or mechanical repairs be necessary internal work will not be done but, instead, the motor, or in other words, the entire signal is replaced with the exception of the projector, diaphragm and back shell. The motors supplied in exchange are assembled and inspected at the Klaxon factory; thus every authorized service representative maintains Klaxon factory standards, delays are eliminated and charges reduced to a minimum. In every case predetermined charges are made so that accurate quotations can be given before the work is begun.

If service is required within 90 days after delivery of the Klaxon warning signal to the original purchaser and if the car on which it was placed as factory equipment has not been operated more than 3000 miles, the authorized service representative will make the necessary repairs without charge for either labor or material.

United Motors Service, Inc., with home offices in Detroit, is the service division of the Klaxon Co.

Motor Main Bearing Replacement

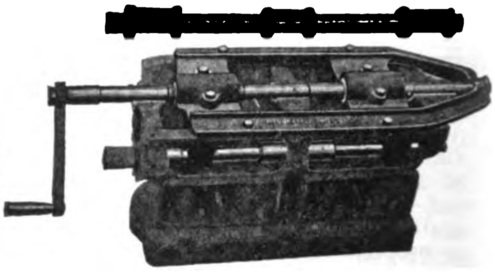
THE condition and alignment of the main bearings of the automobile motor are often not given the attention they deserve. There is a tendency to neglect this important branch of work due, no doubt, to the fact that many repair shops are not properly equipped to handle it as it should be and, in some cases, to the impression that the bearing caps receive all the strain from the explosion and, therefore, all the wear. While it is true that the caps wear the most, the variation of the crankshaft in the bearings in some types of motors, due to the starting and stopping of the pistons at the end of their travel and also to the uneven throw of the flywheel and transmission, cause an uneven wear on these bearings and pounds them out of round. Furthermore, the three bearings are not of the same size and are not subjected to the same stresses.

Experience shows that the center bearing is affected the most and, when the bearings run hot, the heated metal from the caps is forced out and is often carried over to the opposite or upper side, building this up and throwing the bearings out of true alignment. To tighten the bearings when in this condition will cause the crankshaft to spring at each revolution, resulting in crystallization and ultimate breakage or at least in a permanent bend. Bearings so tightened also cause uneven friction and wear and do not stand up.

Scraping In Is Impracticable.

Scraping in is hardly practical for these bearings, first, because it takes too long a time, and, second, when they need attention they should be built up rather than scraped down, as scraping changes the position of the shaft and causes the camshaft to run noisily, it not being in proper mesh.

No matter how much pains are taken with other work, if this important part is not properly taken care of, the motor will not run satisfactorily and the repair will be efficacious for only a short time.



Storm Main Bearing Babbitting and Boring Tool for Ford Engines.

There is illustrated, herewith, the Storm main bearing replacement tool, made by the Storm Manufacturing Co., 406 Sixth avenue, south, Minneapolis, Minn., which is stated to be a simple and practical device for this class of work. It consists of a main jig, heavily and substantially made, which is used for holding both the babbitting and boring bars. It obtains its alignment from the camshaft holes by means of a ground camshaft aligning arbor. The babbitting arbor is made smaller than the crankshaft and is provided with specially constructed pouring troughs, giving ample space for the free flow and proper filling of the metal.

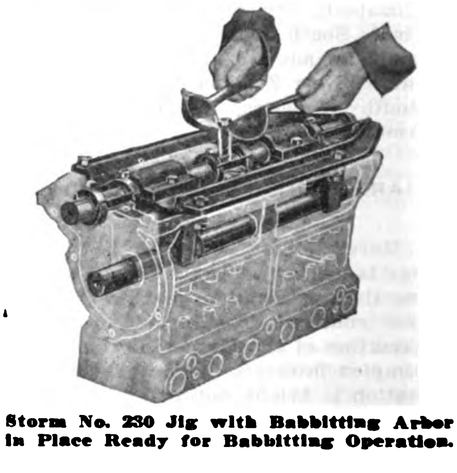
The boring bar is of ground chrome steel and is provided with three double-face and double-end cutters, which bore all three bearings at one operation. It is claimed that, by the use of this tool, new main bearings can be produced in from 20 to 30 minutes and that they will be exactly the same as the original bearings, perfectly aligned and in the exact original position.

The Storm main bearing replacement tool is made in two sizes, one for Ford cars and the other for Fordson tractor.

FOUR-WHEEL DRIVE DEALERS.

The Four-Wheel Drive Auto Co., Clintonville, Wis., has established five new dealers within the past month to handle FWD trucks in various sections of the country, as follows:

Lambert-Jones Motor Co., Oklahoma City, Okla., Oklahoma and a part of Texas; Ballard Tait Sales Co., Brunswick, Ga., the greater part of that state; Rennoc Sales & Service Co., Philadelphia, Pa., Delaware and portions of New Jersey and Pennsylvania; Talbot-Miller Motor Co., Baltimore, Md.; entire state of Maryland with the exception of three counties; Manbeck & Suloff, distributor at Mifflin, Pa.



Storm No. 230 Jig with Babbitting Arbor in Place Ready for Babbitting Operation.

Rolls-Em-Out Fender Straightener

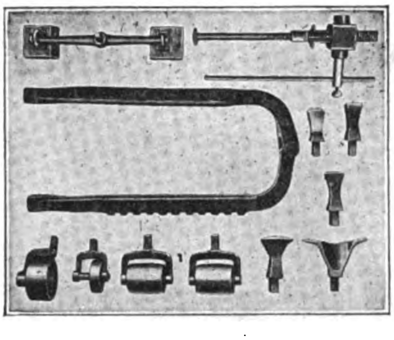
The Stiles Manufacturing Co., St. Louis, Mo., is marketing a unique equipment for the garage, repair shop and service station in the Rolls-Em-Out fender straightener, which is especially designed for the quick repairing of bent or damaged automobile fenders and other similar parts. The work can be done without the removal of the fender from the car and it will not mar the enamel or finish. It does away completely with the old laborious and unsatisfactory process of hand peening and bumping. It is claimed that it will distribute the metal uniformly and shape the fender quickly and perfectly.

It is stated that no ability or experience is required to successfully use this device, as the detailed and illustrated instructions with each set are easily understood and followed and will make an expert in this kind of work out of any repair man. It offers a new source of profit for garage owners, repair men and service stations.

The accompanying illustration shows the Stiles Rolls-Em-Out fender straightener and its various parts and attachments disassembled. To get the device ready for use, first, assemble the pressure arbor shown in the right hand upper corner of the cut, on the frame, shown in the center, by removing the small plate from the top of the rack and withdrawing the rack from the bottom of the rider. Then place the rider in the slot in the top of the upper arm of the frame and turn so that the hook engages the under side of the upper arm of the frame. Next insert the T bolt end of the rack in the slot of the lower arm of the frame, slide the upper end of the rack back into the rider and replace the small plate on the top of the rack. The machine is now ready for use.

Changing the attachments requires very little time and is easily done as the various parts are all interchangeable. When making the changes care should be taken to see that the parts are lined up before applying pressure. All moving parts should be frequently lubricated. The upper and lower surfaces of the fender to be straightened should be thoroughly cleaned and a little oil should be rubbed over it in order to assist in getting a well finished job.

With a little practise and study the repair man will soon be able to adapt the various attachments and rollers for the work in hand.



Stiles Rolls-Em-Out Fender Straightener Outfit.

CALIFORNIA TOP AND ITS CONSTRUCTION.

So many automobile manufacturers, automobile trimmers and finishers have solicited from the Du Pont Fabrikoid Co., Wilmington, Del., explicit instructions for making the popular permanent California top, that it has issued a booklet entitled "The 'California' Top and Its Construction," to supply this demand.

The booklet contains numerous scale drawings showning details of construction of every minute part; also many reproductions of photographs depicting cars equipped with the various styles, some of the illustrations being in colors.

It is stated that the edition of these booklets is limited so that it will be impossible to supply individual owners of cars, but one will be sent, on request, to any automobile manufacturer, automobile trimmer or finisher, it being in the nature of a technical course of instruction.

This type of top equipment originated in California, hence its name, and is recommended by its lines of beauty, stability, durability and the ease and speed with which it may be converted from the wide open to the storm proof attachment.

MOTOR VEHICLES IN TELEPHONE WORK.

According to a survey recently made by the National Automobile Chamber of Commerce, every telephone company in the country has its passenger vehicles for supervising work, which are usually roadsters or runabouts frequently equipped with tool boxes so that minor repairing can be handled on the spot, while trucks are used extensively for heavy repair work and new construction.

The New York Telephone Co., as might be expected, is the leader in the number of vehicles used, having a fleet totalling 925. The various types of motor vehicles are divided as follows:

Runabouts, 627; delivery cars, 51; touring cars, 11; roadsters, 8; ¾-ton trucks, 68; one-ton trucks, 31; 1½-ton trucks, 1; 2½-ton trucks, 56; 3-ton trucks, 32; 3½-ton trucks, 14; 5-ton trucks, 18; 10-ton trailers, 2.

Other large users of motor equipment are as follows:

Bell Telephone Co. of Pennsylvania, 514; Pacific Telephone & Telegraph Co., 204; Chicago Telephone Co., 170; Southern New England Telephone Co., 157, 46 of which are trucks; Iowa Telephone Co., 120; Southwestern Bell Telephone Co. of Missouri, 96; Wisconsin Telephone Co., 89; Nebraska Telephone Co., 51.

Make-Your-Gas Torch Equipment

The Make-Your-Gas Co., 439 Massachusetts avenue, Indianapolis, Ind., is marketing a portable torch, one notable feature of which is that it requires no air compressor for its operation. It is stated that it will throw a perfect combustion flame from 14 to 30 inches in length, to meet the demands of any particular piece of work, being regulated by a valve connected with the device. It is pointed out that by concentrating the flame of this torch into a cavity of fire brick a heat of 2200 degrees may be obtained. There are many uses to which this equipment can be applied, such as straightening bent automobile frames and axles, preheating large pieces of metal for welding, heating rivets and small steam and hot water boilers.

The torch is made entirely of steel and is so constructed that carbon does not appear in the torch itself and very infrequently in the valve where a special clean-out screw is provided for cleaning purposes. A stand to hold and elevate the flame and a base trench pan to generate it is also provided if there is no other means at hand. This torch consumes, at full blast, only one gallon of kerosene an hour.

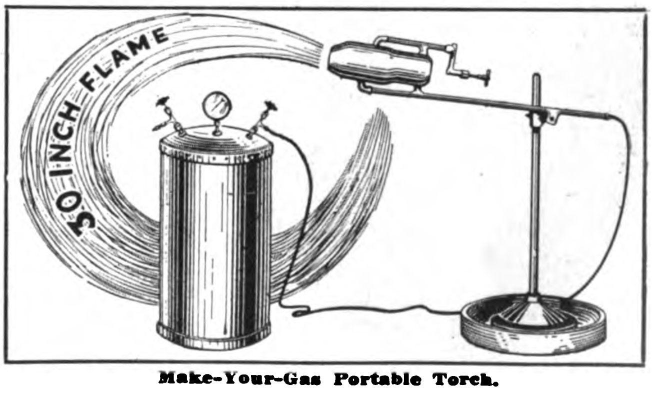
The company will supply prices and literature on application.

NEW FACTORY OF INDIANAPOLIS AIR PUMP CO.

The Indianapolis Air Pump Co., Indianapolis, Ind., has moved into its new factory building at 1625 Bellefountaine street, which is equipped with every modern appointment and convenience for economical production. This new unit will be operated in addition to the former plant and will enable the company to better supply the increased demand for its products.

NEW PLANT OF AUTOMOTIVE PARTS CO.

The Automotive Parts Co., Indianapolis, Ind., manufacturer of Hy-Duty cooling fans, has completed a new factory in that city, 125 by 200 feet, which will give much needed additional production facilities.



Make-Your-Gas Portable Torch.

Personal News of Industry and Trade

Graham with Pierce-Arrow Co.

George M. Graham, general sales manager of the Pierce-Arow Motor Car Co., Buffalo, N. Y., has been promoted to be vice president, succeeding W. J. Foss, resigned. Mr. Graham joined the Pierce-Arrow Co. four years ago as assistant commercial manager and has rapidly advanced since that time. He was formerly engaged in newspaper work in Philadelphia. Mr. Foss, who joined the Pierce Co. in 1915 as commercial manager, was formerly connected with the Foss-Hughes Co., Philadelphia Pierce-Arrow distributor. He will take an extended vacation before making another business connection.

Joseph Tallmadge has resigned the position of assistant sales manager of the east central division of the Willys-Overland Co. to become sales manager of the Handley-Knight Co., Kalamazoo, Mich. Mr. Tallmadge is well known in the industry and entered the sales department of the Franklin Co. in 1909. After a number of years in this connection he was made treasurer of the Atlantic Boat Co. and joined the Willys-Overland Co. in 1915 as assistant to H. B. Harper, who was then sales manager. Two years ago he was made assistant division manager, which position he has held ever since.

T. J. Hockins was recently appointed assistant sales manager of the J. I. Case Plow Works Co., Racine, Wis. He was in turn a salesman in the St. Louis territory, trade manager at Colorado, assistant manager at Kansas City and branch manager at Omaha. He is succeeded at Omaha by C. J. Evans, who has been assistant manager.

Charles P. Hennessy has been appointed sales manager and **Carl H. Page** director of sales and advertising of the Saxon Motor Car Corporation.

T. J. Hockins, Assistant Sales Manager, J. I. Case Plow Works Co.

George M. Graham, General Sales Manager, Elected Vice President of Pierce-Arrow Motor Car Co.

J. Elden Shaw, formerly sales manager of the Savage Tire Sales Co., Des Moines, Ia., has been appointed district manager of the Standard Four Tire Co.'s Pacific Coast business with direct charge of the Los Angeles branch. Mr. Shaw has been closely connected with the tire trade on the Coast for over 10 years, starting with the L. A. Vulcanizing Co. of Los Angeles. Four years later he was appointed credit man in the Los Angeles branch of the Savage Co., later being transferred to the factory as credit manager; then promoted to travelling auditor and soon to special salesman In 1919 he was made sales manager for the Savage Co., with headquarters at Des Moines, which position he has just resigned.

W. A. Olen, president of the Four Wheel Drive Auto Co., Clintonville, Wis., with D. J. Rohrer and C. F. Folkman, members of the board of directors, have sailed for England, where they will make a study of the truck situation with a view to improving the present facilities of their company for handling its increasing export trade. They will be joined on arrival by Senator Anton Kuokuk, also a director in the Four Wheel Drive Co.

Frederick M. Davenport, New York state senator from the 36th district, has been connected with Franklin Automobile Co., Syracuse, N. Y., for the summer, in the Industrial Relations department. Senator Davenport is professor of law and civic policy at Hamilton college. In the Senate he is chairman of the committee on taxation and retrenchment.

C. H. McCarter has been appointed general superintendent and **H. C. Aument** manager of the parts department of the Locomobile Co.'s plant at Bridgeport, Conn., by **E. L. Larson**, works manager. Other promotions include **J. R. Stine** to the position of car superintendent and **J. Burns** to be machine superintendent.

Crebbins Is Stoughton General Manager

Fred Crebbins, Jr., a well known executive in the automotive industry, has become general manager of the truck division of the Stoughton Wagon Co., Stoughton, Wis. Mr. Crebbins is a pioneer in the industry, having begun his business career with the Packard Motor Car Co. in Detroit, with which he served for several years as head of various departments. In 1908 he joined the Thomas Motor Car Co. of New York. and after three years there became general sales manager of the S-G-V Co. He was also with the Hurlburt Motor Truck Co. in New York City for seven years before going to Chicago in the spring of 1919 as factory manager of the Master Truck Co.

A. F. Bassett has been made sales engineer for the motor bearings division of the Hyatt Roller Bearing Co. in Detroit and surrounding territory. Mr. Bassett has been with the Hyatt Roller Bearing Co. for several years, serving in various capacities in the sales and engineering departments. He is a graduate engineer of Yale university and previous to his connection with the Hyatt Roller Bearing Co. spent five years in the western mining country, during which time he was engineer for the Timber Butte Milling Co. and assistant mill superintendent of the Consolidated Arizona Smelting Co.

W. J. Jones, works manager of the J. I. Case Plow Works Co., Racine, Wis., has been elected a vice president of that company in charge of production. Mr. Jones came to the Case Co. about a year ago and had previously had long experience in the production departments of some of the largest farm machinery manufacturing plants in the country, which well equipped him to head the work of increased factory production contemplated by the J. I. Case Plow Works Co.

Fred Crebbins, Jr., General Manager Truck Division, Stoughton Wagon Co.

New Officials of Hamilton Motors

A. L. Martin has been appointed general sales manager and **H. A. Oswald** chief engineer of the Hamilton Motors Co., Grand Haven, Mich., manufacturer of Apex trucks. Mr. Martin has been in the automotive industry for 16 years. Associated with his brother, W. C. Martin, he was the first metropolitan distributor in New York of Cadillac cars. They also introduced the Rolls-Royce car to this country. When the Cadillac company became a part of the General Motors organization, A. L. Martin joined the General Tire & Rubber Co., Akron, O., as sales manager. He comes to the Hamilton Motors Co. from the Four-Wheel Drive Co., Clintonville, Wis., where he was manager of the dealers' department. Mr. Oswald's engineering experience dates back to his connection with the Ford Motor Co. in the days of the old model Y and six-cylinder 999. Later he was connected in an executive capacity with the Lozier Motor Car Co. and with the manufacturer of the Grabowski truck. He was also, at one time, with the Fiat Co. in Milan, Italy, and during the world war was general superintendent of the Naval Aircraft factory, engaged in making sea planes for the United States navy. He relinquished the position of chief engineer of the Quaker City corporation to accept the place of chief engineer with the maker of Apex trucks.

William Elliott Phelps has become associated with the Haynes Automobile Co., Kokomo, Ind., in the capacity of district sales manager. He is a graduate of Princeton university and comes to the Hayes company with a long record of successful automobile salesmanship. He has been a prominent figure in the sales organization of the Chicago branch of the Winton company, and previous to that was district sales manager of the Haynes Motor Car Co. of Chicago. At one time he was also general sales manager of the All American Truck Co. He is state automobile investigator for Illinois and is a member of a number of the prominent motoring clubs in Chicago and vicinity.

W. E. Kalaman has been placed in charge of the Kansas City zone of the Hamilton Motors Co., Grand Haven, Mich., maker of Apex trucks. He was, for four years, associated with the Harley-Davidson Co., and also with several automobile distributors in the capacity of sales manager and special representative. With headquarters in Kansas City, Mo., Mr. Kalaman will have charge of Hamilton Motors Co. sales in Kansas, Oklahoma, Arkansas, Iowa and Nebraska.

D. C. McIntire has been appointed district sales manager for the Pacific coast territory for the Hamilton Motors Co., Grand Haven, Mich., maker of Apex trucks. His headquarters will be in San Francisco. He was formerly in the transportation engineering department of the Four Wheel Drive Auto Co., Clintonville, Wis.

Millard S. Binney, Advertising Manager, Traffic Motor Co.

R. L. DeVoe has been appointed manager of the Chicago branch of the Madison Tire & Rubber Co., Inc., 20 West 60th street, New York City. He has had 18 years' experience in the tire industry, having traveled from one end of the country to the other, calling on dealers, jobbers and distributors, and has an enviable service record.

Dean Flitch, the 12-year-old son of Karl Flitch, a prominent oil man of Kansas City, Mo., accompanied by his mother, has just driven a Mitchell model F car over a trans-continental trip to California, including a total mileage of over 2800.

E. O. Bodkin, formerly for four years with the Packard Motor Car Co., has joined the sales force of the Sewell Cushion Wheel Co., Detroit, maker of Sewell wheels, as a transportation engineer.

E. O. Bodkin, Transportation Engineer, Sewell Cushion Wheel Co.

Vice President of Bartlett-Hayward Co.

Chester F. Hockley, formerly vice president and general manager of the American Hammered Piston Ring Co., has been elected vice president of the Bartlett-Hayward Co., Baltimore, Md. It will be remembered that control of the American Hammered Piston Ring Co. was taken over by the Bartlett-Hayward company about a year ago and the business was removed from Newark, N. J., to Baltimore. Under Mr. Hockley's efficient administration the company has prospered and today ranks as one of the largest and best known makers of this type of product in the United States, turning out upwards of 10,000 rings a day. Mr. Hockley has had a wide and valuable experience in the industrial field. He was an operating official of the Bethlehem Steel Corporation for nine years, and has been associated with the Pittsburgh office of the Westinghouse corporation. It is understood that he will continue to give special attention to the Bartlett-Hayward subsidiary, the American Hammered Piston Ring. Co.

James V. Lyons, formerly central western representative of the American-La France Fire Apparatus Co., Elmira, N. Y., has been chosen as supervisor of the national account division recently established by the Sewell Cushion Wheel Co., Detroit, Mich. Mr. Lyons has opened offices in Chicago. The recent factory expansion of the Sewell Cushion Wheel Co. included 20,000 square feet of additional floor space in the rear of the present quarters, and 10 acres of land was also purchased adjoining the Detroit Terminal railroad and plans immediately made for a new, modern, completely equipped factory and administration building. Work on this new plant has progressed so rapidly that the first unit has been completed and is in operation.

Fred H. Miller has been appointed general sales manager of Hare's Motors of New England. He has been a special representative of the company and has recently spent some time in the southern states. When R. J. Gilmore, president of Hare's Motors of New England, was president of the Packard Motor Car Co. at New York, Mr. Miller was metropolitan district manager of the same company, so when Mr. Gilbert needed a man to head his sales organization he prevailed on the parent Hare's Motors Co. to release Mr. Miller in order that he might become a regular member of the New England organization.

Don K. Wilson, son of Frank B. Wilson, publicity director of the Climax Rubber Co., Columbus, O., is undoubtedly one of the youngest stock salesmen in the country. He was 17 years old Aug. 1 and is selling stock for the Climax Compression inner tube. His sales for the past few weeks have ranked well up with those of the older salesmen in the organization. He resides with his parents at 1952 West Fifth avenue, Upper Arlington, Columbus, O.

English Engineer Visits Shaler Co.

W. H. Miles, the English engineer and inventor, recently made a visit to this country for a conference with the C. A. Shaler Co., Waupun, Wis., in connection with the marketing of his devices in this country. Among Mr. Miles' best known inventions is the solid fuel type of vulcanizer, patents on which have recently been sustained by the United States Court of Appeals and under which the Shaler company holds the exclusive license to manufacture vulcanizers of the Five-Minute type. The direct purpose of Mr. Miles' visit to this country is to complete plans for the distribution of Shaler vulcanizers and road lighters throughout Europe from the factory which the Shaler company recently established in England and for the rigorous prosecution of infringers on the patents. Mr. Miles reports an unprecedented demand abroad for American accessories of all kinds, especially of equipment for repair shops and articles designed to enable car owners to make their own minor repairs and adjustments.

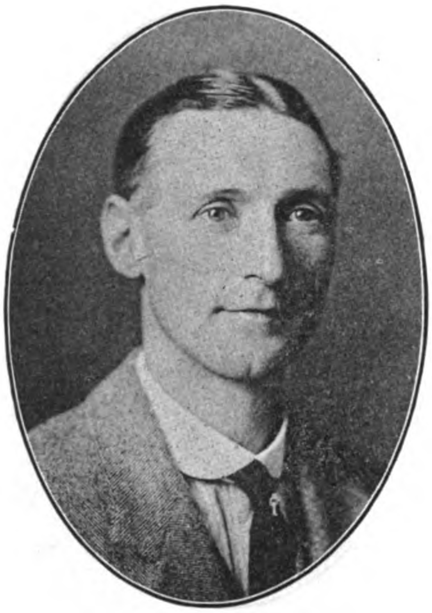
John S. Johnson, known in the old days of cycling as "Johnnie" Johnson, is traveling today through the Minneapolis and North and South Dakota territory in the interests of the Napoleon truck, for which the Whitcomb Automobile Co. of Minneapolis is the distributor, he being a member of the Whitcomb company. After the close of his sensational career as a cycle racing star, he entered the automobile business and for many years was branch manager for the Winton Motor Car Co. at Minneapolis.

R. L. Wilkinson, who has been sales manager of the wholesale division of the Klaxon Co., Newark, N. J., has been placed in charge of the recently consolidated industrial and wholesale divisions of that concern. He will be assisted in the wholesale division by C. E. Vaughan, who has been service manager of the Klaxon Co. for the past three years. Mr. Vaughan will continue his service work in addition to his new duties.

Colonel H. W. Alden, past president of the Society of Automotive Engineers, has been designated to serve as a member of the Federal Highway Council Transportation committee and also on the committee of sub-grade in its relation to road surfacing. Colonel Alden is vice president of the Timken-Detroit Axle Co., Detroit.

A. M. Merrifield, factory representative of the American Hammered Piston Ring Co. for the states of Colorado, Utah and Wyoming, has been transferred to take charge of special sales work in the central and eastern states. This promotion is a fitting recognition for his remarkably successful sales record in the Rocky Mountain district.

W. G. Shultz, sales manager for the Sandow Motor Truck Co., Chicago, Ill., is abroad for an extended business trip through England, Scotland, Norway, Sweden, Denmark, Holland and Switzerland.



W. H. Miles, English Engineer and Inventor, Connected with C. A. Shaler Co.

C. J. Larsen, production manager of the Mac-Lar Battery Co., Inc., Detroit, states that an advertising idea has been a big factor in the rapid growth of the sales of that company throughout the United States. This is the somewhat spectacular spike test of the power and endurance of the Mac-Lar Master storage battery. "To most car owners," says Mr. Larsen, "the little black box is a mystery, and we have never attempted to discuss the technical side of the results of our several years' experiment and trials. Instead we have devised a way to show the unusual strength and endurance of the Mac-Lar most strikingly. We take two-penny spikes and short-circuit the terminals of the Mac-Lar battery. In a fraction of a minute the spikes are fused—the molten metal drops hissing to the floor. After this test has been made time and time again, an examination of the plates will not reveal any injury."

C. J. Larsen, Production Manager Mac-Lar Battery Co., Detroit.

New Officials of Handley-Knight Co.

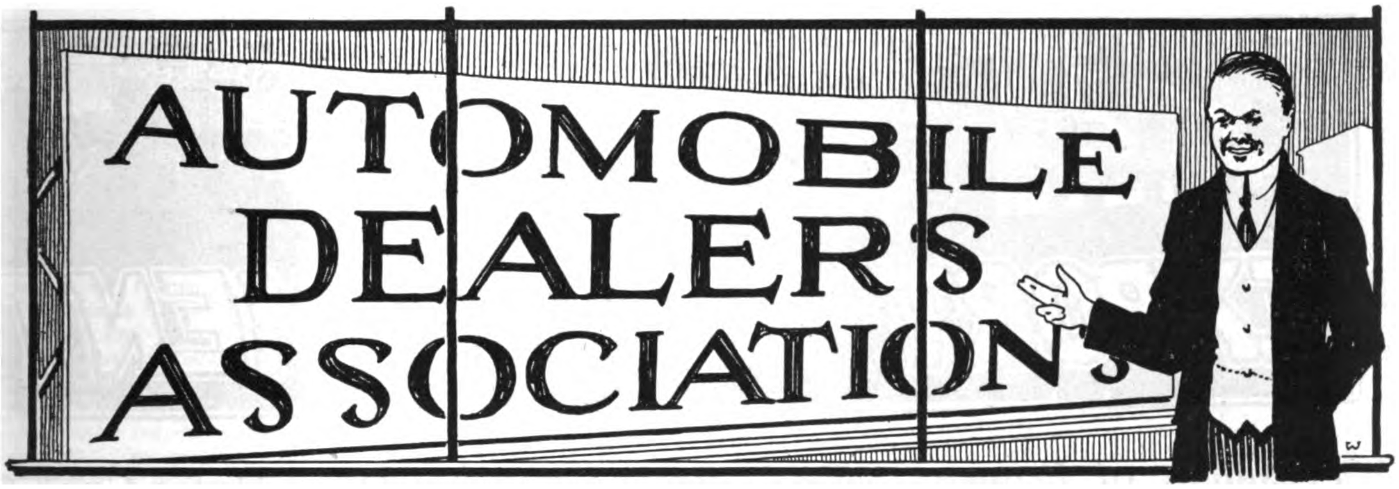
D. B. Williams has been appointed advertising manager of the Handley-Knight Motors Co., Kalamazoo, Mich. In 1909 he went to Dayton, O., as assistant advertising manager of the Stoddard-Dayton Co. A year later he joined J. I. Handley, who is now president of the Handley-Knight Co. at Indianapolis. Mr. Handley being at that time at the head of the American Motors Co. Mr. Williams was in the position of advertising and assistant sales manager. After several years there he went to Jackson, Mich., as sales and advertising manager of the Mutual Motors Co. Later he joined the staff of the Chevrolet Motors Co., first in the capacity of assistant sales manager at Flint, Mich., and then working out of the New York office of the company in charge of the commercial car division of the general sales department. From New York Mr. Williams went to New Orleans as branch manager for the Chevrolet, leaving there again to join Mr. Handley in the Handley-Knight Motors.

F. L. Mowder has recently been made comptroller of the Handley-Knight Co., Kalamazoo, Mich. He brings to this new position valuable experience gained in the financial end of many important enterprises. Ten years ago he began his business career as financial representative for one of the largest investment companies on the Pacific coast. From 1914 to 1917 he became a certified accountant with offices at Los Angeles. During 1917-1918, the period of the war, he was accountant in charge of the financial division on cantonment construction. Following this he served as financial representative of the Air Nitrates Corporation, Toledo, O., building nitrate plants at Mussel Shoals, Ala., Toledo and Cincinnati. Early in 1919 he joined the Toledo Scale Co. as comptroller, which position he left to accept a similar connection with the Handley-Knight Co.

Alexander Matheson, who was formerly connected with the Boston branch of the Motor Parts Co. of Philadelphia, has just been discharged from government service and returns to Boston as vice president and manager of the Boston branch of the Motor Parts Co., 106 Brookline avenue. Mr. Matheson served as an instructor of student officers and officers of the regular army in motor ignition and carburetion, first at the Massachusetts Institute of Technology and later at Camp Holabird in the South.

Charles A. Kingsley recently became manager of the Locomobile San Francisco branch of Hare's Motors, Inc., succeeding I. J. Morse, resigned, G. L. Catlin of Hare's Motors staff having acted as manager in the interim. Mr. Kingsley is a former Locomobile man and has had extensive experience in both the wholesale and retail departments.

Hoover Holton, Chicago branch manager of the Kelly-Springfield Motor Co., recently moved into new quarters at 25th and Michigan avenue, that city.



New Hampshire Dealers Organize

Motor vehicle dealers in New Hampshire are organizing a state association and have taken steps to affiliate with the National Automobile Dealers' association. The New Hampshire Automobile Dealers' association was organized at Manchester with P. M. McKinney, formerly of Boston, as president. The special guests were A. J. Shorey, vice president of the National Automobile Dealers' association for Massachusetts, and James T. Sullivan of the Bay State Automobile association.

DEALERS' AUTO-MOTIVE ASSOCIATION OF MARYLAND.

The Dealers' Auto-motive association of Montgomery county was recently organized at Rockville, Md., with 30 members and the following board of officers:

President, Edgar Reed, Rockville; vice president, William A. Waters, Gaithersburg; secretary-treasurer, Cuyler Meeds, Rockville; membership committee, E. R. Brosius, James O. King, Samuel M. Montgomery, C. W. Brown.

EQUIPMENT SECTION ORGANIZED.

At a recent meeting of the tire and accessory dealers' division of the Automotive association of Cleveland, O., a new division, known as the Equipment section, was organized. One of the first plans outlined is a campaign for better merchandising, and prizes are also to be offered for the best window displays.

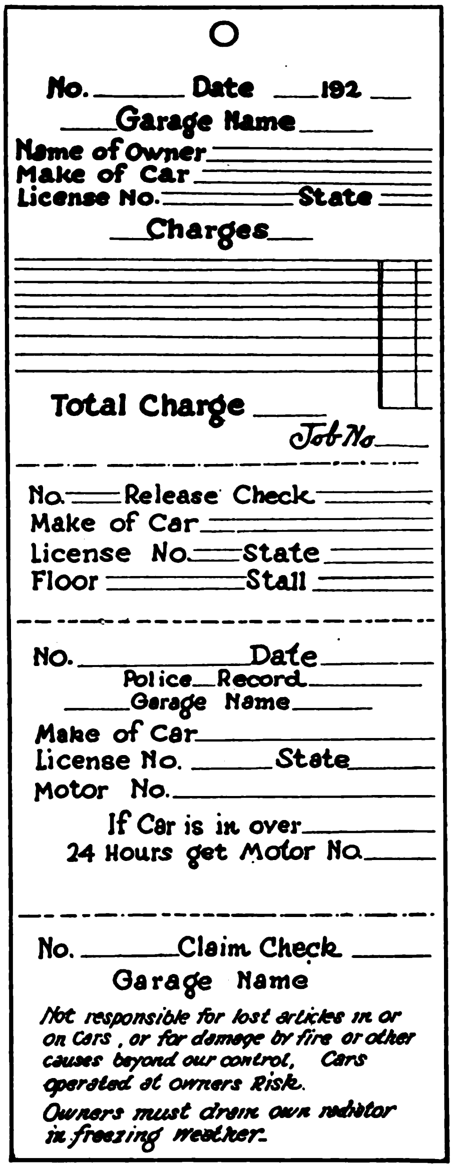
P. F. Valentine, distributor of Lee tires, was chosen as chairman of this division, and Arthur Mechanic vice chairman.

HANSON COUNTY DEALERS.

The Hanson County Auto Dealers and Garagemen's association has been formed at Alexandria, S. D., by the dealers and garage proprietors and operators of that section for the purpose of the betterment of business conditions and the standardization of methods.

CLAIM CHECK AND RECORD DEVISED BY PORTLAND ASSOCIATION.

Below is a reproduction of a combination claim check, police and work record devised by the Garage & Repair Men's association of Portland, Ore. This has been sanctioned by the police department of that city and is available to all garages at a cost of about $2 a thousand, the city standing one-half the expense.



○

No. Date 192

Garage Name

Name of Owner

Make of Car

License No. State

Charges

Total Charge

Job No

No. Release Check

Make of Car

License No. State

Floor Stall

No. Date

Police Record

Garage Name

Make of Car

License No. State

Motor No.

If Car is in over

24 Hours get Motor No.

No. Claim Check

Garage Name

Not responsible for lost articles in or on Cars, or for damage by fire or other causes beyond our control, Cars operated at owners Risk.

Owners must drain own radiator in freezing weather.

Washington Association's Outing

The annual excursion of the Washington, D. C., Automotive Trade association to Marshall Hall, Md., was a pronounced success, the festivities including an extra fine programme of athletic events, etc., and a fried chicken dinner. The committee of arrangements was headed by Rudolph Jose, president of the association; S. Sidney Forst, secretary, and Si Grogan, acting secretary.

WILL EXHIBIT AT FAIRS.

The newly organized Automotive Equipment Manufacturers' & Distributors' association of Portland, Ore., has voted to make exhibits at the fall fairs at Salem and Gresham, Ore. A committee of the association has secured space adjoining the automobile show headquarters at the Salem fair grounds on which a big tent will be erected to house the equipment exhibits, while Machinery hall at Gresham will be the scene of the display at that fair.

J. E. Harley of the United States Manufacturers' Sales Co. is president of the Automotive Equipment Manufacturers' & Distributors' association.

NEW PORTLAND ASSOCIATION MEMBERS.

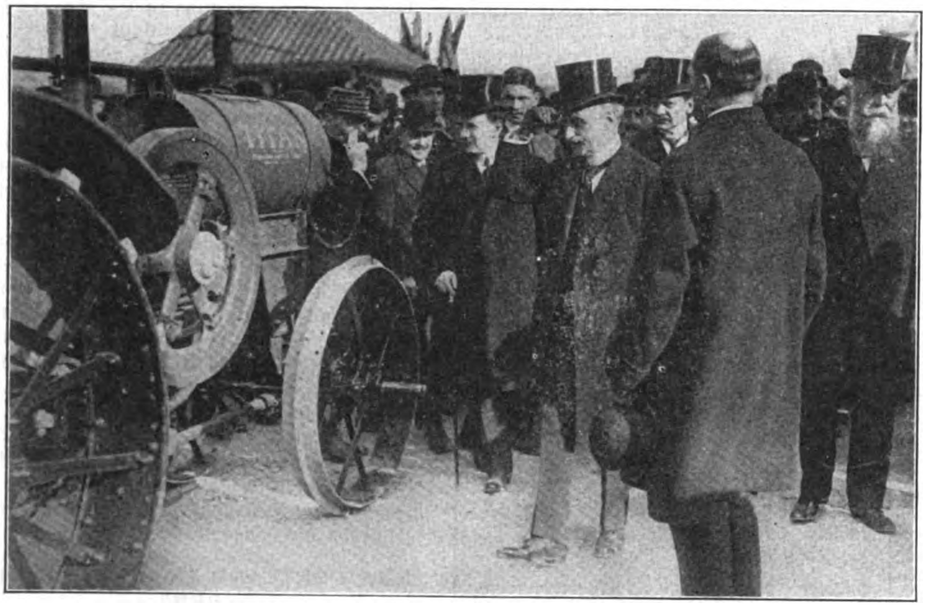
The following have been elected to membership in the Portland Garage & Repair Men's association:

Automotive Service Co., F. C. Burrell, manager, 430 Belmont street; Hall Engineering Co., J. B. Hall and Thomas Vatnsdal, owners, 1392 Milwaukie avenue; Milwaukie Garage, I. H. Jones, owner, Milwaukie, Ore.; Pacific Auto Repair, Slayman & Weeks, owner, 288 11th street; Sellwood Garage, J. A. Dressler, owner, 1614 East 17th street; East Glisan Garage, East 81st and Glisan streets, J. G. Thayer and A. J. Geidle, owners; Hughson, R. S. Hollingsworth Co., Eighth and Davis streets, R. S. Hughson, owner; Laurel Rose Garage, 834 East Burnside street, H. Weishar and L. West, owners; Peninsular Motor Sales Co., 212 South Jersey street, F. S. Belcher, proprietor; United States Sales Co., 412 Stark street, C. B. Dowling, manager.

EXPORT DEPARTMENT
W.

President of France Views American Tractors

Three of the leading factors in increasing the wheat crop in France to such a scale that this European country hopes that there will be no necessity in 1920 for importing wheat for bread were recently photgraphed in one group.



President Deschanel of France Examining a Titan Tractor at the Agricultural Implement Exhibition at the Tuileries Garden.

One of these is President Deschanel of France, another J. H. Ricard, French minister of agriculture, and the other an American made Titan tractor, the product of the International Harvester Co. of America, Inc., Chicago.

President Deschanel and Minister Ricard are shown at spring wheat plowing exhibition at the Tuileries Gardens.

THE NEW AUSTRALIAN TARIFF.

The long-expected revision of the Australian tariff has entered the legislative stage and is in effect provisionally pending its discussion in Parliament. The new schedule on automobile bodies is £40 to £75 each, general, and £30 to £65 preferential, as compared with the old rate of £17 to £42 general and £15 to £36 preferential. The rate on chassis is 17½ or 20% ad valorem, general, and 7½ or 10% preferential. the old rates being 10% general and free preferential.

Other items are as follows: Automobile parts: New—General, 55%; preferential, 40%. Old—General, 45%; preferential, 35%.

Bicycles, tricycles, motorcycles, etc.: New—General, 40%; preferential, 30%. Old—General, 30%; preferential, 25%.

Magnetos, spark plugs, etc.: New—General, 40%; preferential, 27½%. Old—General, 40%; preferential, 25%. Motors: New—General, 40%; preferential, 27½%. Old—General, 30%; preferential, 25%. Lubricating grease: New—General, 20 to 25%; preferential, 10 to 15%. Old—General, 15%; preferential, 10%. Tires for automobiles: New—General, 40%; preferential, 25%. Old—General, 35%; preferential, 25%.

Mineral oils. Fuel and gas—New, free; old, general, ½d. per gallon; preferential, ¼d. Lubricating—New, general, 3½d; preferential, 3d; old, general, 3½d.; preferential, 3d. Gasoline—New, general, 1d.; preferential, ½d.; old, general, 1d.; preferential, ½d. All other distilled oils—New, general, 1d.; preferential, ½d.; old, general, 1d.; preferential, ½d.

Many Motor Cars Are Owned in Switzerland

It is estimated that there are now owned in Switzerland between 10,000 and 12,000 automobiles, 1500 to 2000 motor trucks and 5000 to 6000 motorcycles. According to statistics the number in 1917 was 9425, 5076 automobiles, 1216 trucks and 3133 motorcycles. Seven of the trucks and 305 of the passenger cars were of American make. The other principal makes are Picpic and Martini of Swiss manufacture; Fiat, Bianchi and Scat, Italians; Benz and Mercedes, German, and Clement-Bayord, Reynaud Panhard and Levassor, French.

The prices of European cars in this market range from $2316 to $5211. The 1919 Martini seven-passenger touring car is priced at $5211, but is not equipped with self-starter, lamps and other electric equipment furnished with a first-class American car.

The principal makes of motor trucks are the Sauer and Berna, both Swiss.

HONGKONG'S AUTOMOBILE TRADE.

The import and export records for Hongkong, China, show that, in 1919 motor cars were imported into the colony to the value of $493,574, of which a value of $429,480 came direct from the United States. Of the balance a considerable amount also came from this country by the way of the Philippines and North China, and the remainder represents the casual movement of cars into the colony from various parts of the world as brought by their owners. During the year the colony exported cars to the value of $171,996, of which $64,064 went to Canton, $ 45,972 to Indo-China, and the rest to the East Indies, Straits Settlements, and in the casual movement of cars about the world by their owners.

Since the beginning of the year the movement of cars to Canton has been accelerated and agencies of American cars there are becoming of some importance. No new cars have come in from Europe since the war began.

A motor car exhibit will be held at the commercial fair at Bandoeng, Java, next year.

Motor Taxes Based on Value of Car

A new scale of motor taxation comes into force in Holland this year under which the value of the car is made the basis. Cars valued less than 2000 francs are taxed two francs (38.6 cts.) for every 100 francs value; for cars valued between 2000 and 4000 francs are taxed a fixed amount of 100 francs for each 100 francs exceeding 2000 francs; 4000 to 7000 francs, a fixed sum of 85 francs, plus 2.50 francs for every 100 francs exceeding 4000; 7000 to 10,000 francs, 160 francs, plus 2.75 francs for each 100 francs exceeding 7000 francs; over 10,000 francs, 2425 francs, plus three francs for each 100 francs exceeding 10,000 francs.

LICENSING OF CHAUFFEURS IN JAPAN.

According to Everard Thompson, representative of the Firestone Tire & Rubber Co. of Akron, O., in the Far East, the Japanese police, which have authority in such matters there, issue two kinds of licenses to chauffeurs. A sort of half or preliminary permit allows the driver to proceed in a straight-ahead direction only and after he becomes more expert he may take his examinations for full chauffeurship. The candidate must show himself thoroughly familiar with the reverse gear and be able to back long distances without hitting a tree or a tram car.

Mr. Thompson says that the Japanese make fairly good drivers, but do not seem to quickly grasp the idea of speed and distance. They drive too much on the brake. The pay of a first class Japanese chauffeur is from 15 to 20 yen a week, which is equivalent to approximately $7.50 to $10 in United States gold. Speeds are not high, the police holding motor cars down to about 20 miles an hour except in the open country, where 25 to 30 miles is permitted. But if you ride over a Japanese road at 30 miles an hour, Mr. Thompson states that you surely know you have been riding.

GASOLINE SUBSTITUTE PRODUCED IN HAWAII.

In view of the increasing demand for and rising price of gasoline, the progress reported as being made in Hawaii in the development of the manufacture of a substitute motor fuel alcohol is of special interest. The raw material is waste molasses and the refuse from pineapple canneries. It is stated that approximately 135,000 tons of waste molasses is produced yearly in Hawaii, which could be converted into about 9,000,000 gallons of motor fuel by the Foster process recently patented.

MOTOR OMNIBUS SERVICE IN ITALY.

Owing to the fact that Italy to a considerable extent is a mountainous country, railway lines can only be built at much cost and labor. About 10 years ago public automobile services as feeders to the railways were inaugurated at certain points and proved so successful that today it is believed that Italy ranks first in the use of this auxiliary traffic medium. The total length of roads over which motor lines are run on fixed time tables is 8700 miles, there being 400 regular lines.

The Fiat Corporation of Turin took the initiative in augurating this service and, at the present time, 350 of the 400 motor lines operate Fiat cars exclusively.

Swedish Motor Cars to South America

Swedish motor car manufacturers seem to consider South America as the most promising field for future business. The export of cars from that country, which was interrupted by the war, has been resumed and it is said that orders are now being received from Argentina, Chili, Brazil, Peru and Venezuela. The Swedish motor industry reached its greatest development during the war, particularly during the years 1917 and 1918. The production increased from $4,111,120 in 1913 to $10,076,800 in 1917, and lack of tonnage and blockade measures undoubtedly prevented a much greater production. There was a noticeable decrease in 1918 on account of the loss of the Russian market.

Exports of motor cars to the United States from Sweden in 1916 were valued at $822,760; $854,920 in 1917 and $85,760 in 1918.

MOTOR OPERATIONS OF RED CROSS ABROAD.

The American Red Cross has about 900 motor vehicles of all kinds operating in France, Rumania, Poland, Western and Southern Russia, Constantinople, Vienna and other places where its relief work is still going on.

Within six months the Red Cross has moved over half a million tons of supplies by motor to and from trains and steamships, and often across country.

A train of 13 cars—10 of which were trucks, recently left with 134 cases of spare parts, 75 barrels of oil and 10 barrels of grease for the Polish commission.

FOREIGN TRADE OPPORTUNITIES

(Information in regard to names and addresses may be obtained from the United States Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C., or its district and cooperative offices, upon written request, mentioning the opportunity number.)

33,334—Dealers in machinery in Italy desire to secure an agency for the sale of lubricating oils of all kinds. Correspondence may be in English, but Italian is preferred. References.

33,341—A commercial agent from Mexico is in the United States for a short time and desires to secure an agency for the sale of gas and crude oil engines of three and four horsepower to 500 horsepower and agricultural implements. Catalogues and prices are requested. References.

33,343—A company in England desires to purchase metal fittings for automobile bodies, such as locks, hinges, knobs, handles, windshields and frames, and window fittings; also wood and metal fittings for household and office furniture of all kinds. Quotations should be given c. i. f. Liverpool. Reference.

33,358—A merchant firm in Spain desires to purchase and secure agencies for chemical products, cotton, automobile accessories and steel. Quotations should be given c. i. f. Spanish port. Correspondence may be in English. Reference.

33,359—A commercial agent in Switzerland desires to purchase and secure an agency for the sale of light automobiles (touring cars) from firms that are able to deliver quickly and give a guaranty for manufacture. Quotations should be given c. i. f. Antwerp. Payment to be in cash or bankers' guaranty. Correspondence should be in German or French. References.

33,361—Automobile importers in the Dutch East Indies desire to secure an agency for the sale of a high grade motor car and also a low priced motor car. References.

33,368—A manufacturers' representative in South Africa desires to secure an agency for the sale of light automobiles. References.

33,391—A commission agent in Poland desires to secure an agency for the sale of machinery, automobiles, agricultural implements, heating plants, plumbing supplies, cast iron articles, railroad equipment, cement, commercial glass ware, typewriters, sewing machines and rubber goods. References.

33,404—A commercial agent in Italy desires to secure the representation of manufacturers of automobiles and agricultural machinery and accessories. Correspondence may be in English. Reference.

33,421—A firm of mechanical and electrical engineers in India desires to receive quotations from manufacturers on a large number of motors and generating sets, specifications of which were forwarded. Prices to include effective packing for shipment and delivery f. o. b. American port. A list of firms represented by this company was forwarded.

33,423—A commercial agent in Cuba desires to represent manufacturers on a commission basis for the sale of paints, varnishes, lubricating oils, greases, imitation leather, hosiery, shoes, automobiles and trucks, tires, adding and calculating machines and disinfectants.

33,429—The partner of a firm in Chile is in the United States and wishes to purchase a complete line of hardware, including automobile accessories, cutlery, silverware, and also to secure an agency for a medium priced automobile.

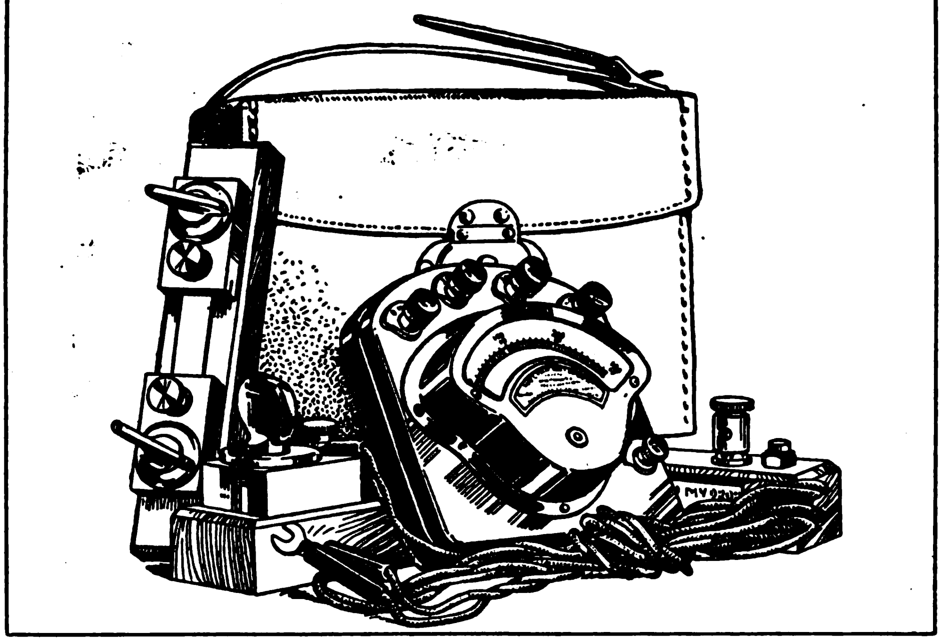
33,430—An importing company in Denmark desires to purchase and secure an agency for the sale of japanned leather, colored hides for upholstery of motor cars and carriages. Reference.

33,434—A commercial agent in Spain desires to secure agencies for the sale of high class automobiles, carpenters' and locksmiths' tools, flour and olive oil mill machinery, lubricating oils, cotton and woolen piece goods, crockery and glass ware, enameled kitchen ware and all kinds of machinery used in connection with the sugar refining industry. Quotations should be given c. i. f. Spanish ports. Correspondence may be in English. References.

33,447—A commercial agency firm in Honduras desires to secure the representation of manufacturers and exporters for the sale of medium and high priced automobiles and motor trucks, one-half ton and up, suitable for hilly country. Quotations should be given f. o. b. American ports or c. i. f. Amapala. References.

How to Test for Defects in Electrical System

THE past few years have been marked by great development in electrical appliances on automobiles so, at the present time, with a few exceptions, all cars are supplied by the manufacturers with electric starting, lighting and ignition systems as standard equipment. These systems require attention from time to time when it may be necessary to make repairs and adjustments. Just as the mechanical adjustments on the passenger car require special tools and gauges, so the testing and adjusting of the electrical apparatus necessitate the use of electrical measuring instruments. Today, therefore, no garage or service station can claim to be properly equipped to care for modern motor cars, including the electrical apparatus, unless it is supplied with one or more reliable voltmeters, an ammeter and a hydrometer. It is the purpose of this article to describe such instruments and to give the proper method of use, particularly as applied to the Delco system



Combination Volt-Ammeter Complete with Carrying Case.

One of the instruments most suitable for the purpose is known as a combination volt-ammeter. This consists of a voltmeter provided with a 0 to 30, 0 to 3 and 0 to 1/10 volt scales for making voltmeter measurements, together with three shunts having a capacity of 0 to 300, 0 to 3 amperes respectively, which are used in connection with the 1/10-volt scale for taking current measurements. A set of special calibrated leads for use with these shunts is also provided.

When the instrument is used as a voltmeter it is necessary to select the proper scale for the circuit, and, if there is any doubt, it is well to start at the 30-volt scale. If the deflection on this scale indicates less than three volts the three-volt scale can be safely used. The 1/10-volt scale is only used in connection with the shunts previously mentioned, and also for special armature testing.

When measuring the voltage of the storage battery, terminal voltage of generators, etc., the 30-volt scale should be used and the proper method of connecting it into the circuit is shown in the diagrams.

In connecting the volt-ammeter, care should be taken that the terminals are properly connected across the circuit, according to the accompanying illustrations. It is necessary to connect the positive terminal of the meter to the positive side of the circuit and the other terminal to the negative side.

If the polarity of the circuit is not shown, a trial reading can be taken. If the pointer move to the right, the meter is properly connected. If it moves to the left it will be necessary to reverse the connections of the meter, and this should be done at the circuit—not at the meter—to avoid any accidental short circuits.

On the Delco systems the polarity is governed by the storage battery and for this reason it never changes.

The principal use of the three-volt scale is to test the terminal voltage of the different cells of the storage battery and it should be connected as in diagram D, Fig. 1. It is also used when testing for short-circuited fields in the motor generator.

Used as an Ammeter.

When used as an ammeter it is necessary to first select the proper shunts and if the value of the current to be measured is not known, it is well to start with the 300-ampere shunt and then come to the 30-ampere shunt if the reading on the 300-ampere shunt shows current of a value less than 30 amperes. These shunts are connected in the manner illustrated in diagram E, Fig. 1, and as seen from this diagram, all shunts are connected in the circuit in a similar manner so that it simply requires a substitution of the different shunts. The connections are always the same. If the polarity is wrong, it is only necessary to reverse the connections from the ammeter to the shunt, which should be done at the shunts. It is unnecessary to reverse the connection to the shunt itself.

As a rule a 300-ampere shunt will be used for measuring starting currents, a 30-ampere shunt for measuring charging current, and the three-ampere shunt for very small currents, such as shunt field current, current taken from the individual lights and when making an adjustment of the ignition relay.

The accurate testing of armatures for the various defects that may develop involves the use of test points and of a voltmeter. The general function of these devices has already been explained, but their particular application to armature testing will be taken up in detail under the following divisions. It is unnecessary to remove the motor generator from the car to make these tests. Where there are grounds on the armature windings, or shorts between them, simply raise all the brushes off the commutator, and insulate them from the commutator with pieces of card board. This applies as well to testing for short circuits between generator and motor armature windings.

A grounded generator coil on one-wire systems of the single-unit type will result in slow cranking and materially reduce the charging rate. To test for this, refer to A, Fig. 2. Place one of the test points on the frame or shaft of the armature, all of which are grounded, and the other point on the generator commutator. If the lamp lights it will indicate a ground on the commutator.

A grounded motor coil will cause an excessive current to be drawn from the storage battery while cranking, or it will prevent cranking entirely. This is tested by a similar method to that used in the preceding paragraph, except that the test point is placed on the motor commutator, instead of the generator commutator. See B Fig. 2.

Short circuits between the motor and generator armature coils in most cases will decrease the speed of cranking and also cause the armature to continue to run after the engine has been shut down. This defect is tested by placing one of the test points in the generator commutator, the other on the motor commutator. If the lamp lights it will indicate a short circuit between the motor and generator windings, C, Fig. 2.

When testing for open or short-circuited generator armature coils, the generator brushes should be left in contact with the commutator, but the storage battery should be disconnected from the system. Then disconnect the shunt field from the brushes and connect up a dry cell and an ammeter, having about a 30-ampere scale, to the brushes, as shown at D, Fig. 2. Then turn the armature over slowly by hand. If the commutator is in good shape, and the brushes are making good contact, a very noticeable change in the ammeter reading will indicate an open or short-circuited armature coil. To see whether the coil is open-circuited, or short-circuited, the following tests should be made:

Open-circuited coil: Connect the brushes to the terminal of a dry cell so that current of about 10 amperes is flowing through the brushes. The field should be entirely disconnected. Then with a special pair of points connected to the three-volt scale of the voltmeter, measure the voltage across each two adjacent commutator bars. If there is an open-circuited coil, the voltage reading will increase materially. D, Fig. 2.

If there are no open-circuited coils and the preceding tests show that there is some armature trouble, the armature should next be tested for short-circuited coils. (This should only be done after the preceding tests have been made, as an open-circuited coil might cause the 0.1-volt scale of the voltmeter to be burned out if this test were made first.) The armature is connected as described in the paragraph for open-circuited coils, but for this test the 1/10-volt scale is used instead of the three-volt. F, Fig. 2.

The voltage drop between each two adjacent commutator bars is then measured by slowly turning the commutator by hand. The readings should all be approximately the same. If any of them drop nearly to zero, it will indicate that one or more of the armature coils are short-circuited. In taking these readings care should be used to keep the points on adjacent bars, otherwise the voltage drop may be sufficient to injure the voltmeter.

If any of these tests show trouble it will be advisable to install a new armature, or to send the armature to the factory to be repaired. Unless the fault is visible to the eye, it is inadvisable to attempt to have such armatures repaired except at the factories manufacturing them, where special equipment for this class of work is available.

The armature in the Delco motor-generator differs from the usual form of construction in that it is double-wound, having two separate windings and commutators, one winding for the motor, and the other for the generator. The brushes are so arranged on the two commutators that, when the starting pedal is pushed down and the motor-generator is being used to crank the engine, both of the motor brushes make contact with the motor commutator while, at the same time, one of the generator brushes is lifted off. However, when the starting pedal is released, one of the starting brushes is automatically raised and the lifted generator brush dropped to make contact with its commutator, thus permitting the machine to operate as a generator. The generator output is regulated by the third-brush principle.

The system has no cut-out, as is usually found, the closing and opening of the charging circuit being taken care of by the turning on and off of the ignition button.

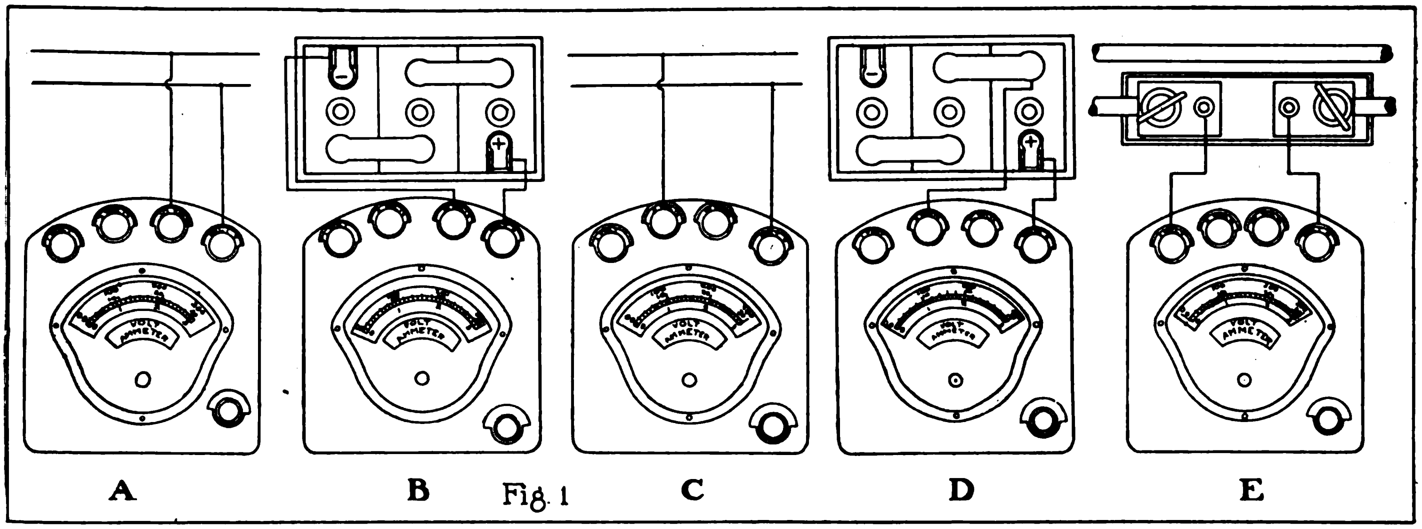


Fig. 1

The Remy Two-Unit System.

Troubles in the electrical system of an automobile are generally those which prevent the current from traveling in its proper paths and doing the work that is expected of it. Almost all electrical troubles can be placed under one of four heads: Open circuit, circuit having abnormally high resistance, short circuit, the modification of the short circuit called a "ground."

An open circuit occurs when a wire becomes detached from one of its terminals or breaks, or when a connection is dirty or improperly made, so that the current carrying surfaces do not make proper contact with each other, thereby preventing the current from flowing because of the lack of a complete path or circuit.

High resistance may result from poorly made or dirty connections, wires that are partially broken through, wires that are too small for the work they must do, or dirty, pitted and corroded contacts in the dynamo, cut-out or regulating parts. A high resistance in a circuit will be indicated by a low generator output and a high generator voltage. A loose connection will cause a variable output, low when poor contact is made and high when good contact is made at the connection. A high resistance connection frequently occurs at the battery when battery terminals become corroded. Frequent cleaning of the storage battery terminals is recommended and coating with vaseline to prevent corrosion.

A short circuit is established whenever an accidental current carrying path occurs in a circuit at a point that allows a flow of current where there should be no flow, or that permits the current from the generator or battery to return without passing through the lamps or other devices that are designed for using current. This may be caused by two wires being crossed and making electrical contact, or by the insulation being worn off so that an electrical contact is made with the metal of the car. The metal then completes the short-circuit path for the current.

The success of any electrical installation depends upon the flow of current being kept within the conductors designed to carry it, and should the insulation fail or exposed parts come into contact so that a flow of current is allowed where it should not be, the result will be a drain on the battery, failure of generator, failure of starting motor or of almost any of the electrical units, depending on the point at which the short circuit occurs.

A ground is a form of short circuit established through the metal parts of the car. On a grounded (one-wire) system, that is, a wiring system using the metal parts of the car to carry the return current, a ground occurs when a current-carrying conductor comes in contact with a metal part of the car. It can readily be seen that if the ground occurs between the battery and any part of the equipment, the result will be a short circuit, the current returning to the battery through the metal of the car instead of first going through the current-using devices, then returning to the battery. On an insulated (two-wire) system, it is necessary that both wires make contact with the metal of the car before a short circuit can result.

The test lamp is a very convenient means of indicating, by means of a flow of current, whether a circuit is complete through a certain path or not. If one side of an ordinary drop cord, as used for shop and garage lighting, is opened, the lamp can be used as a test lamp. Cutting one wire will open the circuit and prevent the lamp from lighting as long as the two ends are separated, but when the ends are brought together the circuit will be complete, as will be indicated by the lamp lighting. The lamp may be used as a tester by touching the two free ends to any points between which it is desired to make a test. If the conduction path is not complete the lamp will not light, indicating an open circuit. D, Fig. 2.

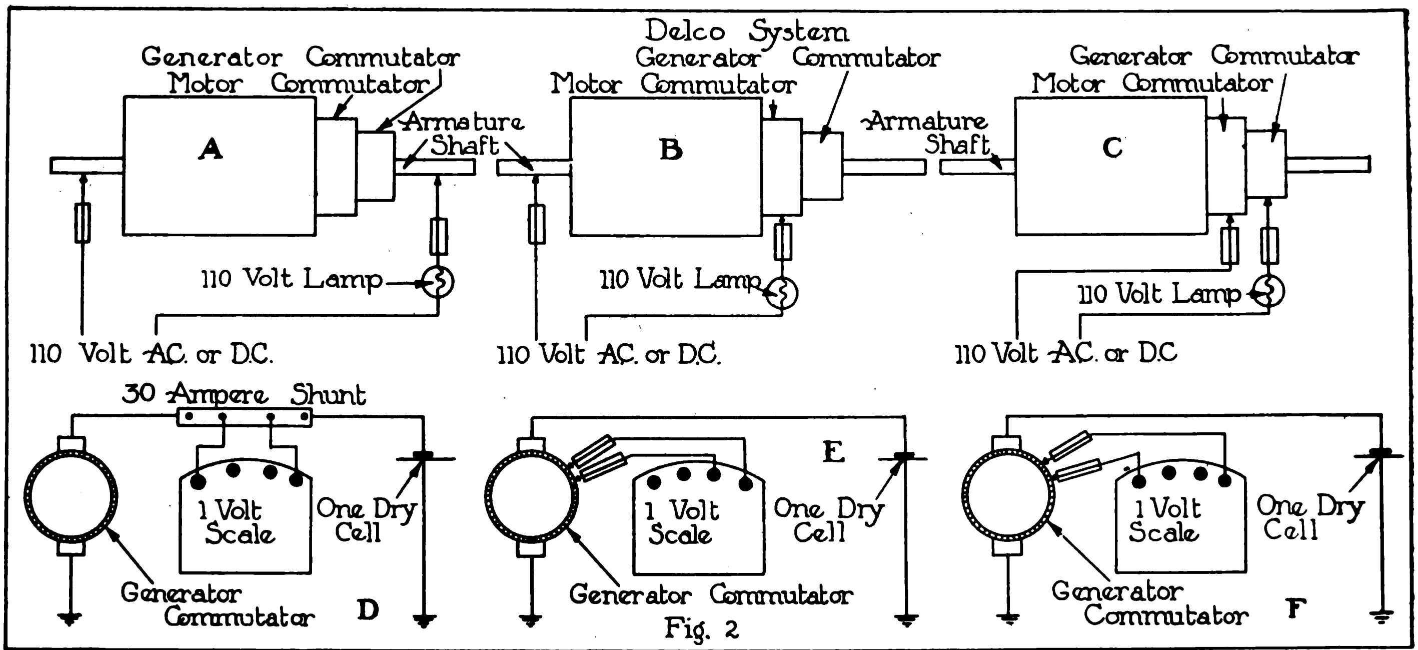


Fig. 2

A low voltage test lamp is a very convenient article for locating trouble, and is made in the same manner as the set just explained, except that a small socket is used which will take a six-volt automobile lamp. An ordinary automobile trouble lamp makes a good test lamp. This low voltage lamp can be used for many tests where a high voltage lamp cannot be used. The leads from this lamp can be connected to the terminals of the generator to see if it is generating; the lamp can be connected across a battery, an ignition coil primary, switch terminal or any place where it is desired to ascertain whether a voltage exists or not. The approximate voltage can be determined with the test lamp; for instance, if a six-volt lamp is placed across the terminals of a six-volt generator or battery and the lamp burns with full brilliancy, the battery or generator must be producing in the neighborhood of six volts, while if the lamp burns only half bright the voltage must be low or in the neighborhood of three volts. The low-test lamp can also be used to test for grounds, short circuits, open circuits, etc., by connecting a storage battery or dry cells in series with it. E, Fig. 2.

Testing Generators.

To test the field, connect battery across the field with an armature in series. A field drawing excessive current indicates a short-circuited field winding, field connected wrong or, in single-wire systems, field grounded to frame of car. An open field will be indicated by the ammeter indicating zero.

Testing the armature, when the generator is operating and the armature is drawing an excessive and fluctuating current, indicates a short-circuited armature or, on single-wire systems, a grounded armature will be indicated by a very pronounced firing at brushes, and the commutator bars which are connected to open coil or coils, will be badly pitted and burned. The generator refusing to motor may indicate a wrongly connected field, open circuit at two or more places on opposite sides of armature, a very dirty or badly burned commutator, brushes sticking in holders, or open circuit in the field winding, field leads or armature leads.

Making proper connections for motoring generator and testing field-grounded system: With one terminal of battery grounded and generator frame grounded, connect the other battery terminal to generator terminal on relay regulator next to fuse or the fuse terminals. See that it is intact and that the regular points make good contact. Generator should motor with these connections made.

When testing the field winding, using the connections just mentioned, raise the insulated brush on generator and the field will be connected across the battery direct.

On insulated two-wire systems, connect one battery terminal to the brush which connects directly to the field, and the second battery terminal to one of the stationary points of regulator, or the leads connecting the regulator, making sure that the regulator points are making good contact. The generator should then run as a motor.

When testing the field winding on this system, use the above connections, raise the field brush—that is, the brush to which the battery lead is connected—clear of the commutator, and the field will be directly across the battery.

Third Brush Grounded System.

In case of a generator such as model 234 A on which third brush regulation is used, ground one side of the battery and the generator frame. Then if the ungrounded lead of the battery is applied to insulated terminal on generator frame the generator should run as a motor.

In testing the field winding, connect one battery lead to insulated terminal on generator and the second to the third brush with third brush raised from the commutator. The battery will then be connected across the field.

Third Brush Insulated System (Two-Wire.)

For insulated systems, third-brush, two-pole generators, such as models O B and 165, connect battery across generator terminals and the generator should motor on pressing down relay armature.

When testing the field winding use the above connections, raising the main brush, which is farthest from the third brush, from the commutator and the field will be connected across the battery.

Armature Test, Generator Running as a Generator.

A high cut in, that is, the relay cutting in at too high speed, may indicate that the relay is out of adjustment, a reversed or wrongly connected field, the armature short circuited, a dirty or burned commutator, bad brushes or brushes sticking in holders or, on a grounded system, a grounded armature.

Low generator output with normal or low voltage, may indicate that the regulator is out of adjustment, that is, that the spring holding the contacts in closed position may need adjusting to hold them closed longer, dirty or burned regulator contacts, armature short circuited, badly discharged battery, field coils connected wrong or partly shorted out or, on third-brush regulation, the third brush may need adjusting.

Low output with high voltage indicates loose connections in battery circuit or battery circuit open.

High generator output may be caused by only one regulator point making contact, thereby cutting only half of regulating resistance into field circuit, or the regulator contacts may need adjusting so that spring does not hold them closed too long, or may be sticking closed. If third-brush regulation is used, third brush may need adjusting.

The failure of the generator to charge the battery may be caused by dirty or badly burned relay contacts, an open circuit in wiring or connections, fuse out, battery very badly discharged or badly sulphated.

The failure of the generator to function may indicate an open field, a field with two adjacent poles reversed, an open circuit in wiring or connections, or armature open at opposite sides.

Open or Short-Circuited Generator Armature Coils.

When testing for open or short-circuited generator armature coils, the generator brushes should be left in contact with the commutator, but the storage battery should be disconnected from the system. Then disconnect the shunt field from the brushes, and connect two or three dry cells and an ammeter, having about a 30-ampere scale, to the brushes as shown at A, Fig. 3. Then turn the armature over slowly by hand. If the commutator is in good shape and the brushes are making good contact a very noticeable change in the ammeter readings will indicate an open or short-circuited armature coil. To see whether the coil is open-circuited or short-circuited, the following tests should be made:

For open-circuited coil, connect the brushes to the terminal of a dry cell so that current of about 10 amperes is flowing through the brushes. The field winding should be entirely disconnected. Then, with a special pair of points connected to the three-volt scale of a voltmeter, as shown at B, Fig. 3, measure the voltage across each two adjacent commutator bars. If there is an open-circuited coil the voltage reading will increase materially.

To test for short-circuited coil, if there are no open-circuited coils found, and the preceding tests show that there is some armature trouble present, the armature should next be tested for short-circuited coils. (This should only be done after the preceding tests have been made, as an open-circuited coil might cause the 0.1-volt coil of the voltmeter to be burned out if this test were made first.) The armature is connected as described in the preceding paragraph for open-circuited coils, but for this test the 0.1-volt scale is used instead of the three-volt. The voltage drop between each two adjacent commutator bars is then measured by slowly turning the commutator by hand. The readings should be approximately the same. If any of them drop nearly to zero, it will indicate that one or more of the armature coils are short circuited. Connections for this test are shown at C, Fig. 3.

In taking these readings, care should be used to keep the points on adjacent bars, otherwise the voltage drop may be sufficient to injure the voltmeter.

If any of these tests show defects it will be advisable to order and install a new armature, or to send the armature to the factory to be repaired. Unless the fault is visible to the eye it is inadvisable to attempt to repair such an armature outside of the factory manufacturing it, which is especially equipped for such work.

Setting Brushes on Generators.

All generator brushes should be set in the position of least sparking when carrying full load, which position will be a short distance ahead (in direction of rotation) from the neutral plane. The brushes are in the neutral plane when at the point where the current is reversing in the winding and, therefore, at the position where the highest voltage is obtained between brushes of opposite polarity. This position can be located by connecting a voltmeter between the brushes and moving the rocker ring until the point of highest voltage is reached. The voltage will decrease as the brushes are moved away from the neutral plane.

Setting Brushes on Motors.

Motor brushes should be set at the position of least sparking when machine is carrying full load. This will be a short distance back (in the direction opposite to rotation) from the neutral plane. To set motor brushes in the correct position, place machine on block test and apply a load approximately equal to that which it is normally required to carry. (This load will be about 40 pounds on a pulley of six-inch diameter, or 10 foot pounds for starting motors.) The speed of a motor is greatest when the brushes are at the neutral plane and decreases as they are moved away from that position. The voltage of a generator and speed of a motor can be changed considerably by moving the brushes providing the machine is not too heavily loaded so that it will spark badly.

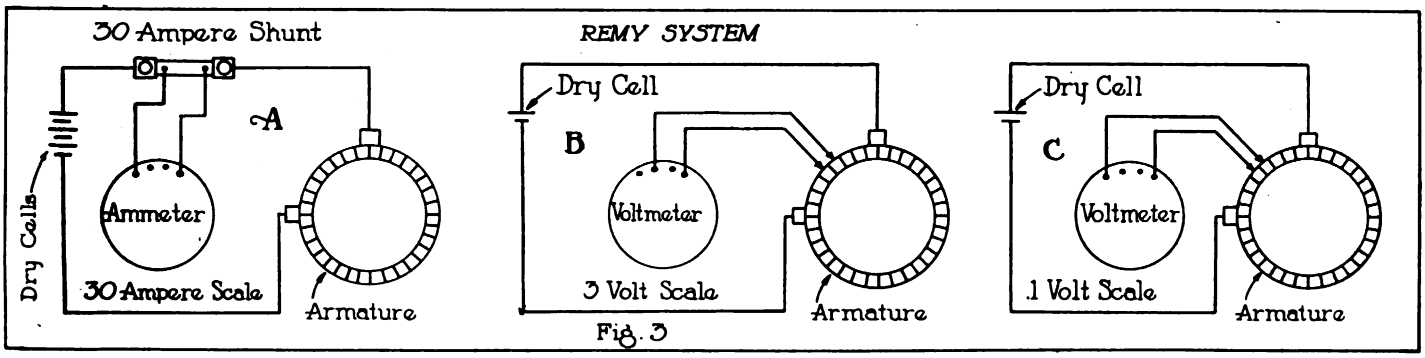


Fig. 3

Reversed Field Coils.

Field coils are not liable to be connected wrong when the machine leaves the factory, and cannot possibly become reversed when in operation. This trouble, therefore, is very unlikely to be encountered unless the machine has been disconnected for repairs and then connected up wrong.

To locate a reversed field coil, with the field excited and armature out of circuit, approach each field pole with a compass, taking them in succession. If connected properly, each pole will attract the opposite end of the compass needle to that which the preceding or following pole attracts. Care should be exercised in making this test, to approach each pole with care, and not slide from one pole to the next without taking the compass well away from the machine, as the polarity of the compass needle is very liable to be reversed and incorrect results obtained. To locate a ground on an insulated (two-wire) system, disconnect the battery from the system and ground one battery terminal. Attach one voltmeter lead to ungrounded lead of battery and apply the second voltmeter lead to the system. If a reading is obtained on the voltmeter, the system is grounded. An ordinary test lamp, consisting of a socket with flexible leads and a 110-volt lamp, can be used for this test. Apply leads from a 110-volt alternating or direct current lighting circuit, with test lamp in series, to the apparatus just as the battery was applied. That is, apply one lead to ground and the other to the equipment in any place where it is required to test for grounds. If the lamp lights, it indicates a ground on the system. Armatures and fields may be tested for grounds in the same manner, applying one lead to field winding and the other to the frame or, in case of testing armatures, one lead on commutator and the other on the shaft.

One ground will cause no trouble on an insulated system, but it should be cleared if possible, as upon the occurrence of an opposing ground, part of the apparatus is liable to be short circuited.

Testing the Motor.

A motor drawing excessive and fluctuating current may indicate a short-circuited armature or, in a single-wire system, a grounded armature. An open armature will be indicated by very pronounced firing at the brushes and the commutator bars, connected to the open coil or coils, will be badly pitted and burned.

A motor that will not operate may

have a badly shorted armature, open circuit at two or more places on opposite sides of armature, field coils connected wrong, open-circuited field, field leads or armature leads disconnected, brushes sticking, or a very dirty or burned commutator.

Testing Distributor Segments, Caps, Etc.

Connect up any good ignition coil in the usual manner with the breaker in the primary circuit and the base of coil grounded. Connect the terminal of the high-tension winding of the coil to the metal on one side of segment and ground the metal on the other side of the segment. If the spark jumps across the safety gap the segment is all right. If it does not, but jumps through the bakelite, the segment is broken down. To make this test with segment in place on car, remove distributor cap from distributor and disconnect high-tension lead from cap. Test spark by holding high-tension lead close to metal part of car. Then hold high-tension lead against contact spring on segment. If spark jumps safety gap, segment is all right, if not, it is broken down. Use starting motor to turn engine when making this test.

In testing the distributor cap, test as above for distributor segments, making contact with high-tension lead and grounded lead across from one terminal to another, etc.

Condenser Tests.

Condenser troubles will usually be indicated by severe arcing at the breaker points. When testing for a shorted condenser, disconnect condenser or, if condenser is inside of coil, disconnect coil. Connect terminals leading to condenser, across 110-volt alternating or direct current with a lamp in series. If lamp lights the condenser is short-circuited or broken down between layers. On systems using grounded ignition, that is, grounded primary winding in ignition coils, such as Studebaker coil model 171 A, connect to post to which lead from breaker is attached, marked "timer," and to base of coil, for this test.

(Note—If primary winding has become grounded in the above type of coil, the lamp in this test will be lighted the same as if condenser is shorted. However, if breaker points arc badly and are burned, it can be assumed to be condenser trouble.)

On systems using insulated ignition (primary winding not grounded) such as Velie, coil model 172 A, connect to center post marked "timer switch" and to outside post which has not the resistance unit connected to it.

Open Condenser.

An open condenser may be one which is disconnected inside of box or coil tube, or which has opened up between the layers so that its capacity is very low. With an open condenser or one which has no capacity from any cause, very severe arcing will occur at contacts as stated.

Capacity Test.

In case 110-volt direct current is available, a capacity test can be made by connecting across condenser with a lamp in series as shown in diagram, Fig. 4, then disconnecting and bringing the condenser terminals together. If a good spark is obtained, the condenser is all right. An alternating current is not as dependable for this test as direct, although with proper care fair results can be obtained. In using alternating current, a good spark will not be obtained every time the condenser leads are touched together, but only occasionally.

Testing Ignition Coil.

A good ignition coil should produce a spark that will jump at least a ¼ inch gap. Put the coil on test and if it produces a good spark and does not miss after a three or four hours' run, that is, after it is well heated up, it may be considered fit for service.

Emergencies—What They Are

Motorists are often confronted with the word "emergency," and it might be well to know just what the word means. According to the lexicons it means a situation or unexpected happening or occasion of action, caused by a perplexing contingency or complication of circumstances. Motorists in every day life may not recollect this exact definition, but the actual stress of the emergency becomes especially noticeable when pedestrians or persons in vehicles find themselves in a perilous position in consequence of the failure of themselves or others to fulfill their legal and moral obligations. It is seen when pedestrians become confused at the approach of a machine, take the wrong course, run in front of automobiles, or hesitate and seesaw until injury seems inevitable.

The law that has come down to us, from the English courts is that if a person places another in such a situation that he must adopt a perilous alternative, the former is responsible for the consequences. On the other hand, if an injured person's act resulted from the rash apprehension of danger which did not exist, and the injury which he sustained is to be attributed to rashness and imprudence, such a person is not entitled to recover in damages.

Duty of Motorist in Emergency.

Now what is the duty of the motorist in an emergency? This is what one authorized has to say upon the law governing the drivers of motor vehicles:

"The law as to drivers of motor vehicles is no different from that which governs other persons. The standard required is that of a reasonable prudent person under all circumstances. If some unforeseen emergency occurs, which naturally would overpower the judgment of the ordinarily careful driver of a motor vehicle, so that momentarily or for a time he is not capable of intelligent action, and as a result injury is inflicted upon a third person, the driver is not negligent." The law does not require supernatural poise or self-control. But no one can safely drive motor vehicles amid the distractions and dangers likely to be encountered on the modern highway and street who is not reasonably steady of nerve, quick in forming an opinion and calm in executing a design.

Driver Should Always Use Forethought.

It is the duty of the driver to always exercise forethought, wisdom and caution.

It is his duty to anticipate that pedestrians and others in perilous positions might be filled with and overcome by fear and act unreasonably.

It is manifestly his duty to prefer the safety of human beings to that of animals, and to hit an animal rather than a human being, if the emergency demands such action.

It is his duty not to lose his head and to at all times operate his vehicle, not on the assumption that everyone shall look out for him, but rather that he shall look out for them, as more of a burden is placed upon him, because of the character of the vehicle he operates, than upon those not similarly situated.

SKIDS CAN EASILY BE AVOIDED BY CAREFUL DRIVING.

It is just as easy to drive when it is wet as when the roads are dry, comparatively speaking. The only difference is one of speed and using judgment. If you drive carefully and do not try to speed on slippery roads or streets, you will have no trouble.

When streets and roads are first wet, just after a rain has started, the surface is covered with a slime, composed of road oil, dust, etc., that is feared more by motorists, than later when the street or road has become thoroughly wet and the dirt and dust has been washed away to the gutters. Skidding is very easy at this time, and the careful driver is on his guard. If the car is driven rapidly over a greasy street and the brakes applied suddenly, the result is very liable to be a bad skid. It is a great deal better to drive slowly and avoid the chance of skidding. Do not try to turn suddenly, or there is certain to be a skid. In fact, if everything is done deliberately both car and driver will last a great deal longer.

It is easy to stop a car when it is slippery if the brakes are applied gradually, but if the brakes are applied abruptly and the wheels are locked the rear end will swing around.

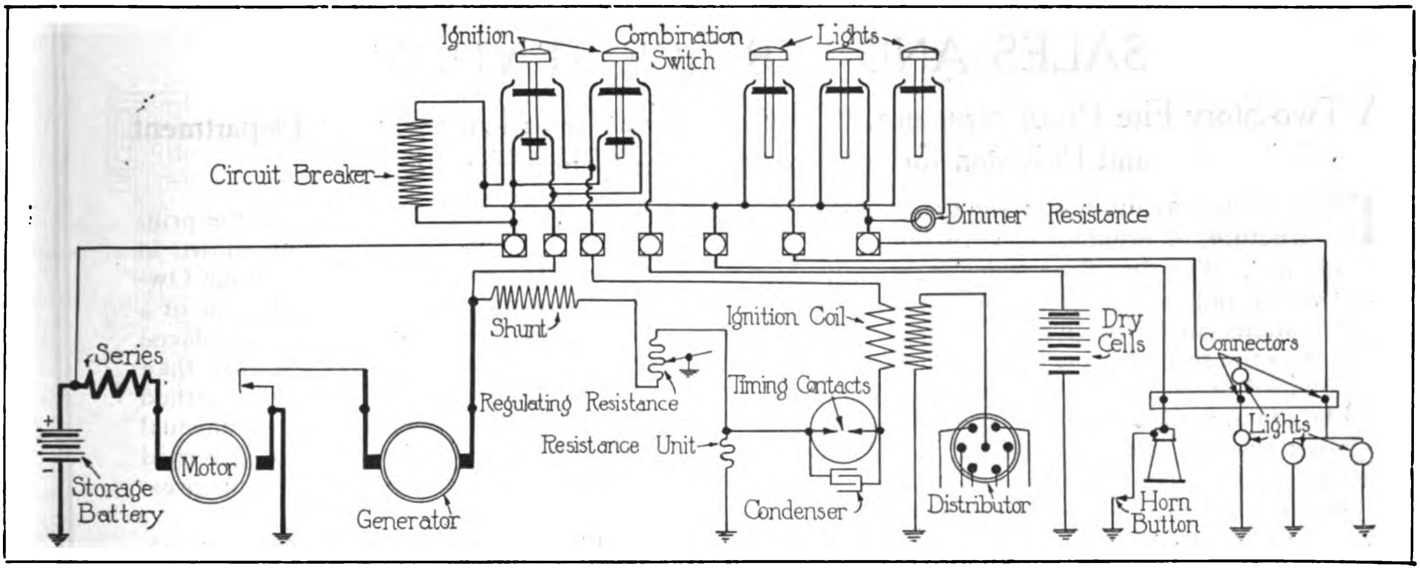
When you turn, give the man behind you a chance to get out of the way by warning him with your hand or arm, or if you have a closed car use a signal.

When you stop, let some one else besides yourself know about it. Do not stop in the middle of the road, a habit too many people have. This is a dangerous practise, especially if you do it suddenly. When you start from the curb, if you have your car parked on a down town street, take a look around and note if any one is coming. Do not swerve out and then curse if some one else nearly rams you.

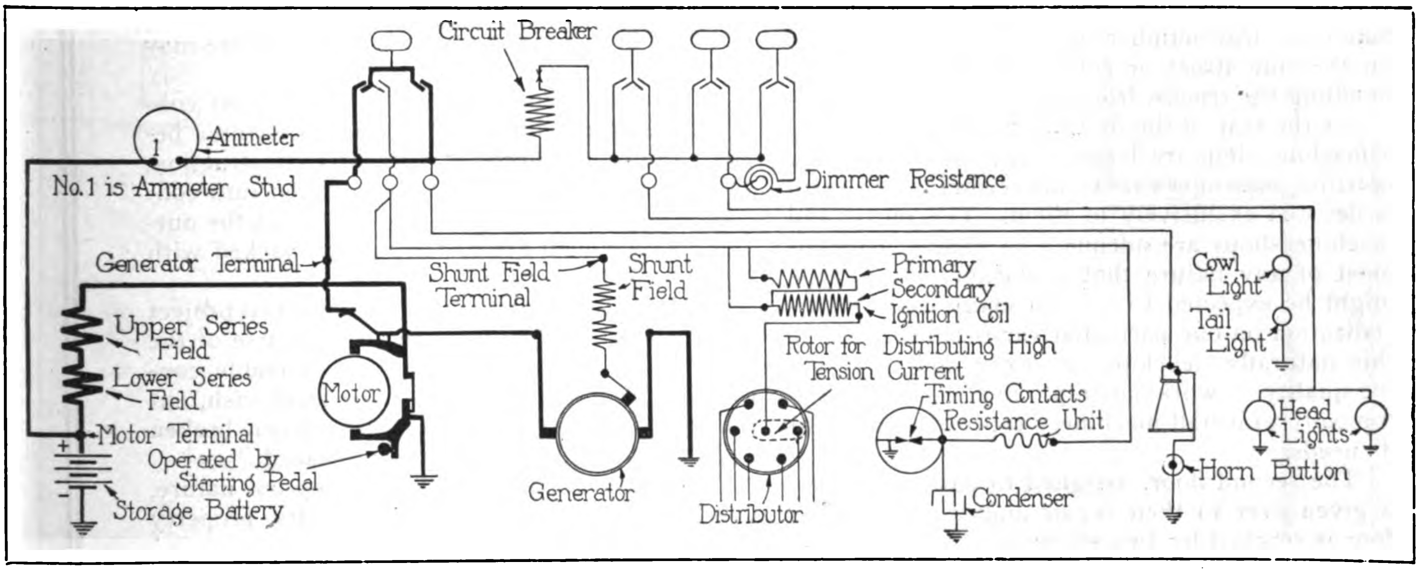
BRAKE RATCHETS.

The brake ratchets attached to the emergency brake levers are called upon for very strenuous service on some occasions and they sometimes break. It is a good plan to carry an extra ratchet in the tool box against this emergency.

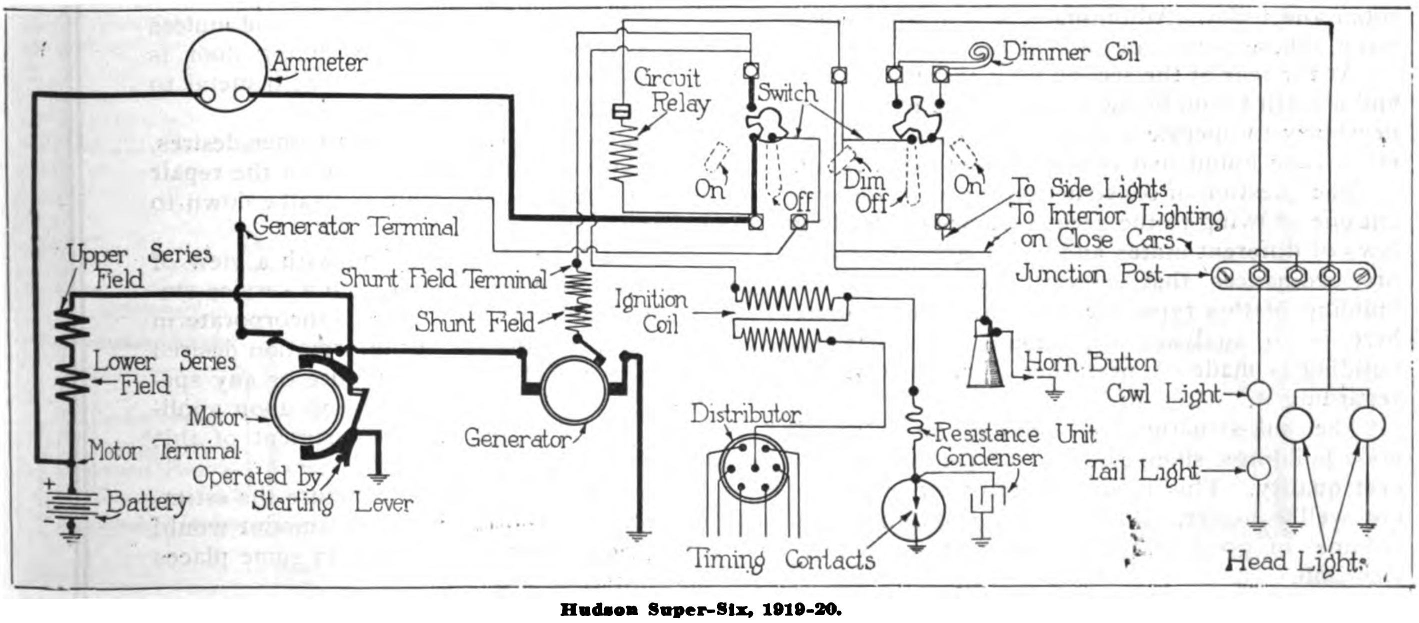
Monthly Wiring Diagram, No. 8


Ignition
Combination Switch
Lights
Circuit Breaker
Dimmer Resistance
Shunt
Series
Ignition Coil
Dry Cells
Connectors
Regulating Resistance
Timing Contacts
Lights
Resistance Unit
Motor
Storage Battery
Generator
Condenser
Distributor
Horn Button

Hudson 6-40, 1914-15-16.


Circuit Breaker
Ammeter
1
Dimmer Resistance
No. 1 is Ammeter Stud
Generator Terminal
Shunt Field Terminal
Shunt Field
Primary
Secondary
Ignition Coil
Cowl Light
Tail Light
Upper Series Field
Lower Series Field
Motor
Rotor for Distributing High Tension Current
Timing Contacts
Resistance Unit
Head Lights
Motor Terminal
Operated by Starting Pedal
Horn Button
Storage Battery
Generator
Distributor
Condenser

Hudson Super-Six, 1917-18.


Ammeter
Dimmer Coil
Circuit Relay
Switch
On
Off
Dim
Off
On
To Side Lights
To Interior Lighting on Close Cars
Generator Terminal
Junction Post
Upper Series Field
Shunt Field Terminal
Ignition Coil
Shunt Field
Horn Button
Lower Series Field
Cowl Light
Motor
Distributor
Generator
Resistance Unit
Condenser
Motor Terminal
Tail Light
Operated by Starting Lever
Battery
Timing Contacts
Head Lights

Hudson Super-Six, 1919-20.

PLATE XXXIV.

SALES AND SERVICE STATION

A Two-Story Fire Proof Structure, 60 by 120 Feet, with Large Truck Department and Provision for Storage and Work Shop Facilities.

THE accompanying design shows a two-story structure, of fireproof construction, size 60 by 120 feet. The first floor is for motor trucks, with repair and storage departments. This floor also contains an office, with staircase leading from it to the second floor. Opposite to the office and divided by an entrance from the main street will be found a space that can be used either for a show room or a sales room for automobile parts and accessories. In event it is used for a show room a large door should be provided to permit placing of cars into the space, as shown.

The storage and general repair department for the trucks take up two-thirds of the entire floor area, thus allowing the management to handle a large number of trucks. A large door on the side street or court adds to the ease in handling the trucks, from a storage standpoint.

At the rear of the first floor a repair shop and a machine shop are located, also an elevator for hoisting passenger cars to the second floor, which is devoted exclusively to them. The repair and machine shops are adequate to handle work almost of any nature that a station of this type might be expected to do. In many cases a specialization on one particular car is adhered to, as this naturally develops efficiency and increases the quality of workmanship. It also permits the company to install machinery especially suited to its needs.

The second floor, assigned to passenger cars, is given over to their repair and storage. This floor is reached by two staircases and one elevator for cars. In the front end, directly over the show room and office, will be found a women's room and toilet. Adjoining this is a large stock room, where parts can be kept on hand.

At the rear of the second floor there is a toilet and a wash room, being ample in size for a force necessary to operate a station of this size. Lockers will be found just outside of the wash room.

The question of construction is a very important one. Owing to the great variance of building laws of different states and cities, and numerous fire ordinances that govern the erection of a building of this type, the best that can be done here is to analyze in a general way what the building is made of, or rather what is proposed regarding it.

The sub-structure or foundation, as in all good buildings, should be of concrete of the very best quality. This being a detail that many do not well consider, allowing only about half the volume of good material necessary for a first class job.

A glance at the elevation shows one the principle of the foundation line, this being shown in a broken line effect, having a spread footing. Owing to excessive loads that arise in this type of a structure, and the amount of live load placed therein, something more rigid is required than under ordinary circumstances. The method shown insures against settlement of an unequal nature. The size of such a footing is governed by the load placed on it, and the bearing pressure of the soil on which it is built.

A mixture that will be found extremely satisfactory for mass concrete work under most any condition is one part Portland cement, three parts clean coarse sand and five parts crushed stone. For other conditions a 1-2-4 mixture may be used.

The floor construction is of reinforced concrete, also the columns, the standard formula being used in connection with this construction. City building laws must also be taken into consideration. All walls are of brick except the outside walls, which are of terra cotta, backed with brick.

The concrete foundation is allowed to project above the ground to form the base course of the building. This is finished off to resemble concrete stone. The windows have steel sash, cut into small panes so that windows when broken may be easily and economically replaced.

The general equipment, of a fireproof nature, complying with the laws of the city property board or the building inspector.

A large sliding door, automatically operated, leads from the side street, while the door in front is of the swinging type, made of wood unless otherwise demanded, while the sliding door is just a plain, simple door, covered with metal to make it fire resisting.

Heating is by steam, or as the owner desires. The boiler room is located underneath the repair shop, with stairs leading from the same down to the boiler room.

This sketch has been finished with a view of giving prospective builders of such a service station ideas that he might desire to incorporate in his structure, and any further information desired relative to the cost of this structure or any special feature will be gladly furnished upon application to the Architectural Department of this publication.

Regarding the cost of the structure the estimate is approximately $30,000. This amount would be sufficient in most cities, while in some places the cost might be less.

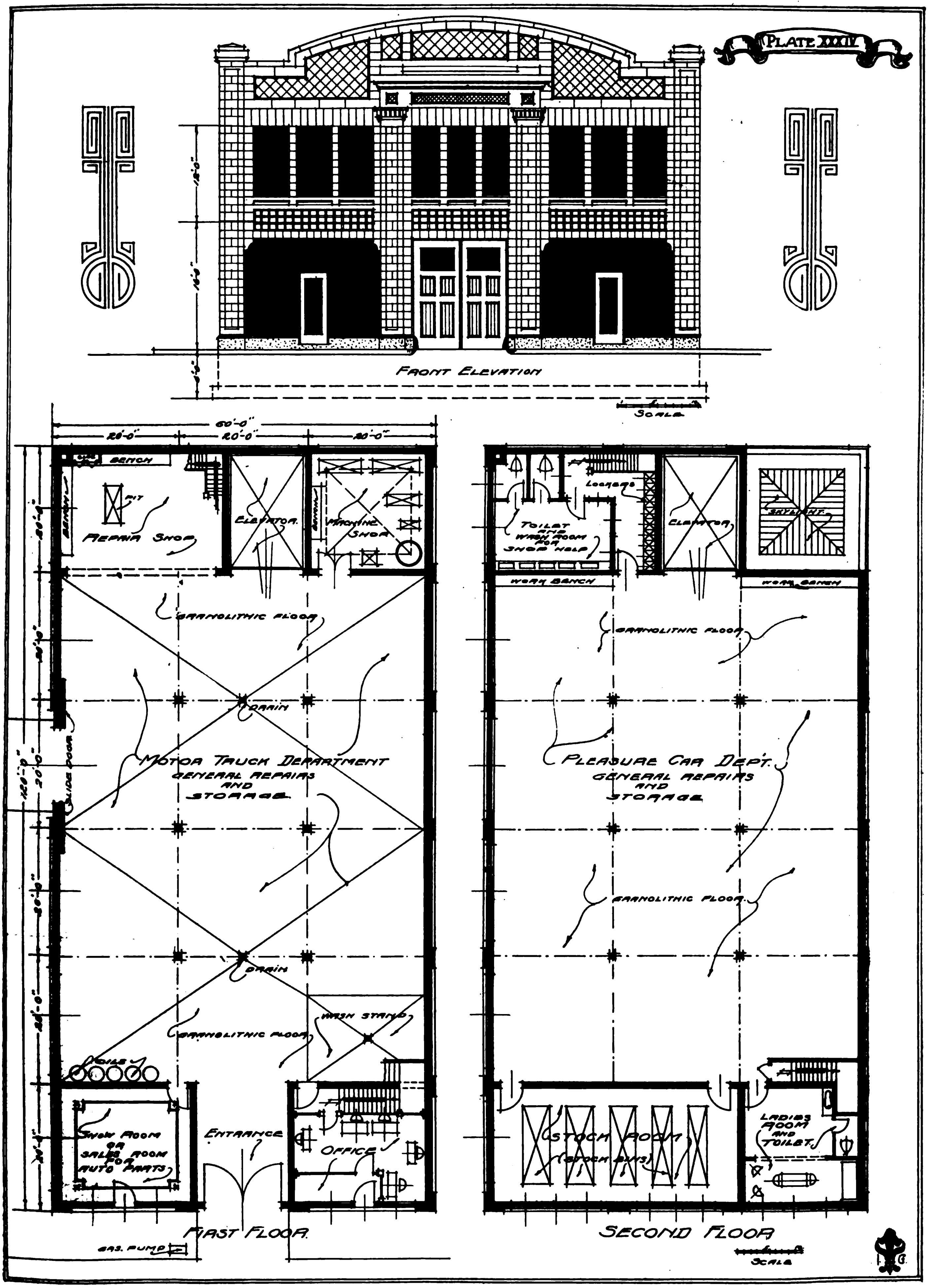


PLATE XXXIV
18'-0"
16'-0"
3'-0"
FRONT ELEVATION
SCALE
60'-0"
20'-0"
20'-0"
20'-0"
120'-0"
20'-0"
20'-0"
20'-0"
20'-0"
20'-0"
20'-0"
BENCH
BENCH
PIT
REPAIR SHOP
ELEVATOR
BENCH
MACHINE SHOP
GRANOLITHIC FLOOR
DRAIN
SLIDE DOOR
MOTOR TRUCK DEPARTMENT
GENERAL REPAIRS
AND
STORAGE
DRAIN
WASH STAND
GRANOLITHIC FLOOR
OILS
SHOW ROOM OR SALES ROOM FOR AUTO PARTS
ENTRANCE
OFFICE
GAS. PUMP
FIRST FLOOR
LOCKERS
TOILET AND WASH ROOM FOR SHOP HELP
ELEVATOR
SKYLIGHT
WORK BENCH
WORK BENCH
GRANOLITHIC FLOOR
PLEASURE CAR DEPT.
GENERAL REPAIRS
AND
STORAGE
GRANOLITHIC FLOOR
STOCK ROOM
(STOCK BINS)
LADIES ROOM AND TOILET.
SECOND FLOOR
SCALE

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN AUTOMOBILES, TRUCKS, TRACTORS, ETC.

Montgomery, Ala.; Packard Birmingham Motor Co.; $100,000.

Montgomery, Ala.; Southeastern Motor Co.; $100,000.

Bridgeport, Conn.; Liberty Auto & Electrical Co., to deal in automobiles; $50,000.

New Haven, Conn.; Alling & Rockwell Auto Sales Corporation.

Dover, Del.; All-American Motor Truck Co.; $6,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Meteor Motors Corporation; $5,000,000; S. B. Howard, Robert K. Thistle, A. Roy Myers, New York, N. Y.

Dover, Del.; Narmo Motor Corporation; $32,000,000; Samuel B. Howard, Robert K. Thistle, A. Roy Myers, New York, N. Y.

Dover, Del.; Scientific Auto Corporation; $3,000,000; M. M. Lucey, M. Butler, M. A. Davis, Wilmington.

Dover, Del.; United States Motor Car Co.; $32,000; A. J. Kingsbury, L. B. Phillips, D. D. Wharton.

Wilmington, Del.; Chyrsler Motor Co., dealing in automobiles; $50,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; Economy Motor Sales Co.; $375,000; Walter N. Reed, Letitia M. Reed, Dushane C. Potter.

Wilmington, Del.; Lafayette-Philadelphia Co., sale of automobiles, etc.; $150,000.

Wilmington, Del.; Porto Rico Blue Line. Inc., dealing in automobiles and to conduct a sight seeing and touring business; $100,000.

Indianapolis, Ind.; Monroe Motors Corporation, to deal in automobiles; $100,000; R. O. Malott, W. G. Todd, Floyd P. Ferguson.

Boston, Mass.; Bowman, J. M., Co., Inc., to deal in automobiles; $150,000; Thomas A. Mullen, Albert Garceau, Rogers Dow.

Cambridge, Mass.; Taylor Manufacturing Co., to deal in automobiles; $500,000; George A. Taylor, Harold G. Goepper, Allen J. Topholme.

Medford, Mass.; South Medford Garage, Inc., motor vehicles; $50,000; Edward G. Daly, Medford; Daniel L. Brown, Cambridge; Olive L. Sawyer, Foxboro.

Byron Center, Mich.; Holleman DeWeerd Auto Co.; $140,000; Peter Holleman, R. O. DeWeerd, Harry DeWeerd, J. H. Holleman.

Excelsior Springs, Mo.; Sam Fell Motor Co.; $5000.

Kansas City, Mo.; Bayless Motor Co., retail and wholesale automobile business; J. D. Bayless, W. J. Evans, Karl Fricke.

Kansas City, Mo.; Johnston Motor Co.; $5000; J. F. Goshern, attorney, Republic building.

St. Joseph, Mo.; Boyd Motors Co.; $10,000; Groves & Watkins, attorney.

St. Louis, Mo.; Banner Automobile Co.; $500,000; R. L. McLaran, attorney, Merchants-Laclede building.

St. Louis, Mo.; Biedermann Motor Car Co.; $50,000; Charles A. Newman, attorney, International Life building.

St. Louis, Mo.; Cole & Howell Automobile Co.; $2100; Judson, Green & Henry, attorney, Boatmen's Bank building.

St. Louis. Mo.; Reden Motor Sales Co.; $5000; Marion C. Early, attorney, Wainwright building.

St. Louis, Mo.; West Side Buick Auto Co.; $25,000; care of W. S. Roberts, Vesper-Buick Auto Co., Grand avenue and Lindell street.

Garfield. N. J.; Belmont Park Garage Co., 224 River road, general automobile and garage business; $100,000.

Newark, N. J.; Albey-Smith, Inc., 35 Marcy avenue, East Orange, to deal in automobiles and trucks; $100,000; Willard T. Albey, Frank K. Smith, Victor Frisbie.

Newark, N. J.; Marone Auto Bus Co., dealer; $25,000; G. F. Seymour, Jr., South Orange; S. D. Smith, Newark; Abraham Rudensky, Montclair.

Newark, N. J.; Nash Newark Co., to deal in trucks, etc.; W. J. Hilton, H. A. Black, J. R. Turner.

Newark, N. J.; Pecht & Armstrong, Inc., 209 Clinton avenue, general automobile and garage business; $125,000.

Pleasantville, N. J.; Ruopp & Steinhauser, Inc.; general automobile and garage business; $125,000.

Union, N. J.; Lawrence Motor Car Co.; $100,000; J. A. Lawrence, H. E. MacIlwain. West New York; A. O. Wittreich, West Hoboken.

Albany, N. Y.; Albany Scripps-Booth Co., automobile sales agency; $10,000; H. F. Callan, F. L. Carrington, T. Southworth.

Brooklyn, N. Y.; Big 3 Auto Service Co., automobile business; $5000; A. Horowitz, A. H. Kesterbaum, J. Levine, 217 Flatbush avenue.

Brooklyn, N. Y.; B. & P. Carburetor Co., Inc., automobile business; $100.000; Abram S. Bergen, 348 Jefferson avenue.

Brooklyn, N. Y.; Collins, E. J., Co., motor vehicles; $5000; E. J. Collins, W. H. Bechmer, H. J. Fogarty, 22 Onderdonk avenue.

Brooklyn, N. Y.; Elm Auto Co.; $7500; E. Haas, E. E. Mears, S. S. Levy, 1089 Prospect place.

Buffalo, N. Y.; Unit Parts Corporation, automobile business; $75,000; F. A. Kamrath, E. A. Egner, A. Dutcher.

Campbell, Steuben County, N. Y.; Wood & Harrison, farm products and automobiles; $10,000; W. P. and W. H. Wood, A. J. Harrison.

Corning, N. Y.; Tew Motor Sales & Service Co., automobiles; $50,000; R. M. and W. H. Tew, C. C. Wilcox, Woodhull, N. Y.

Glens Falls, N. Y.; Braydon & Chapman, to deal in automobiles; $50,000; R. J. Braydon, A. J. Braydon, F. B. Chapman.

Gloyersville, N. Y.; Wilmo Co., automobile business; $15,000; C. F. Moul. F. J. Ferguson, U. G. Patterson, Jr.

Jamaica, N. Y.; Barry Motor Sales Co.; $7500; M. Klinger, M. Cold, W. J. Barry, Far Rockaway.

Jamaica, N. Y.; Long Island Vehicle Corporation, to deal in automobiles; $25,000; F. and L. Kengster, G. J. Story, Hempstead.

Lockport, N. Y.; Eames Motor Corporation; $75,000; W. C. Newcomb, I. L. Fisk, D. D. Eames, Buffalo.

Newburgh, N. Y.; Johnson, Howard E., Sales Co., automobile business; $5000; H. E. Johnson, H. D. Chapin, C. M. Dillman, 692 Decatur street, Brooklyn.

New York, N. Y.; A. & H. Co., Manhattan borough; automobile agents; $10.000; T. F. Husa, V. B. Alling, R. H. Harding, 3d, 50 Church street.

New York, N. Y.; All Weather Top Corporation, Bronx borough, to deal in automobiles; $25,000; F. G. and J. Rettinger, P. H. Voyce, Mt. Vernon.

New York, N. Y.; Ambassador Garage, Manhattan borough, automobile business; $10,000; M. H. Eisenberg, P. W. Winters, E. Haas, 889 Fresh Pond road, Brooklyn.

New York, N. Y.; Arrigoni-Pfeiffer Motors, Bronx borough, to deal in automobile trucks; $50,000; E. Leindorf, A. Arrigoni, A. Pfeiffer. 152 East 92nd street.

New York, N. Y.; Automotive Securities Corporation, Manhattan borough, automobiles and securities; $10,000; A. J. Fulman, G. M. Levy, J. A. Behan, 302 Broadway.

New York. N. Y.; Hodes, Richter & Co., Manhattan borough, automobile business; $10,500; O. Vallaverda, E. A. Richter, R. M. Hodes. 1834 Broadway.

New York, N. Y.; Hollander Motors Corporation; $1,000,000; Samuel R. Howard, Robert K. Thistle, Harry C. Hand.

New York, N. Y.; Leindrof Motor Sales Co.; $100,000; Charles Warner, Edward M. Bernstein, Joseph E. Mantner.

New York, N. Y.; Mogenson, George, Inc., Manhattan borough, general commission merchant, manufacturers' hardware, stoves, automobiles, textiles, etc.; $100,000; T. F. Van Dorn, 325 West 97th street.

New York, N. Y.; Muller, Cowles & Schaefer, Manhattan borough, to deal in automobiles; $15,000; A. Muller, E. E. Cowles, A. G. Schaefer, 16 Union square.

New York, N. Y.; Progressive Motor Car Exchange, Manhattan borough; $5000; F. and P. and D. Schor, 1505 Eighth avenue.

Rochester, N. Y.; Packard Rochester Motors, automobiles; $200,000; H. E. Stowell, G. A. Fonda, O. E. Brown.

Rochester, N. Y.; United Motor Premiums, automobile business and profit sharing coupons; $50,000; D. H. Kuder, M. C. Merriman, O. F. Alaric.

Silver Creek, N. Y.; Blessing Motor Corporation, automobiles and parts; $50,000; R. H. MacGregor, E. M. Dale, L. H. Vogel, Buffalo.

Hickory, N. C.; Abernathy Motor Co., Inc.; $150,000.

Cleveland, O.; Dupont-Cleveland Motor Co.; $100,000; C. B. Bayly, M. C. Haugh.

Dayton, O.; New Morr Sales Co.; $10,000; A. F. House, E. W. Stelter.

Oklahoma City, Okla.; Bemis Oldsmobile Co.; $26,000; Harry V. Bemis, J. W. Taylor, George R. Tighe.

Purcell, Okla.; Slead Motor Co.; $25,000; Howard Roberts, K. Roberts, Oklahoma City.

Grafton, Pa.; Reynolds Motor Co.; $100,000; E. G. Welch, H. J. Hoban, Carnegie; W. E. Pfaller, Grafton.

Philadelphia, Pa.; Erie Avenue Auto Supply Co., to buy, sell and deal in automobiles and automobile supplies, equipment and accessories; Albert J. Blum, William J. Eastwood, Frederick Taylor. Welsh & Bluett, solicitor.

Philadelphia, Pa.; Pennsylvania Transportation Co., leasing, owning, buying, selling, running and operating automobile trucks and other vehicles to be used for the purpose of hauling and transporting merchandise; Lewis A. Rosenthal, Abraham Lipschitz, Harry J. Seidenberg. William M. Lewis, solicitor.

Philadelphia, Pa.; Wood Quality Motors Co.; $75,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

Charleston, S. C.; Midland Motor Co., Inc.; $200,000.

Alto, Tex.; Pearman Auto Co.; $7500; J. I. Perkins, Jr., E. J. Holcombe, J. H. Pearman.

Austin, Tex.; Standard Motor Sales Co.; $15,000; A. S. Philquist, president; Samuel Sparks, J. A. Belger, Jr.

Beaumont, Tex.; Lauderdale-Swain Motor Co.; $20,000; C. W. Lauderdale, G. W. Smith, R. W. Ford.

Center. Tex.; Smith Motor Co.; $50,000; T. T. Smith, president and general manager; W. I. Davis, vice president; W. I. Powell, secretary-treasurer; Frank Crawford.

Dallas, Tex.; Allard-Harper Auto Co., Inc.; $7000; R. B. Allard, E. T. Harper, H. S. Allard.

Dallas, Tex.; Arlington Sales Co.; $15,000; A. W. Vinton, J. H. Harrison, S. C. Chessman.

Dallas, Tex.; Packard Dallas Motor Co.; $200.000; A. D. Hudson, F. M. Abbott, P. P. Hudson.

Dallas, Tex.; Standard Automotive Co. of Texas, to deal in automobiles, parts and accessories; $50,000; M. P. Alexander, W. H. Allen, Clay Preston.

El Paso, Tex.; Franklin Motor Car Co.; $10,000; L. J. Trost, L. A. Whitaker, E. Sawyer.

Fort Worth, Tex.; Diamond T Truck Co.; $50,000; M. B. Harris, Temple Harris, J. D. Davis.

Fort Worth, Tex.; Overland Automobile Co. of Fort Worth; J. L. Stuckert, president and general manager; George F. Mulkey.

Fort Worth, Tex.; Twin-Six Motor Co.; $100,000.

Goose Creek, Tex.; Goose Creek Motor Co.; $5000; W. E. Bussey, C. A. Lillie, C. W. Smith.

Houston, Tex.; Jones Motor Co.; $50,000; Jesse H. Jones, M. Tilford Jones, C. G. Moffat.

Orange, Tex.; Frey Auto Co.; $28,000; William Gunstrom, president; L. A. Frey, vice president; G. E. Boseeman, secretary-treasurer.

Runge, Tex.; Runge Auto Co.; $25,000; Charles Cook, A. W. Swenson, D. I. Patterson.

Rusk, Tex.; Walker Motor Co.; $5000; W. R. Walker, T. H. Cobble, J. I. Perkins, Jr.

San Angelo, Tex.; Shepperson Automobile Co.; $25,000; J. G. Shepperson, L. C. Ferguson, Tom Cody.

San Antonio, Tex.; South Texas Willys Light Co.; $25,000; L. Ward, Jr., H. F. Shaper, H. A. Kelton.

Olympia, Wash.; Olympian Motors Co.; $1500; R. M. Shaver, E. T. Keene, J. A. Wakefield.

Puyallup, Wash.; Valley Auto Corporation, Inc.; $12,000; A. S. Read, L. C. House, A. C. Brown.

Milwaukee, Wis.; Milwaukee Oakland Co., to deal in automobiles; $50,000.

Waukesha, Wis.; Waukesha Motors Co.; $1,000,000.

MANUFACTURERS OF CARS, TRUCKS, TRACTORS, ETC.

Los Angeles, Cal.; Victor Garden & Orchard Tractor Co.; $250,000.

Dover, Del.; Reynolds Motor Co., Inc., manufacturer and sale of automobiles: $200,000.

Wimington, Del.; American Motor Body Co., manufacture of automobiles, etc.; $25,000,000.

Wilmington, Del.; Gibson Lens Co., Inc., manufacture of motor vehicles, lenses, devices, etc.; $750,000.

Wilmington, Del.; Globe Motors manufacture and sale of automobiles, etc.; $15,000,000.

Wilmington, Del.; Guaranteed Service Corporation, manufacture of automobiles, etc.; $8,100,000.

Wilmington, Del.; Morgan Manufacturing Corporation, manufacture and sale of automobiles, etc.; $3,000,000.

Wilmington, Del.; People's Filling Station Co., manufacture of automobiles, etc.; $500,000.

Wilmington, Del.; Protexometer Manufacturing Co., manufacture of trucks, automobiles, etc.; $1,000,000.

Wilmington, Del.; Rowe Motor Manufacturing Co., manufacture of automobiles, etc.; $500,000.

Wilmington, Del.; Wills, C. H. & Co., manufacture and sale of motor vehicles, etc.; $40,000,000.

East Orange, N. J.; Protecto Battery Filler Co., 3 South Walnut street, to manufacture, buy and sell automobiles and parts; $600,000; Louis M. Sanders, Louis M. Sander, Jr., Mrs. H. L. Lund.

Buffalo, N. Y.; Saturn Motor Co., to make automobiles; $100,000; M. C. Emsinger, M. L. Woodford, E. E. Finck.

New Rochelle, N. Y.; Neeham Motor Co., to make motors, automobiles and air planes; $10,000; J. A. Farrell, G. L. Sill, B. F. F. Needham.

MANUFACTURERS OF PARTS, EQUIPMENT, ETC.

San Francisco, Cal.; U Want Tire & Rubber Co.; $250,000.

Denver, Col.; Steam Bag Corporation, 1545-1547 Broadway, to manufacture a vulcanizer for rubber, especially rubber tires; $150,000; E. W. Ohls, president and treasurer; C. F. Miller, vice president and general manager; W. L. Heining, secretary; T. E. Stephenson, assistant secretary; M. A. Johnson, service and factory manager.

Dover, Del.; American Motor Body Co.; $25,000,000; M. L. Rogers, L. A. Irwin, W. G. Singer, Wilmington.

Dover, Del.; Crandall Lock & Auto Hardware Corporation; $250,000; Emery P. Crandall, Harry K. Hickey, Washington, D. C.; John Dickson, New York, N. Y.

Dover, Del.; Crude Oil Carburetor Co. of America; $6,000,000; T. L. Croteau, S. E. Dill, A. M. Hooven, Wilmington.

Dover, Del.; Dividend Auto Rim Co.; $1,000,000; William F. O'Keefe, George G. Steigler, E. E. Aberle, Wilmington.

Dover, Del.; Dual Auto Visor Shield Co.; $50,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

Dover, Del.; Kelly Tire & Rubber Corporation; $5,000,000; M. L. Rogers, L. A. Irwin, W. G. Singer, Wilmington.

Dover, Del.; Libby Auto Accessories; $150,000; D. K. Einfurer, E. Seidman, Brooklyn, N. Y.; G. E. Montgomery, Forest Hills, N. Y.

Dover, Del.; Meteor Motors Corporation, to manufacture and sell various kinds of motors, engines, machines, etc.; $5,000,000.

Dover, Del.; Service Spring Co.; $750,000; C. H. Blaske, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Universal Body Co. of Wilmington; $150,000; W. Ingraham, Homer R. Soenee, A. Robert Elmer, Washington.

Wilmington, Del.; American Auto Axle Corporation, to manufacture axles of all kinds; $10,000,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; American Compressed Air Motor Co.; $100,000; M. M. Lucey, M. A. Davis, V. P. Lacey.

Wilmington, Del.; Dorman Governor Co., Inc.; to manufacture governors and parts for automobiles; $1,250,000.

Wilmington, Del.; Odeal Tire & Rubber Corporation, to manufacture tires, tubes, casings, etc., for automobiles; $50,000,000; C. H. Blaske, M. A. Bruce, S. E. Dill.

Wilmington, Del.; Imperial Caster Co., casters for heavy trucks, autombiles, etc.; $100,000; T. L. Croteau, M. A. Bruce, A. M. Hooven.

Wilmington, Del.; Jellicose Covered Tire Corporation; $1,500,000; M. M. Lucey, M. Butler, M. A. Davis.

Wilmington, Del.; Leindrof Motor Sales Corporation, to manufacture motors, etc.; $100,000.

Wilmington, Del.; Lion Motor Corporation, to manufacture motors, engines, etc.; $1,000,000; Charles Warner, Joseph E Mautner, Ed. N. Bernstein, New York, N. Y.

Wilmington, Del.; Pioneer Tire & Rubber Co., Inc.; $2,000,000; M. L. Rogers, T. A. Irwin, W. G. Singer.

Wilmington, Del.; Simplex Gear Shift Corporation; $300,000; M. L. Rogers, L. A. Irwin, W. G. Singer.

Atlanta, Ga.; Atlanta Auto Top & Trimming Co., Inc.; $150,000.

Lafayette, Ind.; Automobile & Truck Steering Gear Co.; $100.000: Elmer Ruegemer, Forrest W. Jackson, Clarence Ruegemer.

Lexington, Ky.; Mercury Body Co., Inc.; automobile bodies; $100,000.

Boston, Mass.; Stahle Felx-Hub Wheel Co., wheels and tires for motor vehicles; $100,000; William K. Beardsley, Joseph F. Moloney, Boston; Patrick J. Fitzpatrick, Revere.

Springfield, Mass.; B-M-W Body Co., automobile bodies and motors; $50,000; George A. Morin, Watertown; Charles H. Bailey, Frank T. Walsh, Springfield.

Joplin, Mo.; Joplin Auto Puller Co.; $100,000; J. D. Wolverton, attorney.

Kansas City, Mo.; Acme Auto Radiator & Sheet Metal Co.; $3000; Glen E. Whitlaw, American Bank building.

Kansas City, Mo.; Bliss Non-Skid Manufacturing Co.; $300,000; G. A. Stultz attorney, 415 Republic building.

Kansas City, Mo.; Campbell Engineering Corporation, 3803 Woodland street manufacturing molds for storage batteries, battery parts and battery service station equipment; E. W. Campbell, president; M. W. Ramsey, secretary-treasurer.

Kansas City, Mo.; Quality Electrical Products Co., 907 East 15th street; Butler J. Haskins, Carl Studna, Reuben Finkelstein.

Kansas City, Mo.; Superior Tube Co.; $300,000.

St. Louis, Mo.; Long, E. F., Auto Parts Manufacturing Co.; $400,000; Barker & Britton, Boatmen's Bank building.

Camden, N. J.; American Strombos Co., Inc., 501 Market street, manufacturing railroad and automobile supplies, safety apparatus, etc.; $125,000.

Elizabeth, N. J.; Quality Tire Co., automobile tires, etc.; $50,000; J. J. Cooley, Elizabeth; Edward Feename, Trenton; L. M. Ettinger, Newark.

Newark, N. J.; Asher Machinery Corporation, manufacturing machines, motors, etc.; $125,000.

Newark, N. J.; Strain & Gentile Co., manufacturing motor devices; $125,000.

Albany, N. Y.; M. and S. Radiator Co., automobile, tractor and aeroplane radiators; $5000; G. E. and A. N. Sperry.

Binghamton, N. Y.; Kaplan-Gregory Battery Co.; $15,000; E. Kaplan, J. B. and W. F. Gregory.

Brooklyn, N. Y.; American Coil Corporation, to make automobiles and accessories; $10,000; F. M. and J. Greenhut, 107 Taylor street.

Brooklyn, N. Y.; Curran Detroit Motor Radiator Co. of New York; $10,000; J. W. and Z. L. Stevens, W. Buchanan, 1577 Atlantic avenue.

Brooklyn, N. Y.; Guaranteed Tire Filler Corporation; $50,000; J. and M. Stander, A. M. Chamow, 1092 President street.

Brooklyn, N. Y.; Maurer, O., Co., to make motors and air ships; $50,000; P. W. Wolf, O. Maurer, E. Scroedler, 306 Tompkins avenue.

Brooklyn, N. Y.; Mead Rubber Co., manufacturing tires and general rubber business; $100,000; John F. Mead.

Brooklyn, N Y.; No Air Auto Tire Co.; $100,000; I. Trautman, G. S. and C. P. Carlucci, 239 Union street.

Buffalo, N. Y.; Buffalo Artcraft Top Co., to make automobile tops; $50,000; C. P. and F. C. Scott, E. H. Verden.

Buffalo, N. Y.; Bush Auto Tool Co.; $100,000; J. W. Wolf, E. J. Barth, C. J. Bush.

Buffalo, N. Y.; F. and W. Tire Distributing Co., Inc., manufacturing automobile tires and equipment; $100,000; Albertus D. Ferrell.

Buffalo, N. Y.; Hydro-Speedway Tire Corporation; $25,000; W. Stahlka, A. Burkard, H. Seitz.

Buffalo, N. Y.; Unit Parts Corporation; $75,000; F. A. Kamrath, E. A. Egner, A. Dutcher.

Jamestown, N. Y.; Atlantic Convertible Auto Body Corporation; $50,000; F. C. Cosgrove, J. T. Morrison, J. D. Curtiss.

Long Island City, N. Y.; Metropolitan Body Co. of New York-Connecticut, automobile bodies; $50,000; P. Murray, representative.

Newburgh, N. Y.; F. and D. Automobile Specialty Corporation; $10,000; H. Fatt, A. Droutman, J. Hoffman.

New York, N. Y.; American Motor Body Corporation; $20,000,000; merger of Hale & Kilburn Corporation, Philadelphia, Pa., and Wadsworth Motor Body Co., Detroit, Mich.; Edward G. Budd, president.

New York, N. Y.; A. R. Corporation, Manhattan borough, to make motors, machinery and scientific instruments; $10,000; C. W. Clowe, S. M. Cohen, M. Young, 76 West 92nd street.

New York, N. Y.; Atlantic Patents & Trading Corporation, Manhattan borough, to make air planes and motors; $10,000; M. Elkin, C. L. Kahn, R. Vogel, 1451 Broadway.

New York, N. Y.; Beck-Hill Corporation, Manhattan borough, manufacturing railway cars, truck frames, iron and steel castings; $350,000; Peter P. Beck, Bogota, N. J.

New York, N. Y.; Bell Safety Bumper Co., Manhattan borough, automobile accessories; $10,000; K. Katz, D. Weinberg, D. Robson, 263 East Seventh street.

New York, N. Y.; Gaillard Automobile Control Corporation, Manhattan borough, to manufacture speed controlling apparatus for automobiles, air planes, etc.; $1,000,000; M. Gaillard.

New York, N. Y.; Hook Fast Products, Manhattan borough, automotive accessories and leather goods; $100,000; A. M. Malone, H. S. Dube, A. M. Lorraine, 10 West 61st street.

New York, N. Y.; K. W. Battery Co. of Illinois; $10,000; G. J. Lederer, 37 Wall street, representative.

New York, N. Y.; Motor Truck Radiator & Manufacturing Co., Manhattan borough; $55,000; D. Dew. Wever, G. W. Geiling, T. D. Hartigan, 2 Wall street.

New York, N. Y.; Robe Rail Sales Corporation, Manhattan borough, to manufacture safety robe rails, motor accessories, etc.; $300,000; M. Robinson.

New York, N. Y.; Zaun, H. C., Tire & Rubber Co., Inc., Manhattan borough, automobile tire manufacturing business; $100,000; Harry C. Zaun, Queens borough.

Oneonta, N. Y.; Traver-Blair Co., Inc., manufacturing motors, machinery, wagons, boats, automobiles, etc.; $100,000; W. J. Blair, B. A. and A. Traver, 318 West 25th street, Manhattan borough.

Syracuse, N. Y.; Syracuse Sales Corporation, to make lubricants; $30,000; O. F. Simmons, S. J. Sayers, O. N. Iloff.

Oklahoma, Okla.; American Auto-Lock Co.; $25,000; J. H. Hill, Oklahoma City; J. S. Inlow and G. C. LaBrant, Tulsa.

Philadelphia, Pa.; Featherweight Tire Filler Co.; $100,000; Joseph L. Zackey, Walter Carroll, George H. Hill.

Pittsburgh, Pa.; Runkel Automatic Gear Shift Corporation; $500,000; Louis Gehmanne, Jr., Charles B. Prichard, George Wasser.

Amarillo, Tex.; Panhandle Tire & Rubber Co.; $40,000; A. E. Cullen, T. V. Reeves, L. A. Crews.

Dallas, Tex.; Southwestern Batery Co.; $20,000; Albert Kramer, Max Rothman, F. Vonderhoya.

Dallas, Tex.; Universal Body Co.; $50,000; R. R. Jackson, R. W. Jackson, F. H. Crow.

San Antonio, Tex.; South Texas Willys-Knight Co.; $25,000; L. Ward, Jr., H. F. Shaper, H. A. Kelton.

GARAGES, REPAIR SHOPS AND SERVICE STATIONS.

Pine Bluff, Ark.; Boyce-West Garage, 316-320 West Second avenue; D. W. Boyce, Jr., C. W. West.

Long Beach, Cal.; White Garage, Inc.; $100,000.

Boston, Mass.; Munson Garage Co.; $50,000; William L. Shearer, William L. Shearer, Jr., Edwin N. Ray.

Kansas City, Mo.; C. E. Battery & Service Co.; $5000; McCune, Caldwell & Downing, Scarritt building.

St. Louis, Mo.; Delmar-Academy Garage & Sales Co.; $2000; Frank C. O'Malley, attorney, 819 Merchants'-Laclede building.

St. Louis, Mo.; Pyramid Motor Parts Corporation, to manufacture machined steel parts and the grinding of automobile cylinder blocks and the fitting of pistons thereto; also heat treating of metal; George S. Rogers, George L. Jack, J. F. Culver.

Garfield, N. J.; Belmont Park Garage Co.; $100,000; Joseph Bolcar, Passaic; Joseph Bolcar, Sr., Garfield.

Newark, N. J.; Smith's Garage; $10,000; Hyman Smith, Florence Smith, Edward Citron.

Newark, N. J.; Waverley Garage; $50,000; B. Schnitzer, Anna Schnitzer, Harris Levine.

Albany, N. Y.; Webel Automobile Corporation, to conduct garages; $25,000; F. C. Schede, B. W. and B. K. Webel.

Ardsley, N. Y.; Lind Brothers Garage; $15,000; C. A. and J. E. and O. W. Lind, 423 East 26th street.

Brooklyn, N. Y.; Bay Service Garage; $10,000; M. Gordon, I. S. and W. Sherman, 49 Malta street.

Brooklyn, N. Y.; Avenue M Garage & Repair Co.; $40,000; L. and P. Montalbine, S. J. Turner, 1317 East 174th street.

Brooklyn, N. Y.; D-B Garages; $75,000; Abraham Dunbrow, Samuel Dunbrow, L. Susman.

Brooklyn, N. Y.; Fulton Bridge Garage; $10,000; S. and J. Berenson, S. L. Zuckerman, 923 Simpson street.

Brooklyn, N. Y.; Hillhurst Garage; $35,000; H. T. Phillips, S. Sunetare, H. C. Nilssen, 516 West 125th street, Manhattan borough.

Brooklyn, N. Y.; Schorr & Segal Garage; $5000; M. and A. Segal, D. Schorr, 155 Ross street.

Buffalo, N. Y.; Carlton Sales Garage; $10,000; H. H. and G. L. Schumacher, O. L. Levee.

New York, N. Y.; Alhambra Automobile Station, Manhattan borough, garage and repair shop; $20,000; P. and F. and A. Payer, 691 East 138th street.

New York, N. Y.; Apreco, Manhattan borough, garage; $250,000; A. C. Thomas, A. M. Jacobs, M. V. Knoedler, 2 Rector street.

New York, N. Y.; Chatham Garage, Bronx borough; $20,000; J. Schwartz, G. A. Ostergren, L. J. Murray, 203 Rutledge street.

New York, N. Y.; Community Garage; $20,000; S. Tarter, M. Cohen, B. Nelson, 225 Audubon avenue.

New York, N. Y.; Freed-Tar Garage, Manhattan borough; $10,000; S. and B. Tartero, J. Freed, 522 East 159th street.

New York, N. Y.; Ideal Radiator Cap Co., Manhattan borough, machine shop; $75,000; C. F. Taylor, A. Bangerter, L. Gutheil, 759 Home street, Bronx borough.

New York, N. Y.; Lafayette Garage, Manhattan; $5000; W. E. Malone, F. W. Thompson, Jr., J. Halpin, 452 West 49th street.

New York, N. Y.; S. and F. Garage Corporation, Bronx borough; $5000; M. and B. Schantz, P. Feffer, 170 Suffolk street, Manhattan borough.

New York, N. Y.; South and Front Streets Garage, Manhattan borough; $25,000; J. and T. Semon, H. Melasky, 31 West 114th street.

New York, N. Y.; Titian Garage, Bronx borough; $17,000; A. E. Hurwitch, A. D. Barton, H. Dryer, 1961 Madison avenue.

New York, N. Y.; Zamm Commercial Garage Corporation, Manhattan borough; $27,500; J. C. Zemmenich, S. Lester, I. Lefkowitz, 250 East 67th street.

Red Hook, N. Y.; Triebel's Garage & Machine Shop; $5000; W. J. House, G. M. and W. F. Triebel.

Schenectady, N. Y.; Johnston-Tongue Motor Corporation, general garage business; $10,000; R. B. and M. W. Johnston, W. N. Tongue.

Cleveland, O.; Auto Service Garage & Sales Co.; $75,000; S. H. Bobinchak, G. R. Bobinchak.

Miamiburg, O.; Miamiburg's Vulcanizing Co.; $5000; J. E. Kohl, R. L. Eminger.

Tulsa, Okla.; Midco Super-Service Supply & Garage Co.; $30,000; J. M. McDonald, E. S. Richardson, Otto D. Bierhaus.

Dallas, Tex.; Dallas Garage Men's association; R. W. Kemp, C. E. Swalwell, R. L. Williams.

Henderson, Tex.; Fred Cover Co., Inc., to operate garages and repair automobiles; $25,000; Fred Cover, C. L. Incy, W. Z. Reed.

San Antonio, Tex.; Citadel Battery & Garage Co.; $6000; A. S. Graham, Bessie Mae Graham, W. C. Church.

Sinton, Tex.; Farmers' Motor Sales Co., maintaining and operating garages and for the sale of automobiles and trucks; $35,000; C. C. Williams, Prescott Williams, general manager; J. W. Benson.

ACCESSORY AND EQUIPMENT DEALERS.

Dover, Del.; International Tire Stores Corporation; $50,000,000; T. L. Croteau, M. A. Bruce, A. M. Hooven, Wilmington.

Wilmington, Del.; Union Auto Supplies Co.; $1,000,000; William F. O'Keefe, George G. Steigler, E. E. Aberle.

Arkansas City, Kan.; Hickaday Auto Supply Co.; $10,000.

Chanute, Kan.; Blackwood Auto Supply Co.; $25,000; Sief Nelson, E. L. Blackwood, C. D. Blackwood.

Wichita, Kan.; Central Tire & Equipment Co., Sedgwick county; $30,000.

Kansas City, Mo.; Hockaday Auto Supply Co., $3000. Wash Adams, attorney, Grand avenue temple.

St. Joseph, Mo.; Boyd Motors Co., Inc., to deal in automobile parts; $10,000; Vernon C. Boyd, Julia E. Boyd, N. Althous.

St. Louis, Mo.; Olive Auto & Body Co., care of I. Archshoefer, real estate, 203 New Lucas building; $2000.

Springfield, Mo.; Link-McCluer Motor Supply Co., to deal in automobile and truck supplies; $10,000; Rufus M. McCluer, president; Linder W. Link, secretary and treasurer.

Springfield, Mo.; Queen City Automotive Corporation; $25,000. A. B. Lovan, attorney, Court house.

Newark, N. J.; Essential Auto Supply Co., autombile accesories, etc.; $50,000; Kent Bender, Arthur Schlabohm, W. E. Turton.

Brooklyn, N. Y.; Fischer, A. and H. Auto Supply Co.; $10,000; A. and H. Fischer, M. Kohner, 271 47th street.

Buffalo, N. Y.; F. and W. Tire Distributing Co.; $100,000; A. D. Ferrell, L. F. Werlein, T. R. Terry.

Long Island City, N. Y.; Akron-Overland Tire Co. of Delaware; B. Ruskay, representative.

New York, N. Y.; National Motor Service association, Manhattan borough; automobile accessories; $10,000; F. A. Guarino, A. Trautman, C. J. Jacoby, 24 Patchen avenue, Brooklyn.

New York, N. Y.; Rafferty, J. J. Co., Manhattan borough, to deal in automotive equipment; $15,000; I. Markson, A. Fromkin, B. Wisselman, 200 Fifth avenue.

New York, N. Y.; Rubber Supplies Co. of Dayton, Manhattan borough, tires, etc.; $10,000; J. A. McMillan, C. E. and P. M. Hooven, 117 West 46th street.

New York, N. Y.; Young's Rubber Corporation; $100,000; S. A. Foot, A. R. Chisholm, H. A. Youngs.

Akron, O.; Nozama Rubber Sales Co.; $10,000; W. Bacon, C. Moore.

Cincinnati, O.; Cincinnati Motors & Rubber Co.; $50,000; S. D. Spritz, W. S. Evatt, E. B. Memel, H. H. Dell, H. B. Getelson.

Youngstown, O.; Citizens' Tire Co.; $25,000; O. E. Mehl, R. B. Wilson, R. W. Hedland, W. C. Wilhelm, E. Wilhelm.

Okmulge, Okla.; Sooner Battery & Electric Co.; $10,000; Bert C. Campbell, Lee W. Cotter, Owen J. Hannigan.

Dallas, Tex.; India Tire Co. of Kansas City, Mo.; $100,000. G. T. Townsberry, agent.

El Paso, Tex.; United Motor Supply Co., 420 Texas street, garage accessory and tire business; George Lopez.

Fort Worth, Tex.; Amalgamated Tire Stores Corporation of Texas; $100,000; W. M. Massie, J. C. Muer, B. B. Stone.

Fort Worth, Tex.; Lone Star Tire & Gasoline Service; $21,000; J. W. Milner, W. C. Blanchette, J. G. Blanchette.

Kaufman, Tex.; Direct Tire Co., to do a tire and tube business; James Hatch, E. M. Jenkins, M. D. Stewart.

Sherman, Tex.; Leaman Brothers Automotive Co.; $10,000; D. W. Gulich, W. S. Leaman, R. G. Leaman.

Temple, Tex.; Temple Tire & Top Co.; $8000; A. E. Leonard, G. H. Wayland, W. J. Schluenz.

MISCELLANEOUS.

Dover, Del.; Motor Car Abstract Co., Inc.; $5,500,000; Walter B. Kenton, Brooklyn, N. Y.; Andrew J. E. Wald, White Plains, N. Y.; Oscar Pierce, Montclair, N. J.

Dover, Del.; United Transportation Corporation of America, to operate automobiles, etc., for hauling, etc.; $450,000.

Wilmington, Del.; Motor Finance Corporation, dealing in stocks, bonds, etc.; $11,000,000.

Wilmington, Del.; Scientific Auto Corporation; $3,000,000; M. M. Lucey, M. Butler, M. A. Davis.

Jacksonville, Fla.; American Motors Export Co.; $5,000,000.

St. Louis, Mo.; International Automobile association; $3000. Heneghan, Jones & Kemp, attorney, National Bank of Commerce building.

Bloomfield, N. J.; Alex's Taxi Service, Inc.; $10,000; A. R. Roszkowski, A. M. Robinson, E. P. Robinson.

Newark, N. J.; Lovett Transportation & Motor Co., Inc., motor transportation business; $100,000.

New Brunswick, N. J.; Bray Bus Line. to operate a bus line; $100,000; W. J. Banker, Jr., John Banker, L. Banker.

Newark, N. J.; Marone Auto Bus Co.; $25,000; Abraham Rudensky, S. D. Smith, G. F. Seymour, Jr.

Albany, N. Y.; Sterling Motor Terminal & Transport Corporation; $300,000; H. A. Van Ostenbrugge, H. J. Curtis, J. O. Watson.

Brooklyn, N. Y.; Empire Motor Freight Corporation; $5000; J. E. Richardson, F. C. Blanchard, H. O. Dobson, 375 Carlton avenue.

Brooklyn, N. Y.; Pacific Trucking Co.; $5000; N. Decastanba, De M. Sebastino.

New York, N. Y.; Diehl, William, Aircraft Corporation, Manhattan borough; $5000; E. H. Taussig, S. Harris, W. Diehl. Jr., 13 Crosby street.

New York, N. Y.; Gaillard Automobile Control Corporation, Manhattan borough; $1,000,000; J. H. O'Connell, R. Fina, M. Gaillard, Hotel Seville.

New York, N. Y.; Queens Boxing Corporation. Queens borough, to crate automobiles. tractors, etc.; $5000; J. Kleinhenz, W. E. Vanzuse, W. C. Huber, 463 Academy street, Brooklyn.

New York, N. Y.; Trans-Marine Motor Corporation, Manhattan borough, motors, automobiles, boats, yachts, etc.; $100,000; O. Sperling.

New York, N. Y.; Turbigas Motors Corporation, Manhattan borough, inventions in internal combustion engines; $5000; M. Cooper, R. R. Reynolds, A. Moehringer, 8 Marcy avenue, Brooklyn.

Cleveland. O.; Automobile Inspection & Adjustment Co.; $15,000; A. Goldman, C. P. Gordon.

Philadelphia, Pa.; Motor Machine Transportation Co.; $100,000; John E. Dorar, A. V. Gillingham, Franklin M. Crispen.

Philadelphia, Pa.; Trenton & Philadelphia Motor Service, Inc.; $10,000; Richard S. Tweed, Asher W. Baker, Edwin Booth.

Wilkes-Barre, Pa.; Motors Finance Corporation; $250,000; R. E. Bedwell, C. B. Outen, S. L. Mackey, Wilmington, Del.

Houston, Tex.; Texas Motor Finance Co.; $50,000; R. B. Means, W. C. Gaines, J. K. Woolf.

CAPITAL INCREASES.

Little Rock, Ark.; Universal Motor Co., from $50,000 to $100,000.

Rockford, Ill.; Fay Motor Bus Co., $25,000 to $200,000.

Connersville, Ind.; United States Automotive Corporation, $30,000,000 to $40,000,000.

Fort Wayne, Ind.; Climber Motor Corporation, $1,000,000 to $3,000,000.

Sullivan, Ind.; Mutual Truck Co.; $500,000 to $5,000,000.

Albany, N. Y.; Albany Motors. $25,000 to $100,000.

Brooklyn, N. Y.; Smith, Al, Trucking Co., $5000 to $25,000.

Buffalo. N. Y.; Cole Motor Co., $10,000 to $250,000.

Buffalo, N. Y.; Powarton Tire Corporation, $750,000 to $1,200,000.

Buffalo, N. Y.; Prospect Tire & Rubber Co., $500,000 to $1,000,000.

New York. N. Y.; American Bosch Magneto Co., $12,300,000 to $12,380,000.

New York, N. Y.; Auto Ordnance Corporation, $100,000 to $200,000.

New York, N. Y.; City Tire Co., Manhattan borough, $5000 to $25,000.

New York, N. Y.; General Lead Batteries Co., $800,000 to $2,000,000.

New York, N. Y.; G. M. S. Motor Sales Co., $2000 to $100,000.

New York. N. Y.; Mutual Auto Service Association of North America, $100,000 to $200,000.

New York. N. Y.; Noma Motor Corporation, Manhattan borough, $100,000 to $280,000.

New York. N. Y.; Pyramid Motor Equipment Co., Manhattan borough, $15,000 to $50,000.

New York, N. Y.; Traffic Motor Truck Corporation, Manhattan borough, $1,000,000 to $2,000,000.

Cleveland, O.; Erie Tire & Rubber Co., $4,000,000 to $10,000,000.

Lima, O.; Gramm-Bernstein Motor Truck Co., $1,000,000 to $5,000,000.

Pittsburgh, Pa.; American Tractor Harvester Co., $500,000 to $1,000,000.

Galveston, Tex.; Automobile Finance Co., $100,000 to $250,000.

Giddings, Tex.; Collier Motor Co., $5000 to $25,000.

NAME CHANGES.

Wilmington, Del.; All American Motor Truck Co. to All American Truck Co.

Salina, Kan.; Hudkins-Badders Motor Co. to Hudkins Motor Co.; capital increased to $250,000.

Ottawa, Kan.; Overland-Bailey Motor Co. to Ottawa-Willys Light Co.

New York, N. Y.; Fifty-Seventh Street Garage to West 57th Street Garage, Manhattan borough.

Newton Falls, O.; Akron Maderite Tire & Rubber Co. to Trumbull Tire & Rubber Co.

Philadelphia, Pa.; Morgan Manufacturing Co. to Chester Body Corporation.

Pittsburgh, Pa.; Supreme Motors Corporation to Supreme Auto Motive Corporation; capital increased from $2,000,000 to $4,000,000.

Windell, Pa.; Windell Commercial Aeroplane Co. to Pennsylvania Aeroplane Co.

Houston. Tex.; South Texas Truck Co. to Jones Motor Co.; capital increased from $25,000 to $50,000.

Lufkin, Tex.; Murray Motor Co. to Lufkin Motor Co.

RECORD OF BUILDING OPERATIONS FOR SEPTEMBER

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Bridgeport, Conn.; Schwartz Brothers, 95 River street; one-story public brick garage, 48x84; $30,000.

Hartford, Conn.; Domenico D'Amigo, 503 Albany avenue; two-story brick public garage, 80x80, at 24 Morgan street; $50,000.

Hartford, Conn.; Drogat & Toubaman; three-story brick public garage, 95x95, at 295-297 Windsor avenue; $50,000.

Washington, D. C.; Lambert Hudson Motors Co.; three-story service station. 130x130.

Washington, D. C.; Malakatis, M. H., 224 Massachusetts avenue; two-story reinforced concrete garage, 48x81.

Washington, D. C.; Ralph, Elizabeth M., care of H. S. Hatton Corporation, 1213 Randolph street; one-story garage, 40x75.

Summerville, Ga.; Espy Allen Motor Co.; one-story fireproof garage, 80x120; install garage equipment, rectifier and electric motor; $20,000.

Chicago, Ill.; Braucher, E. N., 3614 North Kedzie avenue; one-story brick and stone garage, 50x125; $25,000.

Chicago, Ill.; Busehell, P. H., 346 South Sangamon street; one-story private garage, 42x124; $12,000.

Chicago, Ill.; Czapski, John, 917 West 31st street; one-story garage and repair shop at 901-903 West 31st street; $14,000.

Chicago, Ill.; Hallgren, A., 7018 Parry avenue; one-story public garage and repair shop; $35,000.

Chicago. Ill.; Harvey A., 3314 North Karlov avenue; one-story brick garage.

Chicago, Ill.; Hauck, F. A., 4782 Keystone avenue; one-story brick garage.

Chicago, Ill.; Hill, F. A., 5638 West Lake street; one-story sales room and service station at 702 West Madison street; $20,000.

Chicago, Ill.; Hoffman, Fred, Custer and Orchard streets; two-story brick garage and repair shop at 2110-2112 Orchard street.

Chicago, Ill.; Hunt, P. J., 4161 Berkeley avenue; one-story brick garage.

Chicago, Ill.; Jennings, W. G., 7216 South Jeffery avenue; one-story brick garage.

Chicago, Ill.; Johnson, Walter J., 5946 West Chicago avenue; one-story brick garage.

Chicago, Ill.; Kelly, N., 1247 Arthur avenue; one-story brick garage.

Chicago, Ill.; Kroft, Jacob, 5127 North Lincoln street; one-story brick garage.

Chicago, Ill.; Latiug, S., 2950 North Richmond street; one-story concrete garage.

Chicago, Ill.; Leom, Paul, 3529 West Adams street; one-story brick garage.

Chicago, Ill.; Magnetic Motor Corporation, 2521 Calumet avenue; one-story garage and service station at 35th and Rhodes avenue.

Chicago, Ill.; Marino, James, 5202 Montrose avenue; one-story brick garage.

Chicago, Ill.; Martoccio, G., 852 Montrose avenue; one-story brick garage.

Chicago, Ill.; Mercile, Benonine, Oak Park, Ill.; three-story garage, 2300 West Addison street; $75,000.

Chicago, Ill.; Meyer, George, 531 Deming place; one-story brick garage.

Chicago. Ill.; Mortensen, Peter, 6212 Rhodes avenue; one-story brick garage.

Chicago. Ill.; Neville, P. J., 9020 Houston avenue; one-story brick garage.

Chicago. Ill.; Nielson, N., 841 Montrose avenue; one-story brick garage.

Chicago, Ill.; Olson, H., 2055 Irving Park boulevard; one-story public garage at 3614 North Kedzie avenue; $25,000.

Chicago, Ill.; Pearson, E., 1428 Thorndale avenue; one-story brick garage.

Chicago, Ill.; Reader, Adam, 1928 South Springfield avenue; one-story brick garage.

Chicago, Ill.; Reynolds, L. E., 741 North Lotus avenue; one-story concrete garage.

Chicago, Ill.; Richelsen, C., 7514 Langley avenue; one-story brick garage.

Chicago, Ill.; Rodd, F. O., 1027 Montana street; one-story brick garage.

Chicago, Ill.; Rosenberg, A., 1832 South Hamlin avenue; one-story brick garage.

Chicago, Ill.; Schultman, M., 3552 Flournoy street; one-story brick garage.

Chicago, Ill.; Simmec, L., 2348 Blue Island avenue; one-story concrete garage.

Chicago, Ill.; Spatt, C., 3600 Addison street; one-story brick garage.

Chicago, Ill.; Starke, Mrs. A., 746 Belden avenue; one-story brick garage.

Chicago, Ill.; Trilling, H., 1856 South Kedzie avenue; one-story brick garage.

Chicago, Ill.; Wolff, G. H. & Son, 2023 West Lawndale avenue; one-story brick and cut stone public garage, 58x80; $10,000.

Chicago, Ill.; Zaksas, George, 634 West 35th street; one-story cement garage.

Freeport, Ill.; Maurer, W. J., 27 Stephenson avenue; one-story brick garage and repair shop, 50x100; $20,000.

Galesburg, Ill.; Monmouth-Galesburg Construction Co.; four-story fireproof garage and storage station, 66x132, at 210 North Cherry street.

Galesburg, Ill.; Ogle, J., National Bank building; four-story brick and reinforced concrete garage and storage station, 160x114; $100,000.

Harvard, Ill.; Manley Motor Co.; one-story brick garage and sales room, 68x113.

Hoopeston, Ill.; McFerren, William; one-story brick and concrete public garage, 75x150.

Moline, Ill.; Ainsworth, C.; two-story brick garage, 64x120; $40,000.

Oregon, Ill.; Bemis Motor Co.; one-story brick and concrete garage and repair shop, 80x122; $20,000.

Pekin, Ill.; Standard Oil Co.; one-story garage and service station, Court and Second streets.

Peoria, Ill.; Swanson, T. A., 713 Bigelow street; one-story concrete garage.

Rockford, Ill.; Seidler, George, 1708 Cumberland street; one-story brick garage.

Springfield, Ill.; Pickering, J. L., 1105 South Fourth street; one-story brick garage.

Wilmette, Ill.; Nelson, David, 811 Elmwood avenue; one-story garage and sales room at Davis and Oak streets; $30,000.

Indianapolis, Ind.; Robery, D. H., 3224 West Washington street; one-story brick and frame public garage, 78x120, at 2424 West Washington street; $14,000.

Indianapolis, Ind.; Steinhart, E. W., Co.; brick and steel fireproof automobile building at 1102 North Meridian street; $60,000.

Valparaiso, Ind.; Winslow, Aaron; one-story garage and repair shop, South Lafayette street.

Davenport, Ia.; Koester, G. A., Jr., 741 Perry street; three-story brick garage and sales room, 64x150; $150,000.

Dewitt, Ia.; Anderson, J. W.; one-story garage and repair shop.

Maquoketa, Ia.; Bauch, Charles; one-story garage, accessory store and repair shop, North Main street.

Abbyville, Kan ; Hipp, R. C.; one-story garage and repair shop.

Belle Plaine, Kan.; Nessley, Harry; one story garage, 50x140; $10,000.

Dodge City, Kan.; Hockaday, F. W., Wichita, Kan.; one-story garage and repair shop.

Liberal, Kan.; Liberal Auto Co.; one-story brick and stone garage, 70x140; $40,000.

Randolph, Kan.; Miller, J. P.; one-story garage and repair shop.

Zurah, Kan.; Hedberg, Fred; one-story garage and repair shop.

Covington, Ky.; Gallatte, E., 2208 Greenup street; one-story cement block garage.

Covington, Ky.; Michels, J. H., 48 Parkway avenue; one-story steel-clad garage.

Covington, Ky.; Otto, S. T., Highway and Parkway avenues; one-story steel-clad garage.

Frankfort, Ky.; Vatter Oltkey Motor Co.; three-story brick commercial garage, 51x112; $60,000.

Louisville, Ky.; Wells, Prince, 718 Fourth street; two-story garage and service station at Third and Broadway; $75,000.

Madisonvile, Ky.; Lunsford, W. A.; one-story garage and repair shop, West Center street. Lessee, Martin Auto Co.

Newport, Ky.; Vonderhaar, George, 810 Linden avenue; one-story metal garage.

Baltimore, Md.; Blaustein, Louis; two-story garage, 57x120; $30,000.

Baltimore, Md.; Callis, George R., Jr., 611 American building; one-story wood and stucco gasoline service station, 97x46; Spanish tile roofing, concrete floors, steam heat; at Frederick and Pratt streets; $25,000.

Baltimore, Md.; Carter, Millard F., Edmonson and Melvin avenue; one-story public garage; $10,000.

Boston, Mass.; Simons & Weiner; one-story brick and concrete garage, 150x180, at Dorchester avenue and Faulkner street; $100,000.

Dorchester, Mass.; Byrne Realty Co., 435 Geneva avenue; one-story brick public garage, 93x164; $50,000.

Everett, Mass.; Antico, Liberati, 27 Bell Rock street; one-story garge, 63x67, at 371 Main street; $10,000.

Everett, Mass.; McGonagle, Daniel, 24 Mystic street; one-story concrete public garage, 90x200, at Bow and Lynde streets; $55,000.

Northbridge, Mass.; McDonald Brothers; one-story concrete public garage; $10,000.

Worcester, Mass.; Shapiro, D., 320 Green street; one-story brick garage.

Battle Creek, Mich.; Cushman Auto Sales Co.; two-story garage, 128x132; $200,000.

Detroit, Mich.; City of Detroit, department of motor transportation; two-story commercial garage at 24th and Jefferson avenue; $600,000.

Detroit, Mich.; Detroit Motor Bus Co., 664 West Fort street; one-story brick garage and repair shop at East Jefferson and Clairpointe avenue.

Detroit, Mich.; Fort Shelby Garage; four-story public garage, 150x150; $300,000.

Detroit, Mich.; Knoblock, Frank, care of Joseph Giviszdowski, 901 Russell avenue; one-story garage and accessory shop at St. Aubin and Superior streets.

Detroit, Mich.; Union Cooperative Baking Co., 1060 Chene street; one-story brick garage, 30x75, at Hendrie and Granby streets; $10,000.

Millington, Mich.; Evans, D. E.; one-story brick garage, 66x115; $40,000.

Port Huron, Mich.; Hartshorn & Son; one-story brick, tile and stucco garage and sales room, 60x120; $60,000.

Mankato, Minn.; Perrin-Overland Co.; three-story brick and reinforced concrete public garage, 88x147.

Minneapolis, Minn.; Goldman, Morris, 1719 Plymouth avenue; one-story concrete block garage.

Kansas City, Mo.; Lester & Barrell, 1612 Benton boulevard; one-story brick and stone trim garage, 115x100.

Kansas City, Mo.; Lilly Motor Co.; one-story garage and service station at Maple and Independence avenues.

St. Louis, Mo.; Hart, Luke, E., La Salle building; one-story automobile building, 50x125.

Camden, N. J.; Lackey, B. Howell, 509 Federal street; two or four-story garage and service station, 60x135.

East Orange, N. J.; Rekoor, Isidor, 61 Monmouth street, Newark, N. J.; one-story public garage at North 14th street and Hedden place; $50,000.

East Orange, N. J.; Straniero, Frank, 773 South 20th street, Newark, N. J.; one-story brick and limestone public garage at 993 South Orange avenue; $25,000.

Kearny, N. J.; Weill, Edward L., 340 Kearny avenue; one-story brick public garage at 336-338 Kearny avenue; $12,000.

Newark, N. J.; Katchen & Cohen, 201 Norfolk street; one-story public garage; $15,000.

Newark, N. J.; McAllister-Canton Corporation, 1001 Broad street; two-story brick garage and service station; $100,000.

Newark, N. J.; Rasnich, Edel, 180 Howard street; one-story brick public garage; $18,000.

Ridgewood, N. J.; Norman Holding Co.; one-story brick garage; $80,000.

Trenton, N. J.; Casenesa Dairy Co., 234 North Broad street; two-story brick garage, 40x50; $15,000.

Brooklyn, N. Y.; Brausch, A., 301 East 16th street; one-story reinforced concrete garge; $45,000.

Brooklyn, N. Y.; Brownsville Assets Corporation; one-story brick garage at 150 Crescent street; $50,000.

Brooklyn, N. Y.; Church, W., Realty Co., 44 Court street; one-story brick garage; $40,000.

Brooklyn, N. Y.; Dockseller, John, 279 Weirfield stret; one-story brick garage at Jamaica avenue and Chestnut street; $25,000.

Brooklyn, N. Y.; Interboro Structural Iron & Steel Co., 1620 Union street; one-story brick garage and show room at Crown and Bedford avenue; $60,000.

Brooklyn, N. Y.; Kalman Construction Co., 1729 Pitkin avenue; one-story brick garage at Avenue J and West streets; $30,000.

Brooklyn, N. Y.; Karahow, Louis, 248 Union avenue; one-story brick garage at 8-10 Jackson street; $12,000.

Brooklyn, N. Y.; Katz, Charne, 392 Bushwick avenue; one-story brick garage at Montrose avenue and Leonard street; $20,000.

Brooklyn, N. Y.; Logan Garage, 773 Howard street; one-story brick garage; $45,000.

Brooklyn, N. Y.; Martin, Robel E., 1352 Atlantic avenue; one-story brick garage; $12,000.

Brooklyn, N. Y.; Montelbine, Pompey, 1611 Cedar court; one-story brick garage; $15,000.

Brooklyn, N. Y.; O'Brien, S. L., 179 Montague street; one-story brick garage at 23rd and Avenue R; $10,000.

Brooklyn, N. Y.; Rabinowitz, Jacob, 263 Amboy street; one-story brick garage; $30,000.

Brooklyn, N. Y.; Randex Realty Corporation, 34 Nassau street, New York; one-story brick garage at Empire boulevard and Rogers avenue; $35,000.

Brooklyn, N. Y.; Schinbe, Louis, estate of, 385 McDonough street; one-story brick garage; $40,000.

Brooklyn, N. Y.; Schkelnick, Joseph, 37 Van Buren street; one-story brick garage, Moore and White streets; $60,000.

Brooklyn, N. Y.; Shamrock Towing Co., 667 West 50th street; two-story brick garage at 661-665 West 50th street; $25,000.

Brooklyn, N. Y.; Simonelli, Grescence, 28 Conselyea street; one-story brick garage at Lombardt street and Morgan avenue; $25,000.

Brooklyn, N. Y.; Skiaberg Realty Co., 133 Floyd street; one-story brick garage at Pulaski street and Nostrand avenue; $35,000.

Brooklyn, N. Y.; Steigman, Phillip, 690 Broadway; two-story brick garage at Whitlock avenue and Barrett street; $60,000.

Brooklyn, N. Y.; Sullivan, John H., 570 Hamilton avenue; one-story brick garage; $50,000.

Brooklyn, N. Y.; Thrift Home Providing Corporation, 1416 Lincoln place; one-story garage; $80,000.

Brooklyn, N. Y.; Waller, Harney, 320 Rutledge street; one-story brick garage; $15,000.

Brooklyn, N. Y.; Webster Building Co., 390 Saratoga avenue; one-story brick garage at 509 Warren street; $30,000.

Brooklyn, N. Y.; Weiner, Barnet, 496 Hopkinson avenue; one-story brick garage; $25,000.

Brooklyn, N. Y.; Wood, William H., 860 St. Mark's avenue; one-story brick garage at Herkimer and Van Siderin avenue; $35,000.

Long Island City, L. I., N. Y.; Fitzpatrick, Edward W., 244 Jackson avenue; one-story brick garage; $30,000.

New York, N. Y.; Alsheimer, Michael, Queens borough; one-story brick garage at Jericho turnpike and Rocky Hill road; $18,000.

New York, N. Y.; Dunnellen Construction Co., 263 West 23rd street; one-story brick garage at 662-672 11th avenue; $25,000.

New York, N. Y.; Hagedorn, William, 1896 First avenue; one-story brick garage at 860 First avenue; $30,000.

New York, N. Y.; Klein, Harry, 425 West 54th street; one-story brick and terra cotta public garage at 544 West 55th street; $40,000.

New York, N. Y.; Miller, Maurice, 935 Intervale avenue; one-story brick garage at northwest corner Park avenue and 184th street; $60,000.

New York, N. Y.; Ryan, Michael J., 4259 Broadway; one-story brick garage at 401 West 218th street and 300 West 219th street; $50,000.

New York, N. Y.; Ziane, O., 505 Water street; one-story brick garage at 685-691 Lenox avenue; $25,000.

Syracuse, N. Y.; Burnett & Webb, care of Sterling Tire Corporation; three-story brick garage and sales room, 200x165, at East Genesee, Almond and Cedar streets; $200,000.

Syracuse, N. Y.; Rosenbloom, Simon, 300 Madison street; one-story brick and concrete garage, 45x100x25, at 306 Madison street; $10,000.

Yonkers, N. Y.; Ludlow Garage Co., 290 Riverdale avenue; one-story brick garage at 288 Riverdale avenue; $50,000.

Yonkers, N. Y.; Romaine, J., 299 Madison avenue, New York; two-story brick and stone trim garage, southwest corner Broadway and Harriet street; $40,000.

Cincinnati, O.; Reuter, Fred E., 2938 Eggers place; one-story brick garage.

Columbus, O.; Cole Motor Sales Co., 630 North High street; two-story brick, reinforced concrete and limestone trim garage and sales room, 48x200; $125,000.

East Cleveland, O.; Shields Building, 1753 Doan avenue; one-story brick garage, 100x200, at Euclid and Superior avenues; $15,000.

Lakewood, O.; Lakewood Auto Sales Co., 17,600 Detroit avenue; one-story brick public garage, 60x200, at 17,518 Detroit avenue; $15,000.

Lorain, O.; Smith Motor Co., Fifth and Broadway; two-story brick garage, sales room and service station, 100x120; $100,000.

New Lebanon, O.; Weaver, N. H.; one-story reinforced concrete public garage, 47x145; concrete floor; $20,000.

Toledo, O.; Hammond Building Co.; one-story garage and repair shop; $31,000.

Troy, O.; Hemm Brothers, Piqua, O.; one-story brick and concrete garage, 90x125; $20,000.

Bartlesville, Okla.; Indian Territory Oil Co.; one-story brick and stone trim building, 108x140; $65,000.

Chambersburg, Pa.; Slagenhaup, Harry D.; two-story reinforced concrete public, 97x178.

Hamburg, Pa.; Renschler, Robert; two-story public brick garage, 60x150; $73,000.

Lancaster, Pa.; Wheatland Auto Co.; four-story garage, 40x110, at Chestnut and Christian streets; $75,000.

Lewistown, Pa.; Keystone Motor Co.; two-story garage, 180x200; $100,000.

McKeesport, Pa.; Butler, John W., 900 Market street; three-story brick and reinforced concrete garage, 70x120, at Seventh and Walnut streets; $60,000.

Pittsburgh, Pa.; McCurdy, Robert P., Co., 5445 Fifth avenue; two and four-story garage and sales room, 60x120, at Millvale and Baum boulevard.

Scranton, Pa.; Buckworth Brothers, Coal Exchange building; one-story brick public garage, 30x90; $15,000.

Scranton, Pa.; Reisman, L., Miller building; two-story public garage, 80x200; $150,000.

Somerset, Pa.; Adams, Roy; one-story hollow tile public garage, 100x200

Tamaqua, Pa.; Mealy & Good Co.; two-story garage and machine shop, 112x110.

Wilke-Barre, Pa.; MacGalland, Mrs., Hotel Sterling; one-story brick public garage, 45x100.

Wilkes-Barre, Pa.; Roberts, W. H., 399 North Washington street; one-story brick public garage, 50x98.

Bristol, Tenn.; Reynolds, H. W.; one-story brick garage, 60x192.

Morristown, Tenn.; Tyler, James; one-story cement block garage and service station, 40x60; $10,000.

Dallas, Tex.; Dallas Railway Co.; one-story garage and storage station; $232,000.

San Antonio, Tex.; Citadel Battery & Garage Co., 222 East Travis street; three-story brick and reinforced concrete garage, 118x200; install vulcanizing equipment and storage battery plant.

Waco, Tex.; Bacon-Williams Co.; one-story garage and filling station; $10,000.

Alexander, Va.; Remschell Auto Sales Co., 121 North Fairfax street; one-story brick and concrete public garage; $60,000.

Cape Charles, Va.; Fitzhugh, F. C.; one-story garage, 125x78.

Kingwood, W. Va.; Craig, C. W. two-story brick and concrete garage; $35,000.

Wheeling, W. Va.; Beltz, J. W. & Sons Co.; two-story brick garage, 150x75; $10,000.

Milwaukee, Wis.; Packard Motor Car 35th and Grand avenue; one-story brick and concrete garage, and repair shop 80x150; $30,000.

Tomahawk, Wis.; Tomahawk Motor Co.; one-story brick and concrete garage and sales room, 50x142; $15,000.

CONTRACTS AWARDED.

Pine Bluff, Ark.; Boyce, E. G.; one-story garage for C. K. Caruthers and A. H. Rowell; $15,000.

Hartford, Conn.; Delaney & Ryan, care of James Ryan, 77 Greenfield street; one-story public garage, 50x25; $30,000.

Meriden, Conn.; Lines, H. Wales, Co., 134 State street; one-story public garage for Claude Collington, 81 Crown street; $50,000.

Atlanta, Ga.; George, W. H.; one-story reinforced concrete garage for John W. Grant; $60,000.

Macon, Ga.; Page, J. E., Motor Co.; one-story garage; $17,000.

Aurora, Ill.; Doan, Israel & Son, 413 South Lincoln avenue; one and two-story garage, 40x50, for Leo F. Wentzel, Walnut and River streets; $20,000.

Chicago, Ill.; Boyes, M. F., 4020 Crystal street; one-story brick garage.

Chicago, Ill.; Breliant, A., 9438 Cottage Grove avenue; one-story garage, 50x108, at 6629 Cottage Grove avenue; $16,000.

Chicago, Ill.; Brogan, Steven, 6548 Drexel avenue; one-story brick garage.

Chicago, Ill.; Brule, Dr. J. H., 423-425 North Drake avenue; two one-story frame garages.

Chicago, Ill.; Calnes, W. N., 4417 North Racine avenue; one-story concrete garage.

Chicago, Ill.; Cozzo, Samuel, 655 North Tolman avenue; one-story brick garage.

Chicago, Ill.; Deleiden, Mary E., 6522 Bosworth avenue; one-story brick garage.

Chicago, Ill.; Dudzmski, John, 1079 Frank street; one-story brick garage.

Chicago, Ill.; Duzolte, Phil, 656 North Trumbull avenue; one-story brick garage.

Chicago, Ill.; Freeman, A. L., care of I. Marks, 848 North Madison street; one and two-story garage, 88x115, at 29 North May street; $50,000.

Chicago, Ill.; Hallgren, A., 7018 Perry avenue; one-story public garage, 50x161, at 5631-5633 South State street; $35,000.

Chicago, Ill.; Hockmuth, Richard, 1930 Orchard street; two-story garage, 28x48, at 2110 Orchard stret; for F. Hoffman, Orchard and Custer streets; $12,000.

Chicago, Ill.; Kadeschewitz & Buchel, 1539 South Homan avenue; one-story garage, 88x115, at 23x29 North May street, for O. Klean, 111 West Washington street; $50,000.

Chicago, Ill.; McAdams, E. J., 6351 North Paulina street; one-story brick garage.

Chicago, Ill.; Root, T. P., 4655 North Clark street; one-story brick garage.

Evanston, Ill.; Severin, N. P., 105 North Clark street, Chicago; two-story public garage and sales room, 51x119, at Davis and Oak streets, for David Nelson, 811 Elmwood avenue, Wilmette, Ill.; $30,000.

Jacksonville, Ill.; Chumley, S. G.; one-story garage and service station, 60x180, at South Main and Menvaisterre streets, for S. W. Babb; $20,000.

Bluffton, Ind.; Sanders, Charles, Portland, Ind.; one-story brick garage, 60x100, for O. E. Shafer, 510 South Morgan street; $25,000.

Terre Haute, Ind.; Smith, Fred, Terre Haute building; eight-story garage and sales room at 954 Ohio street.

Davenport, Ia.; Horst, H. W., Co., 712 Brunder building, Milwaukee, Wis.; three-story filling, storage and service station, 64x150, for Davenport Refining Co.

Covington, Ky.; Culbertson, R. E., 909 Scott street; one-story garage, 66x48x16, at 2602 Madison avenue, for William B. Floyd; $17,000.

Biddeford, Me.; Johnson, J. M., 25 Maple street, Saco, Me.; one-story public garage and sales room, 112x58, for Cleaves & Sawyer, Saco; $20,000.

Baltimore, Md.; Consolidated Engineering Co., 243 Calvert building; one-story garage, 57x120, at 609x613 Fremont avenue, for Louis Blaustein, 2312 Callow avenue; $30,000.

Baltimore, Md.; Constable, B., Co., 2 West Lafayette avenue; three-story garage, 36x132, at 2026-2032 Blair avenue, for W. E. Thoms; $15,000.

Baltimore, Md.; Wells, C. K., 2919 Guilford avenue; one-story garage, 46x198, for Joseph H. Sneeringer; $10,000.

Baltimore, Md.; Wilson Nash Motors Co., 134 West Mount Royal avenue; one-story garage and show room, 120x150, at Maryland avenue and Oliver street; $150,000.

Hagerstown, Md.; Angle, W. H., Arcade building; two-story show room for H. E. Baker, 20 West Antietam street; $10,000.

Pocomoke, Md.; McIver Construction Co., 1802 Whitmer avenue, Baltimore; one-story garage, 60x120, for J. Milton Cloggs; $50,000.

Boston, Mass.; Broderick, J. H., 101 Tremont street; one-story public garage, 70x90, at Dorchester and Second street; $20,000.

Holyoke, Mass.; Kennedy, P. J., Co., Inc., 460 Mopbesst street; one-story public garage, 30x400, at 72 Center street, for Napoleon N. Robert; $10,000.

Holyoke, Mass.; Ranger, Casper, Construction Co.; two-story public garage, 116x150, at Northampton and Shawmut streets, for Russell W. Magna, 2 Division street; $100,000.

New Bedford, Mass.; General Construction Co., 5 Central Bank building; one-story public garage, 80x112, for J. D. Martin, 238 Maxfield street; $30,000.

Peabody, Mass.; Porter, E. H., Co.; one-story garage, 70x70, for A. C. Lawrence Leather Co.; $60,000.

Detroit, Mich.; Cummins, C. R., 203 Lincoln building; one and two-story garage, 60x120, at Monica road and Glendale avenue, for C. P. Steinheiser Co.; $30,000.

Detroit, Mich.; De Lisle & Cooper, 402 Ford building; four-story garage, 98x196, at Edmund and Watson streets, for C. E. Smith Co.; $50,000.

Grand Rapids, Mich.; Horner, F. A., 422 Widcomb building; one-story garage, for Arctic Ice Cream Co., 79 Market street; $15,000.

Quitman, Miss.; Dunn & Green, Bude, Miss.; one-story concrete garage, 90x130, for John S. Dobbs.

Kansas City, Mo.; Pratt-Thompson Construction Co., Republic building; three-story garage, 114x142, at 10th and Wyandotte streets, for 10th Street Garage & Sales Co.

Kansas City, Mo.; Rice, R. P., Motor Sales Co., 3823 Broadway; three-story terra cotta and glass front sales room, 122x60.

Kansas City, Mo.; Stiver, Harvey, 402 Skukert building; two-story sales room, 49x115, for D. G. Robertson, Marshall, Mo.

Kansas City, Mo.; Weaver, W. B., 304 Commerce building; one-story sales room, 60x130 and 40x50, at Independence and Maple boulevards, for Lilley Motor Co.; $30,000.

St. Louis, Mo.; Kellerman Construction Co., Victoria building; one-story brick garage, 150x150, for Columbia Taxi Cab Co., 4539 Delmar boulevard.

Omaha, Neb.; Chambers & O'Neill, 21st and Leavenworth avenue; one-story garage, 66x132, at 1307-1311 Harney street, for R. H. Harris, 1813 Harney street; $20,000.

Omaha, Neb.; Selden Breck Construction Co., 537 Keeline building; eight-story garage, 279x292, for Public Garage, 310 Baird block; $2,000,000.

Haddonfield, N. J.; Day, L. P., one-story garage and service station, 50x100, for Joseph F. Wallworth; $30,000.

Brooklyn, N. Y.; Grossman, Samuel, 309 Lefferts avenue; one-story brick garage; $10,000.

Brooklyn, N. Y.; Henry, William F., 816 Flatbush avenue; one-story garage for Adam Schumann, 365 48th street; $30,000.

Brooklyn, N. Y.; S. & P. Garage Corporation, 2084 Pacific street; one-story brick garage; $150,000.

Buffalo, N. Y.; Kempf, F. C., Sons, 821 Virginia street; one-story garage and repair shop, 61x125, at 1512 Main street; $25,000.

Geneva, N. Y.; Best, H. D., Co., 175 Fifth avenue, New York; one-story garage, 24x30, for Standard Oil Co. of New York, 26 Broadway; $20,000.

Kingston, N. Y.; Burger, Homer, 10 Green street; two-story public garage and show room, 64x128 and 50x100, for W. Smith; $35,000.

Lancaster, N. Y.; Crooker, B. I., Niagara Life building, Buffalo, N. Y.; one-story garage, 32x90, for Depew & Lancaster Light, Power & Conduit Co., 173 Central avenue; $10,000.

Little Falls, N. Y.; McCaghey, P. B., Construction Co.; one-story garage, service station and sho wroom, 80x73, at Main and Third streets; $20,000.

Long Island City, L. I., N. Y.; Burke Brothers Co., 1483 Broadway, New York; three-story garage at Freeman street and Fifth avenue, for Harrolds Motor Car Co., 233 West 14th street, New York; $5000.

Long Island City, L. I., N. Y.; Fitzpatrick, Edward W., 24 4Jackson avenue; one-story brick garage at Eighth and Pierce avenues; $30,000.

Long Island City, L. I., N. Y.; Frank & Frank, 246 West 42nd street; one-story commercial garage for James Brown, 146 West 44th stret; $20,000.

Malone, N. Y.; Best Co., H. D., 175 Fifth avenue, New York; one-story garage, 34x60, for Standard Oil Co. of New York, 26 Broadway, New York; $25,000.

New Rechelle, N. Y.; Acampora Brothers, 36 Union avenue, Mamaroneck, N. Y.; two-story garage and sales room for B. Rosenbaum, 57 North avenue; $38,000.

New York, N. Y.; Ciccarone, A., 2659 Bainbridge avenue; two-story garage at 111 West End avenue for 111 West End Corporation; $100,000.

New York, N. Y.; Freeman, Robert; two-story garage at 518-522 East 15th street, for Rebecca Sarkowitz, 189 Orchard street; $50,000.

New York, N. Y.; Herbst, Albert H., 735 East 179th street; one-story garage at 1860 First avenue; $30,000.

New York, N. Y.; Hup Realty Co., Inc., J. C. G. Hupfel, president; garage, 75x100, at 317-321 East 38th street.

New York, N. Y.; Rupert, Jacob, two-story brick automobile repair shop, 243-245 East 90th street and 286-288 East 91st street; $40,000.

New York, N. Y.; Standard Concrete Steel Co., 105 West 40th street; four-story garage and service station at Broadway and 131st and 132nd streets, for Bowman Realty Co., 225 West 49th street; $330,000.

New York, N. Y.; Steel, William & Sons Co., 1t6h and Arch streets, Philadelphia; two-story garage at Spring and Clark streets, for Exide Battery Depots, Inc., 101 West End avenue; $225,000.

New York, N. Y.; Underhill, Harvey, 438 West 37th stret; two-story public garage at 439-443 West 36th street; $60,000.

New York, N. Y.; Zimmerman, J., 734 East 160th street; one-story garage for estate of Alfred Camp, 135 Broadway; $35,000.

Oneonta, N. Y.; Bannett, M. D., Sidney, N. Y.; three-story public garage, 80x96, for F. L. Dibble, 115 River street; $60,000.

Pulaski, N. Y.; Raby, Peter, 23 West Cayuga street; one-story garage, 60x100, for Motor Sales Corporation.

Syracuse, N. Y; O'Brien Construction Co., McCarthy building; one-story electric garage, 66x125, at 305 East Genesee street, for Garland Battery Service, Inc.; $40,000.

Troy, N. Y.; J. H. Neary & Sons; brick and steel garage, 164-168 Remsen street, for M. & N. Garage Co.; $30,000.

Cleveland, O.; Brass, Emery, 2517 East 82nd street; one-story garage, 50x90, at 6618 Buckeye street; $10,000.

Cleveland, O.; Laronge, Joseph, Co., 215 Williamson building; one-story garage, 50x120, at 1610 St. Clair avenue; $25,000.

Cleveland, O.; Noderer, J., 3931 Woburn avenue; one-story garage and sales room, 30x48, at 4459 Pearl road, for Ideal Motor Car Co., 4427 Pearl road; $8500.

Cleveland, O.; Pohner, A. W., 14,018 Woodworth road; one-story brick garage, 50x140, for Greenwald & Specker; $10,000.

Clevelnad, O.; Thompson, W. J. Co., 5103 Euclid avenue; one-story brick garage, 50x130, for Cleveland Railroad Co., 724 Leader-News building; $30,000.

Cincinnati, O.; Cook, J. E. & Co., 1564 Elm street; one-story brick and stone trim garage, 148x113, at Warsaw and Woodlawn avenues; $40,000.

Dover, O.; Wentz Lumber Co.; one-story garage, 50x90, at Fourth and Wooster avenue, for Fort Garage Co.; $10,000.

Kenton, O.; Concrete Steel Construction Co., Mitchell building, Springfield, O.; two-story garage, 50x50, for J. N. Pfeiffer; $40,000.

Toledo, O.; Koptke, Gettins, Nasby building; one-story garge, 90x100, for Hammond Building Co.; $31,000.

Brownsvile, Pa.; Brownsville Construction Co.; two-story commercial garage, 65x180, at Fifth and Marget streets, for C. C. Garlett; $60,000.

Easton, Pa.; Bechtel & Bechtel, Northampton Bank building; two-story public garage, 66x113, for E. A. St. Greaves, 30 North Warren street; $35,000.

Easton, Pa.; Sears & Bowers, Bank and Church streets; one-story public garage, 27x75; $12,000.

Gettysburg, Pa.; Weikert, James; one-story public garage, 60x180, for Peckman & Ott.

Hazleton, Pa.; Wettstein, John, 27 West Maple street; one-story public garage, 44x100, at Chestnut and Laurel streets, for Cook Yeager.

Philadelphia, Pa.; Dougherty, William R.; two-story garage, 50x108, at 250 South Camac street, for Morris Geiger; $60,000.

Philadelphia, Pa.; English, Frank G.; one-story garage, 38x81, west side Front street, below Girard avenue, for William P. M. Irwin; $8000.

Philadelphia, Pa.; Fisher, J. D., 5426 Thompson street, alterations on garage, 232 Market street, for Jose P. Pettit, 6242 Market street; $6500.

Philadelphia, Pa.; Fisher, J. D.; one-story brick garage, 34x16 and 18x50, at 6225-6227 Catharine street, for W. J. Baylis; $3000.

Philadelphia, Pa.; Gruhler, William J. & Co.; one-story stone garage, 21x23, rear 6806 Lawton avenue, for W. J. Fry; $4000.

Philadelphia, Pa.; Hanlstick, C. S., 845 North 19th street, alterations on warehouse and garage, for Michell Co., 518 Market street; $3000.

Philadelphia, Pa.; Hartman, A.; two-story garage, 51x37, at 1316-1320 Poplar street, for W. R. Parker; $25,000.

Philadelphia, Pa.; Kister, Alfred E.; one-story brick garage at southwest corner American and Green streets, for American Stores Co.; $15,000.

Philadelphia, Pa.; Reilly, T. F.; two-story garage, 35x24, west side Bryn Mawr avenue, north Woodbine avenue; $2500.

Philadelphia, Pa.; Smith-Hardican Co.; two-story brick garage, 33x81, at 1622-1624 Spring Garden street, for Thomas R. Humphrey; $16,000.

Philadelphia, Pa.; Steele, William, Sons Co.; one-story concrete factory building, south side Rising Sun lane, east Adams road, for Electric Storage Battery Co.; $20,000.

Philadelphia, Pa.; Steele, William & Sons Co., 1600 Arch street, buildings, Third and Hunting Park avenue, for Commercial Truck Co., 27th and Brown streets; $42,600.

Pittsburgh, Pa.; Fiat Motor Car Co., Union arcade; two or three-story garage and sales room, 75x100, at Cypress and Aspen streets.

Pittsburgh, Pa.; Lauer, J., & Son, 810 Portland street; one-story garage for Booth & Flinn; $12,000.

Providence, R. I.; Interstate Construction Co., 29 Weybosset street; one-story public garage at Pratt and Olney streets, for Harris Weber, 27 Halsey street; $18,000.

Chattanooga, Tenn.; Gude & Co.; four-story garage, 75x200, for Hardwick Brick Co., 1526 Market street; $150,000.

San Antonio, Tex.; Coleman & Jenkins, Gunther building; one-story reinforced concrete garage, 40x100; tile floors, fireproof; for Taylor & Holder; $22,000.

San Antonio, Tex.; Flores, E. B., 112 East Mistletoe street; three-story reinforced concrete garage; concrete and tile floors; $75,000.

San Antonio, Tex.; Rand, Edwin, 515 Belknap street; one-story fireproof garage, 50x120; reinforced concrete floors; $37,100.

Richmond, Va.; Bass, E. L. & Brothers, 708 Bainbridge street; 1½-story garage, 120x140, at Lodge and Broad streets, for E. L. Feist and S. T. Beveridge, 1318 East Cary street; $65,000.

Milwaukee, Wis.; Laztnski, Walter, 1107 Humboldt avenue; one and two-story garage, 28x20, at 460 Cass street, for J. Gentilli; $12,000.

Coming Events

Sept. 17-18—Syracuse, N. Y., Dirt Track Races. Horace P. Murphy, Manager.

Sept. 16-17—Cleveland, O., Credit Convention, Motor & Accessory Manufacturers' Association.

Sept. 19-25—Springfield, Mass., Eastern States Exposition.

Sept. 20-26—Los Angeles, Cal., National Tractor and Implement Show, auspices Tractor & Implement Dealers' Association.

Sept. 24-25—Greensboro, N. C., Second Annual Convention, North and South Carolina Automotive Trades Association.

Sept. 25—Allentown, Pa., Dirt Track Races. Horace P. Murphy, Manager.

Sept. 27-Oct. 2—France, Gordon Bennett Aviation Cup Race.

October—London, England, Commercial Vehicle Exposition, Olympia.

Oct. 1-2—Trenton, N. J., Dirt Track Races. Horace P. Murphy, Manager.

Oct. 6-7—Gulfport, Miss., Meeting Louisiana-Missisippi Automotive Trade Association.

Oct. 6-8—Northampton, Mass., Annual Automobile Show, H. F. & H. Agricultural Society, Three County Fair Grounds. A. J. Morse, secretary.

Oct. 6-16—New York, N. Y., Electrical Show, Grand Central Palace. George F. Parker, manager.

Oct. 8-9—Danbury, Conn., Dirt Track Races. Horace P. Murphy, Manager.

Oct. 12-14—Chicago, Ill., National Federation of Implement Dealers' Associations, Sherman Hotel. H. J. Hodge, secretary, Abilene, Kan.

Oct. 20-22—Atlantic City, N. J., Convention National Implement & Vehicle Association. E. W. McCollough, Secretary, 72 West Adams Street, Chicago, Ill.

November—London, England, Passenger Car Show, Olympia.

November—New York, N. Y., Annual Meeting American Road Builders' Association. E. L. Powers, Secretary, 150 Nassau Street, New York.

Nov. 14-21—New York City, Automobile Salon, Hotel Commodore.

Nov. 15-20—Jersey City, N. J., Annual Automobile Show, Hudson County Automobile Dealers' Association, Fourth Regiment Armory.

Nov. 15-20—Chicago, Ill., Automotive Equipment Show, auspices Automotive Equipment Association, Coliseum, A. B. Kaufman, Manager.

Nov. 30-Dec. 3—St. Louis, Mo., Third Annual Meeting and Exhibition, Accessories Branch, National Hardware Association of the United States, Coliseum.

Dec. 8-10—Cincinnati, O., Convention, Ohio Automotive Trade Association. E. J. Shover, Secretary, 404 Central National Bank building, Columbus, O.

Dec. 10-18—New York, N. Y., Motor Boat Show, Grand Central Palace.

January, 1921—Little Rock, Ark., Annual Meeting, Arkansas Good Roads & Drainage Association. Robert O. Schaefer, Secretary, Masonic Temple, Little Rock.

Jan. 8-15—New York City, National Passenger Car Show, Grand Central Palace.

Jan. 8-15—New York City, Truck Show, Auspices Automobile Dealers' Association, Inc., Harry T. Gardner, Manager.

Jan. 11-13—Minneapolis, Minn., Annual Convention, Minnesota Implement Dealers' Association, West Hotel. C. I. Buxton, secretary, Owatonna, Minn.

Jan. 16-22—Schenectady, N. Y., Show, Company E, F and Machine Gun Company, State Armory. J. J. Callahan, Manager, Box 1186, Pittsfield, Mass.

Jan. 29-Feb. 4—Chicago, Ill., National Passenger Car Show.

February—Danzig, Germany, Spring fair.

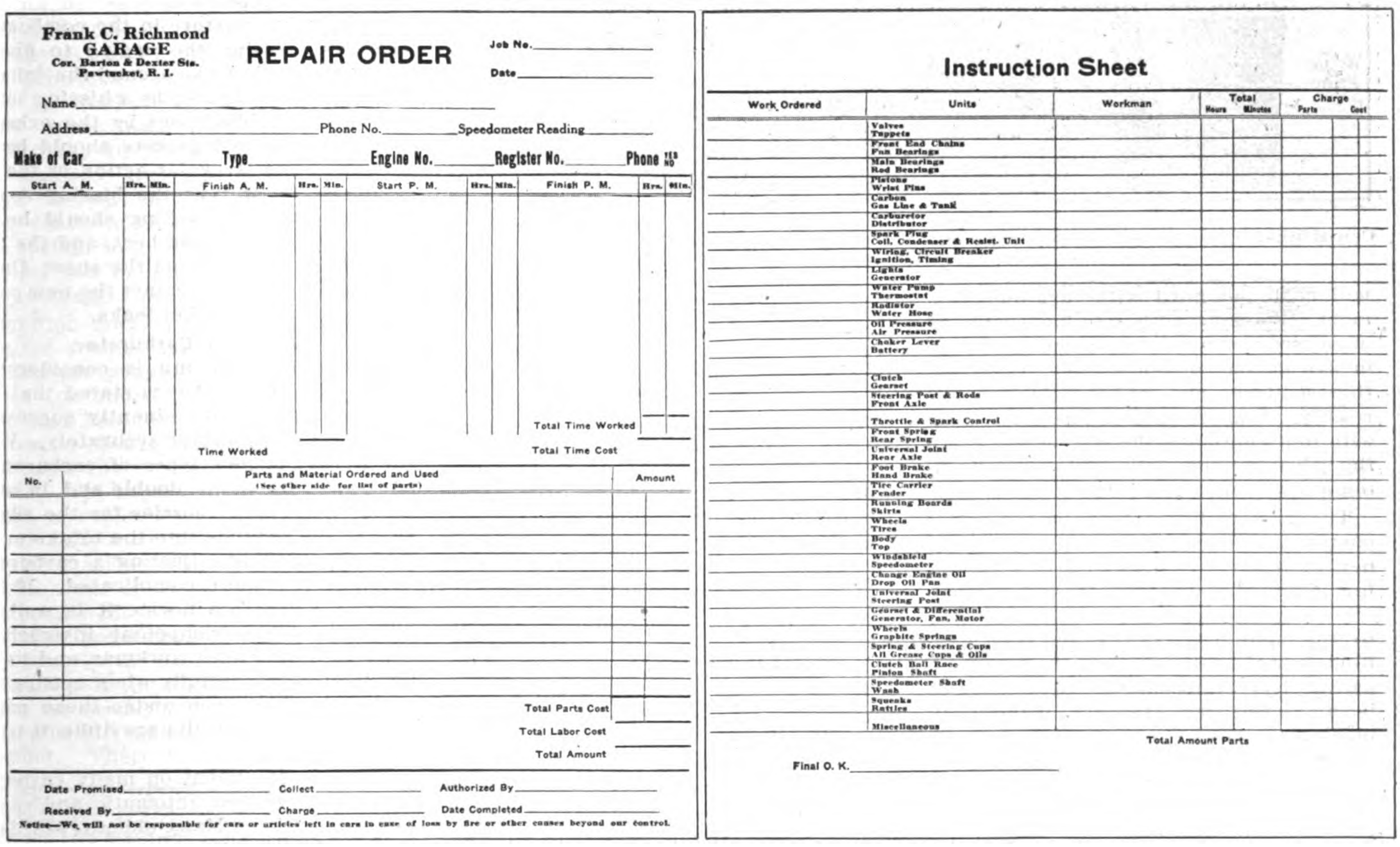
March—Buenos Aires, Argentina, Exhibition of American Products.

March 15—Fort Worth, Tex., 24th Annual Southwestern Exposition and Fat Stock Show. Passenger Cars, Trucks and Tractors. M. Sasson, Jr., secretary.

March 20-26—Torrington, Conn., Show, Company M, State Armory. J. J. Callahan, Manager, Box 1186, Pittsfield, Mass.

Need of System in the Service Station

THE successful and far-sighted repair or service station man is the one who keeps track of and performs the various jobs of repair, adjustment and replacement on cars intrusted to him in accordance with a thoroughly efficient system from the time the car is left until it is ready to go into commission again. One of the best methods of procedure to follow is to have a card or tag prepared, printed on one side with the names of the various units of the car and their components under a suitable head, with a space on either side, one for checking the parts needing attention and the other for filling in the time spent in performing the work.



Frank C. Richmond
GARAGE
Cor. Barton & Dexter Sts.
Pawtucket, R. I.

REPAIR ORDER

Job No.________
Date________

Name________
Address________ Phone No.________ Speedometer Reading________
Make of Car________ **Type**________ **Engine No.**________ **Register No.**________ **Phone** YES NO

Start A. M.	Hrs.	Min.	Finish A. M.	Hrs.	Min.	Start P. M.	Hrs.	Min.	Finish P. M.	Hrs.	Min.
			Time Worked						Total Time Worked		
									Total Time Cost		

No.	Parts and Material Ordered and Used (See other side for list of parts)	Amount
	Total Parts Cost	
	Total Labor Cost	
	Total Amount	

Date Promised________ Collect________ Authorized By________
Received By________ Charge________ Date Completed________

Notice—We will not be responsible for cars or articles left in cars in case of loss by fire or other causes beyond our control.

Instruction Sheet

Work Ordered	Units	Workman	Total Hours	Total Minutes	Charge Parts	Charge Cost
	Valves Tappets					
	Front End Chains Fan Bearings					
	Main Bearings Rod Bearings					
	Pistons Wrist Pins					
	Carbon Gas Line & Tank					
	Carburetor Distributor					
	Spark Plug Coil, Condenser & Resist. Unit					
	Wiring, Circuit Breaker Ignition, Timing					
	Lights Generator					
	Water Pump Thermostat					
	Radiator Water Hose					
	Oil Pressure Air Pressure					
	Choker Lever Battery					
	Clutch Gearset					
	Steering Post & Rods Front Axle					
	Throttle & Spark Control					
	Front Spring Rear Spring					
	Universal Joint Rear Axle					
	Foot Brake Hand Brake					
	Tire Carrier Fender					
	Running Boards Skirts					
	Wheels Tires					
	Body Top					
	Windshield Speedometer					
	Change Engine Oil Drop Oil Pan					
	Universal Joint Steering Post					
	Gearset & Differential Generator, Fan, Motor					
	Wheels Graphite Springs					
	Spring & Steering Cups All Grease Cups & Oils					
	Clutch Ball Race Pinion Shaft					
	Speedometer Shaft Wash					
	Squeaks Rattles					
	Miscellaneous					
		Total Amount Parts				

Final O. K.________

Sample of Repair Card Sold by the Automobile Journal Publishing Co. and Used by Service Stations and Garages. Printed on Both Sides, as Shown, with Name and Address of Station or Owner, Etc. Actual Size, 7½ Inches Wide, Nine Inches in Length, Suitable for Filing.

When a car is driven up for attention the manager of the service station or repair shop takes one of these master cards and checks off the parts which the owner desires to have inspected, repaired or replaced and, after getting the owner's signature as an authorization for performing the work, attaches the card to the wheel or some other convenient part of the machine. This card may be made still more serviceable if, on the reverse side, space is given for a description of the car such as the type, whether roadster, touring car or enclosed model, the registry number, owner's address and telephone number, speedometer reading, the time the car is promised to be ready for delivery, etc.

This will show a complete record of the work and, after the job is completed, is in a convenient form to be placed in the files for future reference.

In many service stations of considerable size the different parts of the work are divided among men who make a specialty of a certain branch and do nothing else. For instance, one expert will handle nothing but radiator repair and sheet metal work; another electrical expert attends to testing, locating and remedying troubles of the electric starting, lighting and ignition system. A carburetor adjuster and repairer may devote his attention to defects in this component, while the ordinary work of grinding valves, adjusting bearings, repairing the chassis, etc., is looked after by the men in charge of the mechanical work in connection with the chassis and its components Painters, experienced in their work, attend to the finishing of the car, while still others, specializing in top and upholstery repairs, attend to that part of the job.

It is, of course, well understood that the repairer must have had several years experience in his line of work in order that the finished job will stand final inspection by the inspector or foreman.

The following article is for the benefit of the many repairers who may have recently entered the field and deals in an elementary manner, with the units and their functions.

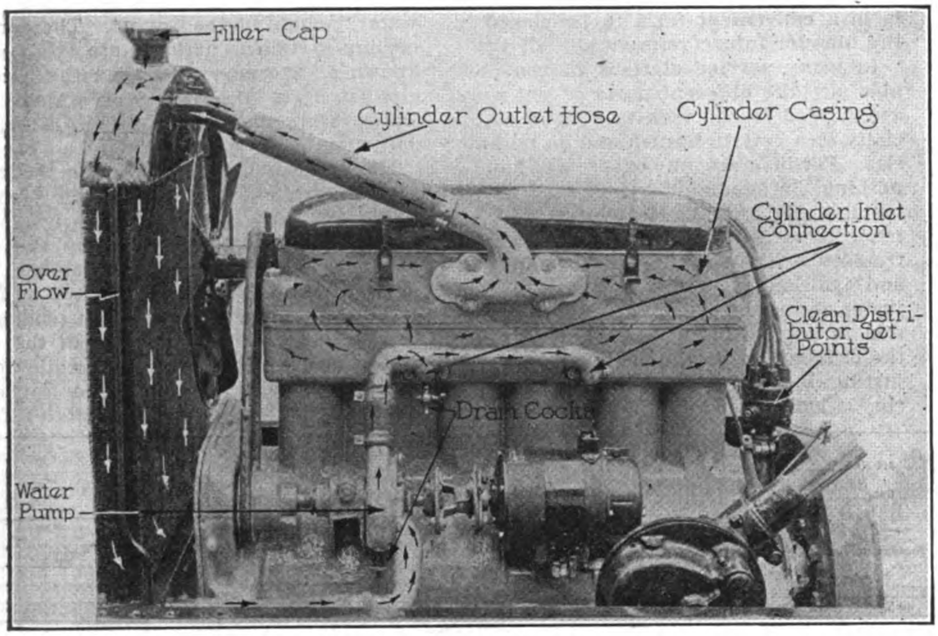
Cooling System.

The cooling system includes the radiator, the fan, fan belt, connections to the engine, water pump (if used) and the water jackets of the engine. The water cooling system is divided into two types known as thermo-syphon and the pump-circulated, in the latter of which the water is circulated by a driven centrifugal pump.

Many of the low priced cars employ the thermo-syphon system, in which a comparatively large body of water is circulated by the heat generated by the explosions in the combustion chambers of the engine. This heat is absorbed by the water and as warm water has a tendency to rise, it passes into the top of the radiator through the inlet pipe, while cold water follows up through the jackets from the bottom of the radiator. The warm water passes down through the sections of the radiator, being cooled as it passes, by the action of the fan, and reaches the bottom in a comparatively cool condition, varying with the size of the radiator and the amount of water carried.

The pump system employs a driven centrifugal pump which causes a positive circulation of the water whenever the engine is operating, the heated water cooling in the same manner as in the thermo-syphon system, but circulating faster. Smaller connecting pipes may be used to convey the water in this system than in the thermo-syphon, as the circulation is more rapid.

The repairs necessary on the cooling system are usually confined to the radiator, such as this unit becoming loose on the frame, leaks in the sections which require soldering, etc. This is work for the radiator repair man and in shops of sufficient size are attended to by him only. Many times radiator and cooling system will be found filled with rust and sediment. Washing with solution composed of sal soda or lye, half a pound dissolved in five gallons of hot water, will loosen this sediment and will be flushed out readily. Running the engine for a time with this solution in the system will make the job more complete, afterwards flushing out well with clean water.



Centrifugal Type Water Cooling System. Circulation Shown by Arrows. Components Requiring Attention Clearly Indicated.

The gaskets fitting between the water connections and the engine require renewing if they are old and brittle and allow the water to seep through. They can be cut from sheet packing and fitted to the manifolds one at a time, each manifold being tightened securely after the gasket has been placed. Water pump bushings will leak, especially if the packing has not been renewed for some time. The gland nuts should be backed off, the old packing picked out and new packing oiled and fitted, tightening the gland nuts just sufficient to prevent the water from seeping through.

Hose connections will soften on the inside, restricting the flow of water and causing some of the rubber to get into the water passage. Pinching the rubber connections at the inlet and outlet of the radiator between the thumb and forefinger will quickly locate the soft tubes. They should be removed and new fitted in their place.

The fan should be examined and adjusted, if loose, while the fan belt should be made tight enough so that the belt does not slip, but drives the fan at its normal speed. Broken balls in the ball races of the fan bearings are easily detected by a grinding sound as the faces of the broken balls rub against the smooth surface of the unbroken balls. Remove the broken balls, examine the races and if found chipped or worn refit with new races.

Overheating of the engine is often caused by either the cooling system becoming clogged with sediment or rust, or by some component not functioning properly. During the cold months of the year, if the water is not drained out of the pump in a pump cooled system, it will freeze in the lower part of the pump case, causing the impellor to stick and twisting off the pin or key which fastens it to the impellor shaft when the engine is again started. In this case the action of the water will be retarded and overheating will result. Disassembling the water pump will allow the trouble to be located and fitting a new pin or key will remedy it.

Power Plant.

Power plant repairing requires more or less expert knowledge of the grinding of valves, taking up bearings, adjusting the different components of the engine, fitting pistons and rings to the cylinders, etc.

Grinding valves is probably one of the first jobs given to the new man, for it is considered that he cannot go far wrong on this job. Considerable time may be necessary in the work, especially if it is performed by the hand method of using a screw driver to rotate the valve against its seat. If a mechanical device is used the time taken will, of course, be materially shortened. Refacing the valve seat and smoothing off the valve face before grinding will shorten the actual working time and make the valve seat more quickly. The valve should be ground till a ring is shown 1/32-inch wide around the face and seat.

Tightening the crankshaft bearings while not requiring a great amount of skill, still the experience gained in watching a repairer do this work will help the amateur.

Adjusting the push rods is a job that often falls to the lot of the new repair man and, while experience helps, still it is not essential to a perfect adjustment. Valves should only be adjusted when the engine is thoroughly warm, for if done when the engine is cold the metal in the push rods and valves will expand when the engine is heated, causing the valves to hold open and give the effect of a skipping engine.

Adjusting them hot puts the valves in the same relative position as when the engine is running and causes them to open and close properly. The adjustment varies on different engines, but a convenient rule to follow is to have the clearance about the thickness of an ordinary visiting card or about the thickness of the paper used in this book. This clearance will cause the valve to open properly to the distance for which it was designed, and to completely close when the valve tappet is released.

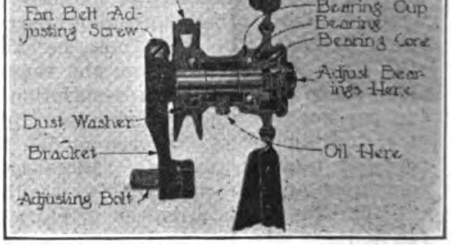
Manifold Gaskets.

Examine manifold gaskets to note whether or not they leak. If so those on the intake pipe will draw in air and dilute the gas mixture in the combustion chamber, causing the engine to fire irregularly, while leaks around the exhaust manifold are indicated by a hissing sound as the gas is blown out by the exhaust. Worn or damaged gaskets should be renewed to stop irregular action of the engine and to prevent the hissing sound. A good grade of packing should be secured which will stand heat, and the gaskets cut as needed from the sheet. Drawing the nuts tightly against the new packing will prevent further leaks.

Adjusting Carburetor.

Carburetor adjusting is considered a science in itself and it is stated that but few mechanics are eminently successful in setting a carburetor accurately. With the advent of new types of carburetors, equipped with single, double and, in some cases, many spray nozzles for the admission of the gasoline into the intake manifold, the work of adjusting a carburetor becomes still more complicated. If this work is given to a novice it is well for him to obtain competent instructions from an experienced workman and to follow them very carefully when setting the carburetor, and even under these conditions successful results are difficult to attain.

The air adjustment on many carburetors is more or less automatic and rarely needs attention. Many older types, however, and some of the newer carburetors are provided with an air adjustment and instructions for setting are included in the carburetor instruction sheet found in the car. Make it an invariable rule to adjust the carburetor only as the last re-



Components of Fan Needing Attention.

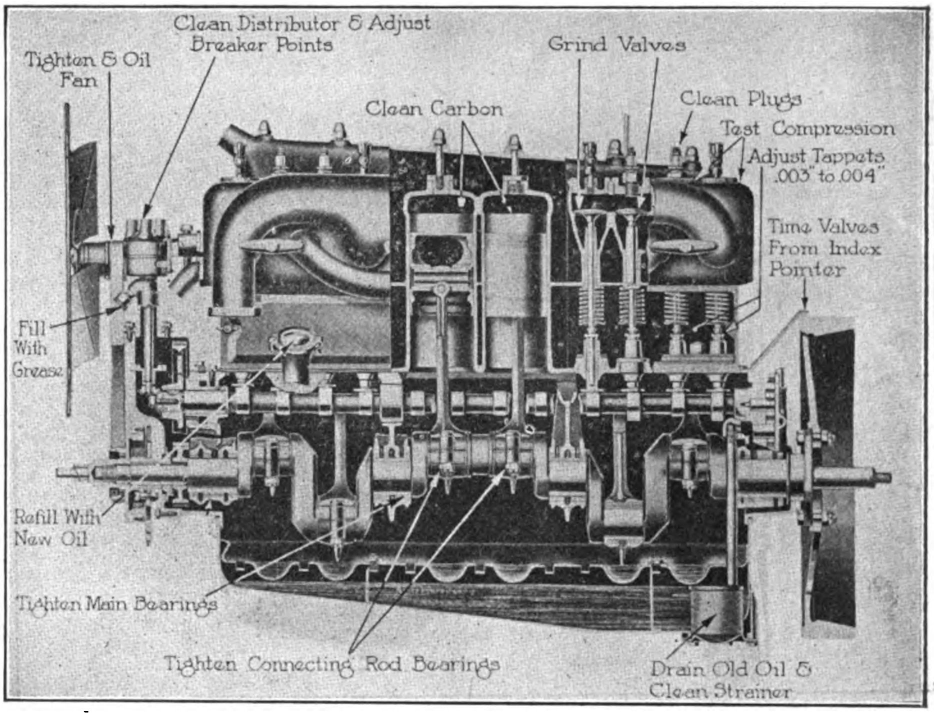
sort for, nine out of 10 times, the defect will be found somewhere in the ignition system and not in the carburetor. If the engine runs irregularly trace the ignition through carefully first. Possibly a loose wire at some connection may be causing the trouble or the timer points are too low, in which case the engine will run satisfactorily up to about 20 miles an hour, hitting all cylinders perfectly, but above this, going to pieces and missing first on one cylinder and then another. A worn point will cause this and although the points look all right, still they may be worn down so far as not to make contact at the higher speeds, resulting in a skipping engine that has all of the ear marks of carburetor trouble. Renewing the points will remedy the trouble.

Ignition.

Ignition defects are usually hard to locate by the new repair man for, as a rule, his knowledge of electricity is limited, and its method of utilization for this work seems more or less of a mystery. It is really simple when the principle is understood. One has only to bear in mind the way that water flows through pipe connections to the various parts of the system to quickly see the analogy of the method by which electricity is used for starting, lighting and ignition.

Ignition repairs may be made by the regular repair man, but such work as testing the generator and motor components for short circuits, open circuits, etc., had best be carried out by an experienced electrician who thoroughly understands the subject.

Very few repair shops make any attempt to repair storage batteries, nearly all of this work being done by battery service stations which make a specialty of this class of work. Such stations are equipped with the necessary devices and charging generators to handle the work and usually the proprietor and workmen have expert knowledge, which enables them to quickly diagnose a defect in a battery and repair it in the best possible manner. There is a wide difference in the construction of batteries, one manufacturer making a certain patented plate, grid type, while still another uses another type. Wood separators are largely used for dividing the plates in a cell. However, one manufacturer believes that rubber is best for the purpose; still another manufacturer employs a manufactured separator for which he makes many claims, but it is stated that the majority of manufacturers use the wood separator and find it very satisfactory.


Clean Distributor & Adjust Breaker Points
Tighten & Oil Fan
Grind Valves
Clean Carbon
Clean Plugs
Test Compression
Adjust Tappets .003" to .004"
Time Valves From Index Pointer
Fill With Grease
Refill With New Oil
Tighten Main Bearings
Tighten Connecting Rod Bearings
Drain Old Oil & Clean Strainer

Units of Engine That Require Attention.

Clutch, Cone and Disc Types.

The ordinary service station repairer finds that work in connection with the different types of clutches used offers no particular difficulties, provided that he familiarizes himself with the principle involved in their construction and is willing to follow the instructions plainly given in the instruction books which accompany cars using the various types.

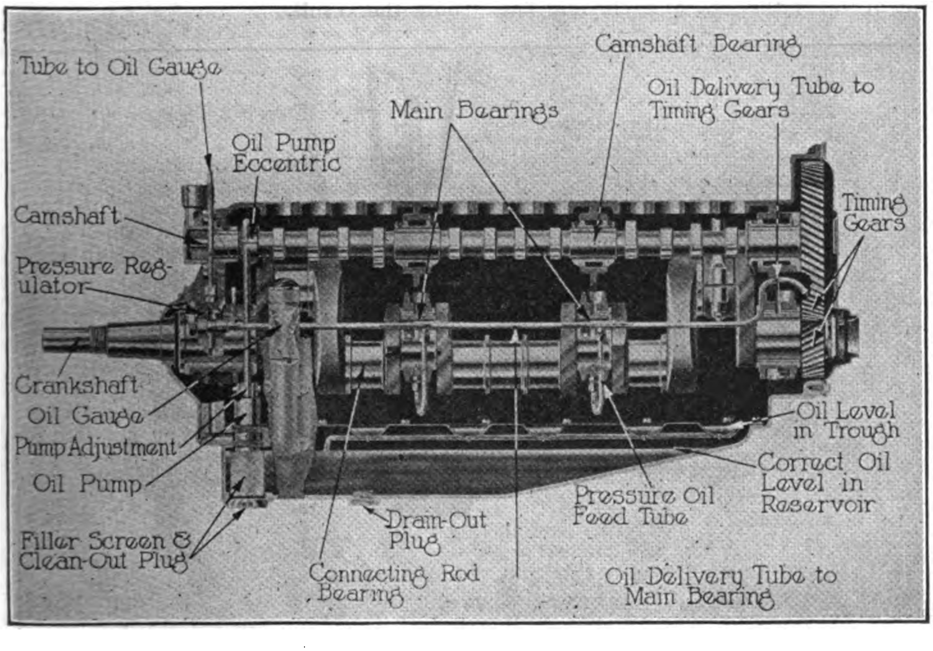
Such work as is required on the gearset, rear axles, differential, steering gear and other components of the chassis, may be performed by the average garage mechanic, no special knowledge being required beyond the ability to disassemble and assemble the parts in their regular order, and supply sufficient lubrication after they have been correctly adjusted.

Tires and Top Repairing.

Tires are usually repaired by experts in that line. Many stations combine this branch with their regular car repairing and are very successful with it. Usually an experienced man is put in charge and the success of the department depends upon his ability. The stock and fixtures necessary to carry on the work require quite an investment, and many stations do not handle it for this reason, but where it is combined with ordinary repairing, and an experienced man is employed, an attractive revenue is added to the business.

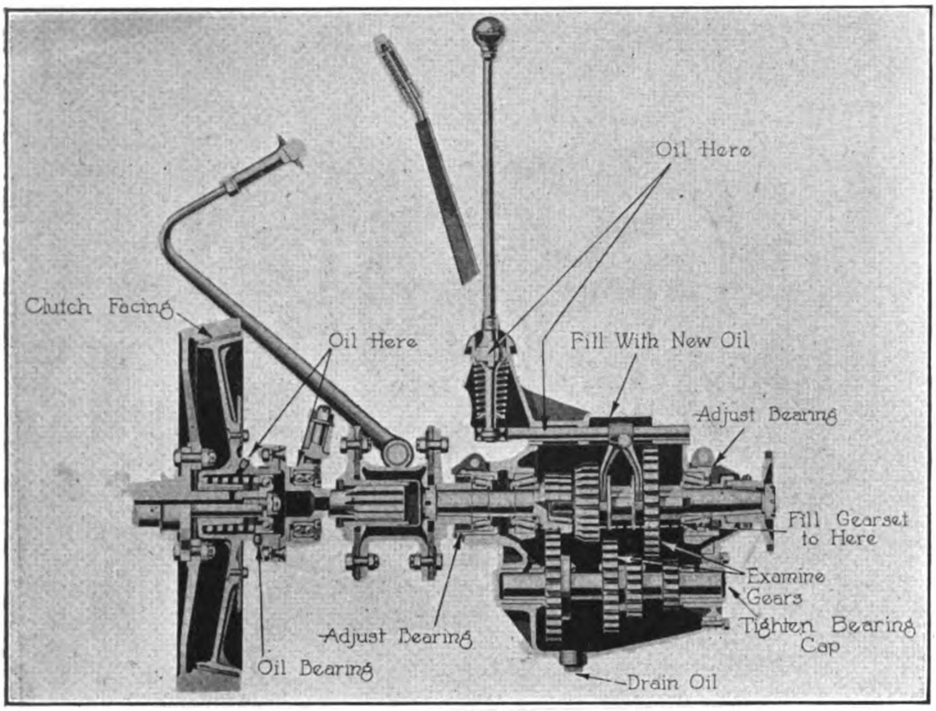
Top and body work should each be handled by specialists. The former especially requires a certain amount of first hand knowledge of styles, material and harmony, and should not be intrusted to inexperienced workmen, unless a competent foreman supervises the work.

Painting, while often considered within the field of the service station, is more usually handled by an outside concern, which specializes in the painting of automobiles and other vehicles. Where a paint department is operated in connection with a service station, an expert foreman painter should be put in charge, and competent journeymen employed. Where the work is done outside the service station manager may find it to his advantage to get a special rate from the


Tube to Oil Gauge
Camshaft Bearing
Oil Delivery Tube to Timing Gears
Main Bearings
Oil Pump Eccentric
Camshaft
Timing Gears
Pressure Regulator
Crankshaft
Oil Gauge
Pump Adjustment
Oil Pump
Oil Level in Trough
Correct Oil Level in Reservoir
Pressure Oil Feed Tube
Drain-Out Plug
Filler Screen & Clean-Out Plug
Connecting Rod Bearing
Oil Delivery Tube to Main Bearing

Components of the Engine Base Clearly Indicated.

painting concern or hire the work done on a contract basis.


Oil Here
Clutch Facing
Oil Here
Fill With New Oil
Adjust Bearing
Fill Gearset to Here
Examine Gears
Tighten Bearing Cap
Adjust Bearing
Oil Bearing
Drain Oil

Cone Type Clutch and Gearset Showing Parts That Require Attention.

Satisfactory and Unsatisfactory Work.

A great deal of the unsatisfactory repair work sometimes turned out is due to the failure of the men to understand just what they are doing and their not using care in repairing and finishing the job. Nuts that are not tightened and cotter pinned properly may cause the motorist serious trouble later. Attention to minor details means everything to the motorist who is paying his money for a job carefully done. Service stations who are willing to stand upon the merit of the grade of work turned out will find that motorists will be pleased, will recommend them to their friends and will return their cars for future work.

The service station which intends to turn out careful and satisfactory work has an inspection system through which all work is scrutinized while being performed, and again after the job has been completed and the car is ready for the road. More time will naturally be taken in this manner, but the station which puts such a system into working order will find that the extra time is well spent. Satisfied customers mean everything to the service station, as they do in other lines of trade, while repeat business means a continuation of friendly and profitable relations with customers.

SPRING COMPRESSOR.

While in a service station recently, attention was called to a difficulty which the repairer was having in refitting clutch springs to the adjusting bolts of a disc clutch housing. The housing had been removed for repairs and as he did not wish to pull the assembly apart more than was necessary to reach the part under repair, he had simply removed the short shaft between the clutch and the gearset and the parts that fitted it.

The bolts fitted the holes of the clutch housing loosely and as there was a small space between the housing and the discs, the bolts would slip back against the disc as soon as any attempt was made to slide the spring over them. To meet this condition the repairer pulled them forward as far as he could with his fingers, causing the squared shoulder of the bolt to fit the squared opening for the bolt in the housing. But to compress the spring so that it could be slipped over the bolt and the nut caught seemed to be an impossibility.

The way the repair man overcame the difficulty was to first compress the spring between the jaws of a vise; after this a fastener, made by bending a wire at the ends, was slipped over end coils of the spring, one at each side. This fastening held the spring compressed after it was removed from the vise, the repairer placing the spring over the bolt. He found that with the spring in place there was just about room to start the nut on the threads. This he did and tried to fit the second spring in the same manner, but found he could not catch the nut on the thread of the second bolt. To overcome this difficulty he obtained two C clamps, fastening one at each side of the clutch housing so as to press the housing tightly to the balance wheel.

The repair man found that now he could easily fit the remaining springs and nuts to the bolts by compressing each spring and after pulling the bolt forward into place the spring was easily positioned and the nut screwed on to the bolt and tightened. Adjusting the nuts to put the proper tension on the discs was the work of a moment and he proceeded to assemble the remaining parts of the shaft.

LOOSE STUD BOLT.

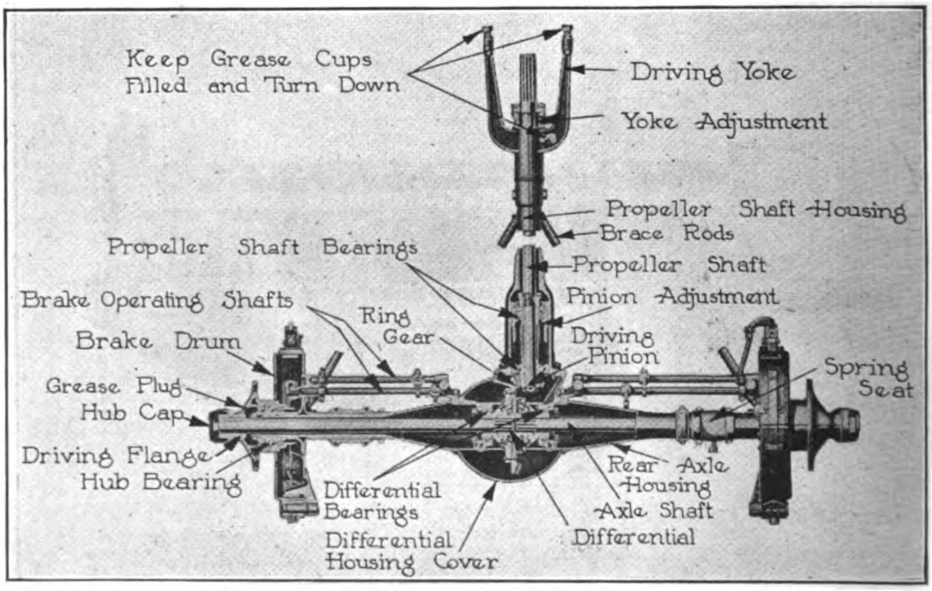
It sometimes happens that in taking off the valve cover plate one of the studs may slip out and the loss will not be discovered for some time. This leaves an opening into the intake passage and the leak will prevent the suction through the carburetor needed to draw the fuel into the cylinders.

DRY BEARINGS.

One cause of insufficient lubrication in the bearings is found in obstructions in the grooves of the bearing holder. Sediment often collects in these grooves so that they cannot carry the oil to the bearing surfaces. An excess of graphite, if that be used with the oil, sometimes produces this condition.

POLISHING NICKEL FITTINGS.

Apply regular silver polish to brighten up the nickel parts of the car. Rub the polish on and off with soft cloths and note the result.

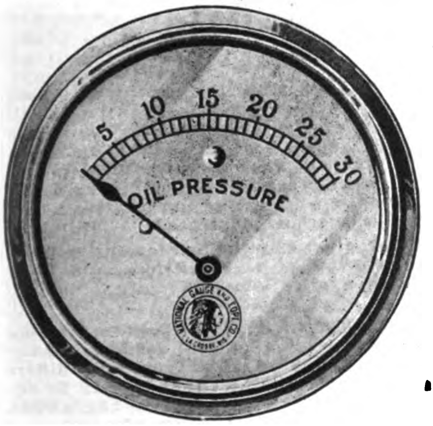

Keep Grease Cups Filled and Turn Down
Driving Yoke
Yoke Adjustment
Propeller Shaft Housing
Brace Rods
Propeller Shaft Bearings
Propeller Shaft
Pinion Adjustment
Brake Operating Shafts
Ring Gear
Brake Drum
Driving Pinion
Spring Seat
Grease Plug
Hub Cap
Driving Flange
Hub Bearing
Rear Axle Housing
Axle Shaft
Differential Bearings
Differential Housing Cover
Differential

Full Floating Type Rear Axle, Indicating Adjustments and Lubrication Required.

ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

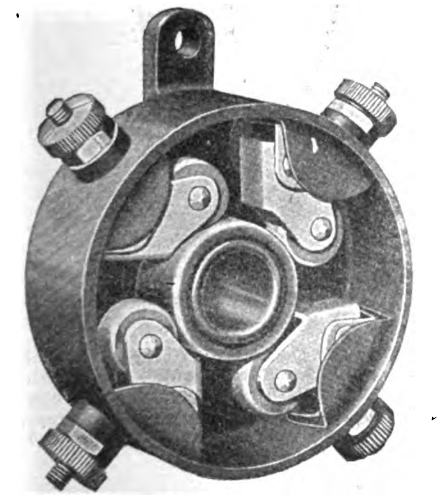
Oil Pressure Gauge Standard Bracket Type No. 185 A. is an all-metal gauge, which is fitted to the cowl of the dash and shows the pressure of the oil in the oiling system at all times. The finish of the instrument matches that of the electrical instruments usually found on the dash. Pounds pressure are indicated from zero to 30 pounds, while a special stop feature is provided which prevents damage due to excessive pressure.

The company manufacturing this instrument also makes a complete line of oil and heat registering gauges of all descriptions for the automobile, air plane and motor boat, including welding apparatus, etc. The line is shown in a new catalogue just issued, which gives a complete description of each instrument and the specifications. This catalogue will be sent to the trade on request.



Manufactured by the National Gauge and Equipment Co., La Crosse, Wis. Prices and literature on request.

The 1921 Duntley Four-Unit Timer for Ford Cars, Trucks and Fordson Tractors has been especially designed to meet the high speed of the Ford and Fordson engine in truck and tractor use. It is adapted to fulfill the requirements of the Fordson tractor and the Ford truck which, it is stated, are geared 18 to one and 12 to one respectively, as actual tests have demonstrated, while its use on the Ford passenger car is assured, as it is geared 3.7 to one.

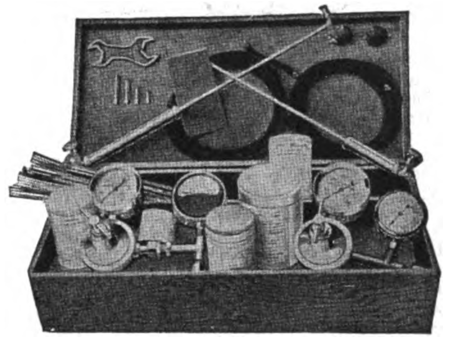


It is claimed that timer misfires are practically impossible with this new timer, as absolute assurance is given of equal spark duration in all four cylinders, thus guaranteeing perfect combustion. Guaranteed for one year regardless of mileage or service.

Manufactured by J. W. Duntley, Chicago, Ill. Price on request.

The Admiral Welding Equipment includes a full outfit for all classes of work requiring welding, except the oxygen and acetylene gas tanks.

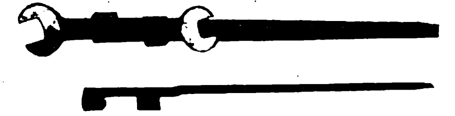
The Admiral equipment has, it is stated, passed the experimental state, as it has been in use for a number of years.



If tanks are desired they can be purchased when ordering the equipment; otherwise, the kind of oxygen and acetylene gas to be used should be stated so that proper connections can be furnished with the equipment.

Manufactured by the Admiral Welding Machine Co., Kansas City, Mo. Price of equipment, $75.

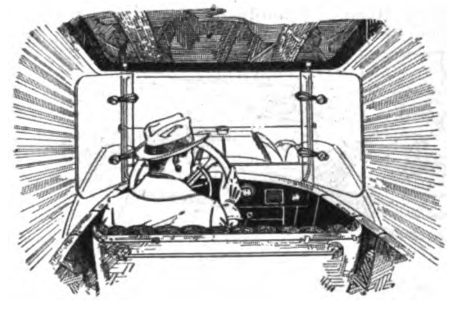
Lownsbery Extension Handle consists of a drop forged hook on an extension handle for use with single and double-head flat and S wrenches. It is designed to give increased leverage and power without undue strain on the wrench and bolt heads, has a hardened screw driver end and is a very handy and efficient tool for both the automobile tool kit and the garage.



Manufactured by the Gardener Specialty Co., Scranton, Pa. The price with unfinished handle is 75 cents and with nickel plated handle 90 cents.

Star Wings are simple in construction and easily attached to any car. It is claimed for them that they stop draughts on the back of the neck, deflect the wind and dust in summer and obviate the necessity for curtains in winter; that they not only add comfort, but instantly catch the admiring eye of the public.

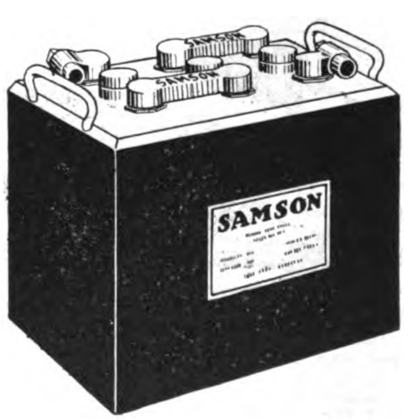
They can be instantly shifted to any angle by simply pushing them around to the desired position. If more air is wanted they may be turned to a forward angle.



Star Wings have no holes in the glass to weaken it and cannot rattle, as the glass is thoroughly protected with rubber bushings. The glass comes in regular lengths, 18 and 20 inches, and other lengths are supplied as required.

Manufactured by the Star Wing Co., 170 West Randolph Street, Chicago, Ill. Price, $22.50 per pair.

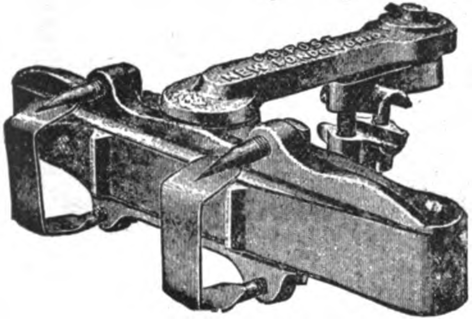
Samson Storage Batteries are manufactured for replacement purposes on passenger cars and trucks for starting, lighting and ignition and also for isolated farm lighting plants. The manufacturer states that the Samson battery has been brought up to its present high standard after long and exhaustive tests; and that it is notable for its wonderful power delivery and quick action. The slogan of the manufacturer consists of three words, "Standardized, Strength and Stability," which is stated to be amply borne out by the battery in use.



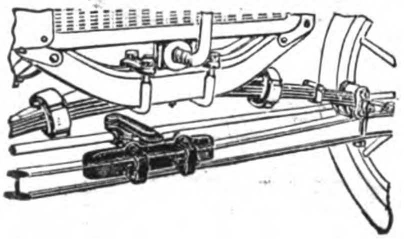
Manufactured by the Fort Wayne Battery Co., 230-300 East Fourth Street, Fort Wayne, Ind. Prices and literature on application.

The Steer Relief for the Ford Car consists of a device which is fastened to the front axle of the car and tie rod and is claimed to prevent the front wheels from running sideways on the road. The device is also claimed to make the steering of the car much easier for the driver, as a car equipped with a Steer Relief will travel in a straight line unless turned in a different direction by the driver at the steering wheel.

The device does not depend upon coiled springs to hold the front wheels in a straight line, but uses two flat springs instead, one at each side, which is stated to give greater strength to the device and make it more durable.

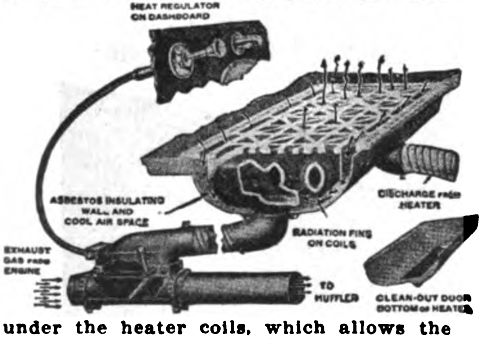


Steer Relief is made of the best of material obtainable and once correctly adjusted, it is claimed, will prove a valuable accessory for the Ford car. It may be installed in a few minutes time by the average motorist who is able to use a wrench.



Manufactured by the Burr Manufacturing Co., 1011-51 Power Avenue, Cleveland, O. Price, $7.50.

The Temme Automobile Exhaust Heater for All Passenger Cars embodies several new features not usually found in heaters of this type. The heater is placed in the floor of the car, the frame setting flush with the floor boards, and becomes a part of the floor. Below the frame is the heater proper, consisting of three coils in a single unit and connected to the exhaust pipe valve by means of flexible tubing. The used gas from the heater passes through a second flexible pipe to the atmosphere. Valve regulation is accomplished by means of a dash control working in a flexible tube and connected to the valve. A clean-out pan is provided under the heater coils, which allows the dust and lint which collects around the heater to be cleaned out at intervals.

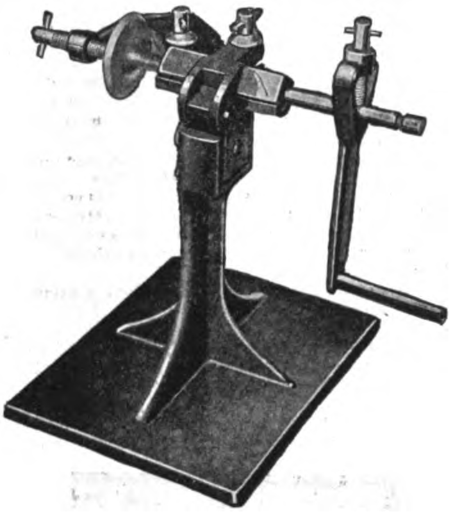

HEAT REGULATOR ON DASHBOARD
ASBESTOS INSULATING WALL AND COOL AIR SPACE
DISCHARGE FROM HEATER
RADIATION FINS ON COILS
EXHAUST GAS FROM ENGINE
TO MUFFLER
CLEAN-OUT DOOR BOTTOM OF HEATER

It is stated that the heater has a capacity of 384 square inches, large enough to satisfactorily heat the largest twin-six car. By means of the dash control it is possible to regulate the heat for early fall or winter driving, increasing or diminishing at will. It is stated that this form of construction eliminates the possibility of gas fumes getting into the car, or of the car catching fire

Owners of trucks equipped with cabs fitted for all-season driving or long-distance work should find a heater of this type a good investment, as it enables the driver to keep warm regardless of outside weather conditions.

Manufactured by the Triple Action Spring Co., 2810-12 South Michigan Avenue, Chicago, Ill. Price, with full instructions for installing, $30; extra fitting for cars having two exhaust pipes, $10 additional.

The Universal Valve Refacer consists of a machine operated by hand which, it is claimed, will reface any valve of any degree of hardness and of any size. The machine, it is stated, will take successfully valve stems from ¼ to ½ inch and heads from one inch to 3½ inches in diameter. The V channel type bearings, anchored in the center, will hold any valve made, it is claimed, including motorcycle valve stems that are smaller at the bottom than at the top.



It is stated that it is possible with this machine to reface a valve in two minutes time and it is this feature that permits using the refacer for roughening out badly pitted valves before grinding, thus saving from one to two hours' time in grinding.

The Universal Valve Refacer is guaranteed to successfully reface tungsten valves.

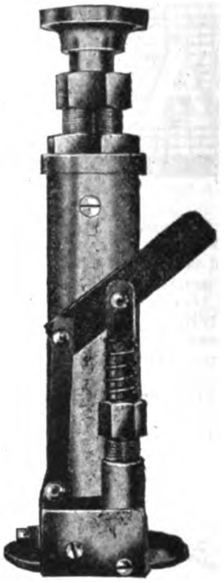
Sold by the Fairbanks Co., Broome and Lafayette Streets, New York City. Prices on request.

MP Cables for Ignition, Starting and Lighting. All MP cables are built according to accepted standards and are guaranteed to perform efficiently the uses prescribed for each wire. There are two grades of plain rubber and braided cables, indicated by the prefixes MP and MPS. All MP types carry an insulation of 30 per cent. pure rubber, while the MPS types have a 20 per cent. special compound rubber covering. It is stated that all braided cables with the prefix MP are essentially quality wires, carrying either an extra [redacted] braid or a wrapping of cambric cloth. MP cables are thoroughly tested to withstand the ill effects of oil, heat and grease; the starting cables are further protected from acids and water. All braided cables bear a durable seal brown or cherry red finish and are saturated with varnish.

These goods are packed in convenient dust proof packages containing 100-foot coils; lamp cords in 250-foot coils. Ford assemblies and spark plug wires are packed in bundles of 100.

Manufactured by the Motor Parts Co., 15th and Mt. Vernon Streets, Philadelphia, Pa., Prices and literature on request.

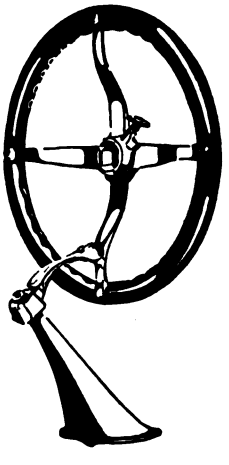
The Jaxall Automobile Jack embodies a new idea in jack construction not heretofore used on automobile and truck jacks. The hydraulic principal is employed in its operation, oil being used for the lifting agent. This fluid is carried in a small container in the base and is pumped, by a single-cylinder pump attached to the side, into the lower part of the plunger, raising the car with ease to the height desired. A few strokes of the pump is all that is required to lift the heaviest car or truck, while provision is made for lowering the car with equal speed and accuracy. The Jaxall is small in size, is easily carried in the car and is ready for use at all times, the manufacturer states. The manufacturer claims that Jaxall is a quality product throughout, and that it is meeting with a ready sale wherever demonstrated.



Manufactured by the Sunderman Corporation, Newburg, N. Y. Prices and literature on application.

Gemco Full Tilt Detachable Steering Wheel follows the general design of many of the wheels of this type, but differs from others in the fact that it may be entirely removed and carried by the owner. This feature is being taken advantage of by many motorists as a means of foiling the automobile thief.

When placed in the normal position the wheel locks automatically and the manufacturer states that there is absolutely no chance of its getting out of order while driving.

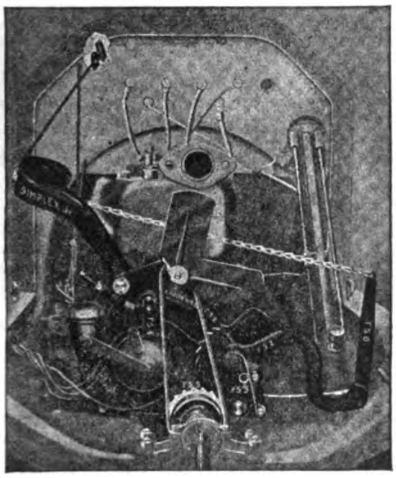


The Full Tilt Detachable Steering Wheel is adapted to the Ford, Dodge, Chevrolet, Overland Four, Briscoe and Maxwell cars.

Manufactured by the Gemco Manufacturing Co., Milwaukee, Wis. Prices and literature on request.

The Simplex Starter for Fords is a newly designed starting device for the Ford engine, and may be attached to any Ford engine in a few minutes' time, as there are but two bolts used. The device is shipped, assembled, with the necessary bolts and fittings, and, it is stated, anyone handy with tools can properly install it.

The castings from which the starter is made are malleable iron, which has been given a test for strength at the factory of 50,000 pounds to the square inch, much more than it probably will ever be called upon to stand in actual work.



A ratchet gear is fastened to the crankshaft, which meshes with the half gear on the starter arm when the starter is being used. As soon as the engine starts this gear is released, allowing the crankshaft to turn free. A safety device is also included in the outfit, which prevents the engine from backfiring when it is being started.

Manufactured by the American Starter Co., Anderson, Ind. Price, $15.

Steam Bag for Tire Vulcanizers is a rubber bag fitted with steam connections which is placed in the interior of a tire during vulcanizing operations, and supplies the necessary heat, at the same time filling out the tire to its proper shape. The intense heat held in the rubber bag cures the rubber of the patch at a uniform temperature both inside and out.

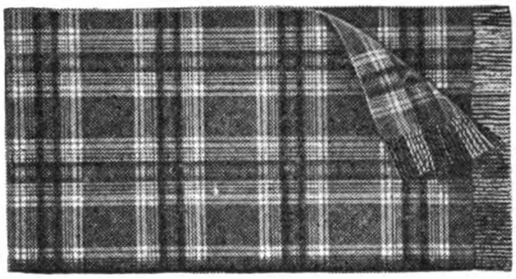
The steam curing bag has been on the market, the manufacturer states, for over three years and during that period has proved its value in vulcanizing work. Recently the company has perfected a steam curing bag of sufficient size to handle six, seven and eight-inch pneumatic truck tires.

The company states that it holds the basic patents for the manufacture of the steam curing bag, and that many of the largest tire companies are large users of them. The patents cover the United States, Canada, Great Britain, France and Germany.

Manufactured by the Steam Bag Corporation, 1545-47 Broadway, Denver, Col. Prices and literature on request.

Woolware Robes and Shawls for the Motorist comprise a very complete line of wool robes and shawls of different designs shown in a well illustrated catalogue which is issued by the manufacturer, whose motto is "Always the Best."

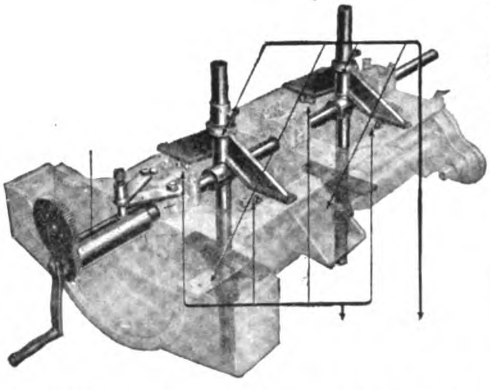
All robes and shawls are thoroughly scoured and shrunk before leaving the factory, while the warp is of cotton and the woof or filling is 80 per cent. high-grade wool stock. Robes and shawls are shown in varying colors and styles, including plaids, plain, grays, browns, etc. All robes and shawls are guaranteed by the manufacturer to be as represented.



Manufactured by the Beckman Co., Northern Ohio Blanket Mills, Fulton road and Paris avenue, Cleveland, O. Jobber and dealer trade solicited.

The Peters' Universal Bearing Reamer, including a combination boring and babbitting tool for main and connecting rod bearings, is stated to be a tool that will prove of great value to service stations and public garages. The outfit, aside from providing a ready means of reaming and babbitting the main and connecting rod bearings, also provides all the adjustments necessary, including lateral and vertical, which are very essential to obtain perfect bearings similar to those made at the factory, used when the engine is first assembled.

It is stated that this device is adapted to either four, six or eight-cylinder engines, and that it will successfully handle engines equipped with from three to eight bearings with a positive assurance of perfect alignment.



The Peters' Universal Bearing Reamer, it is claimed, reduces the time required fo reaming main and connecting rod bearings to four or five hours as compared to three to 10 days by the old hand-scraping method, while the results secured, it is stated, are equal to the manufacturer's original product.

Manufactured by the Aluminum Brazing Solder Co., Widener building, Philadelphia, Pa. Price, $190; West of the Rockies, $200.

The Trex Air-Operated Valve Spring Compressor is a tool that will appeal to service station and garage repairers who have a large amount of valve grinding to do and are equipped with power operated air compressor outfits.

Air is lead to the tool through a rubber tubing from a wall fixture and is turned on as needed by a special three-way cock on the upper section of the cylinder of the tool. The operation of the device is simple—it is simply placed in position with the lower fork around the valve stem above the push rod, and the center pin on the top of valve. The petcock is opened and the air passes into the cylinder, forcing the piston down and compressing the spring. Removing the fastening pin in the valve stem and opening the valve allows the air to escape and the tool may be removed. The valve stem, spring and spring cap can then be removed also.

Trex Air Operated Valve
Spring Compressor.

For Garages, Service Stations and Repair Shops.

The tool is made throughout of steel and is stated to be strong, light and durable, and is claimed to be one of the most practical and efficient valve lifters made.

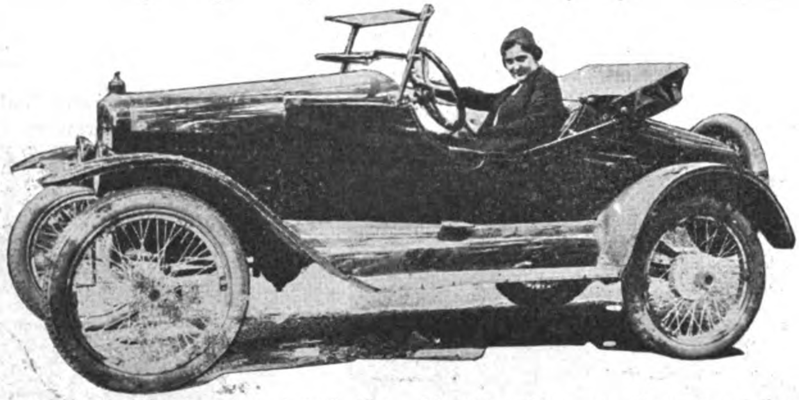
Manufactured by the Trexler Co., 1418 Walnut Street, Philadelphia, Pa. Price, $15; West of the Rockies, $16.

Kozy Windshield Wings consist of two wings of heavy beveled plate glass, which are fastened by special supports and fasteners to the side bars of the windshield and protect the passengers of the car from drafts around the edge of the shield, as well as keeping out dust and rain, it is stated.

A feature of Kozy wings is the special patented arm which holds the glass. This arm is so designed and applied that there is no strain on the glass, and vibration and sudden jerks do not make it liable to breakage. These wings the manufacturer states, add tone to the most luxurious car, yet are practical and are being used on cars of the higher priced type as well as the medium priced.

Manufactured by the Thomas-Bray Co., Cincinnati, O. Prices and literature on request. Dealers and jobbers should send for literature and special proposition.

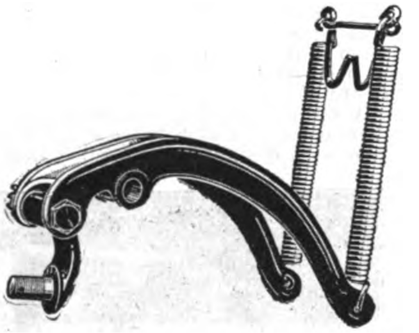
The Lamco Line of High Grade Bodies for Ford Cars comprises four styles: Sporting model F 50, racing model "23," touring model F 99 and the Lamco De Luxe model five-passenger body. The Lamco sport model roadster is of the semi-racing type, having straight, low-cut lines, slanting windshield, one-man top and French plaited upholstery. The outfit comes complete with high grade top and windshield, crown fenders, linoleum covered running boards, side shields, radiator shell and hood, large gas tank and spare tire carrier.



All wood work is finished in walnut, while the body is painted Stutz blue, red, Mercer yellow, or Brewster green. The fender and hood are finished in black only.

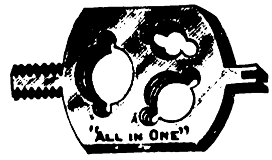
Manufactured by the Lehman Manufacturing Co., Cannelton, Ind. Prices and literature on request.

The H. & D. Patented Shock Absorbers for Ford Cars consist of a special alloy, drop forged steel perch, equipped with high carbon steel bolts fitted with castellated nuts and cotter pins, and a high grade malleable iron arm to which are attached two large coiled springs made of Premier steel wire, .50-.65 carbon, heat treated after rolling and securely attached to the arm. Rear hooks and front clips are provided for attaching the springs to the car and it is stated that the absorbers are easily fitted and that it is unnecessary to bore new holes when attaching. It is claimed that the riding qualities of the car are greatly improved after the absorbers are installed, and that the operator need not fear traveling over rough roads. The absorbers are sold on a 30-day trial and, if not as represented, may be returned to the dealer, the dealer receiving a new set from the manufacturer and compensation for his labor in removing them.



Manufactured by the H. & D. Co., Crawfordsville, Ind. Prices and literature on request.

The "All In One" Valve Tool is in reality five tools in one and is claimed to possess all the advantages of other tools of this type, besides being made from flat cold rolled steel, case hardened, and can be conveniently carried in the vest pocket.



It is claimed that this little tool will do the work that higher priced tools are designed to do and retails for much less.

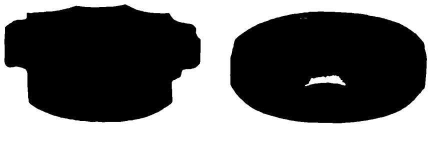
Manufactured by the E. G. Manufacturing Co., 250 West 54th Street, New York City. Price, 25 cents each.

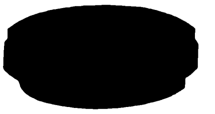
Endura Sheet Packing is made of vegetable fiber, chemically treated, and is stated to be unlike any other packing on the market. Though black in appearance, it contains neither rubber nor asbestos. Endura sheet packing is claimed to be as tough as rawhide and extremely light, is easily cut to make perfect joints and gives unusual service in thin sheets.

Where it is desired to use a packing that is liable to come in contact with water, gasoline, oil, etc., Endura packing is guaranteed to fill the bill, with the exception of parts subjected to intense heat and, for this purpose, a copper asbestos gasket is recommended.

Manufactured by the Endura Manufacturing Co., Philadelphia, Pa. Prices on request.

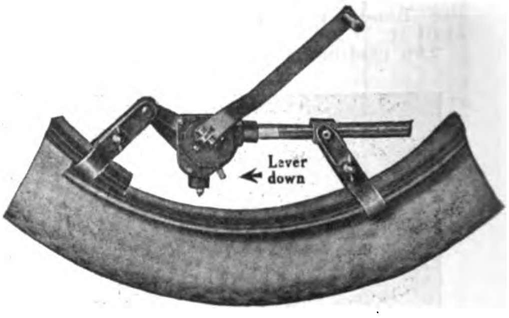
Molded Radiator Caps are made of a cold molded composition having an asbestos base with a cement binder. The manufacturer states that this composition is molded under 30 to 50 tons hydraulic pressure on to brass, male and female threaded inserts. The caps are guaranteed not to be affected by any temperature fluctuations which will be experienced in service or, as a matter of fact, by any temperature, from zero to 600 degrees Fahrenheit, nor by alcohol or the fumes from any other non-freezing mixture.





Manufactured by the American Insulator Co., New Freedom, Pa. Prices on application.

The Jamcap Rim Tool has recently been developed for removing or replacing tires on demountable rims of passenger cars, and is claimed to be the best of all rim tools. The device consists of two clamps which are firmly fastened to the rim, one at either side of the brake; the ends of the clamps are joined by the operating mechanism and a threaded worm. To operate the tool after it has been fitted to the rim, the handle is turned to the right, which action causes a small threaded pin to turn downward on the underside, coming in contact with the rim, and raising one end of it at the break. Still further turning of the handle to the right causes the connecting worm to turn, contracting the ends of the rim and passing the free end over the fixed end, allowing the tire to be slipped off the rim. To replace a tire the operation is reversed.



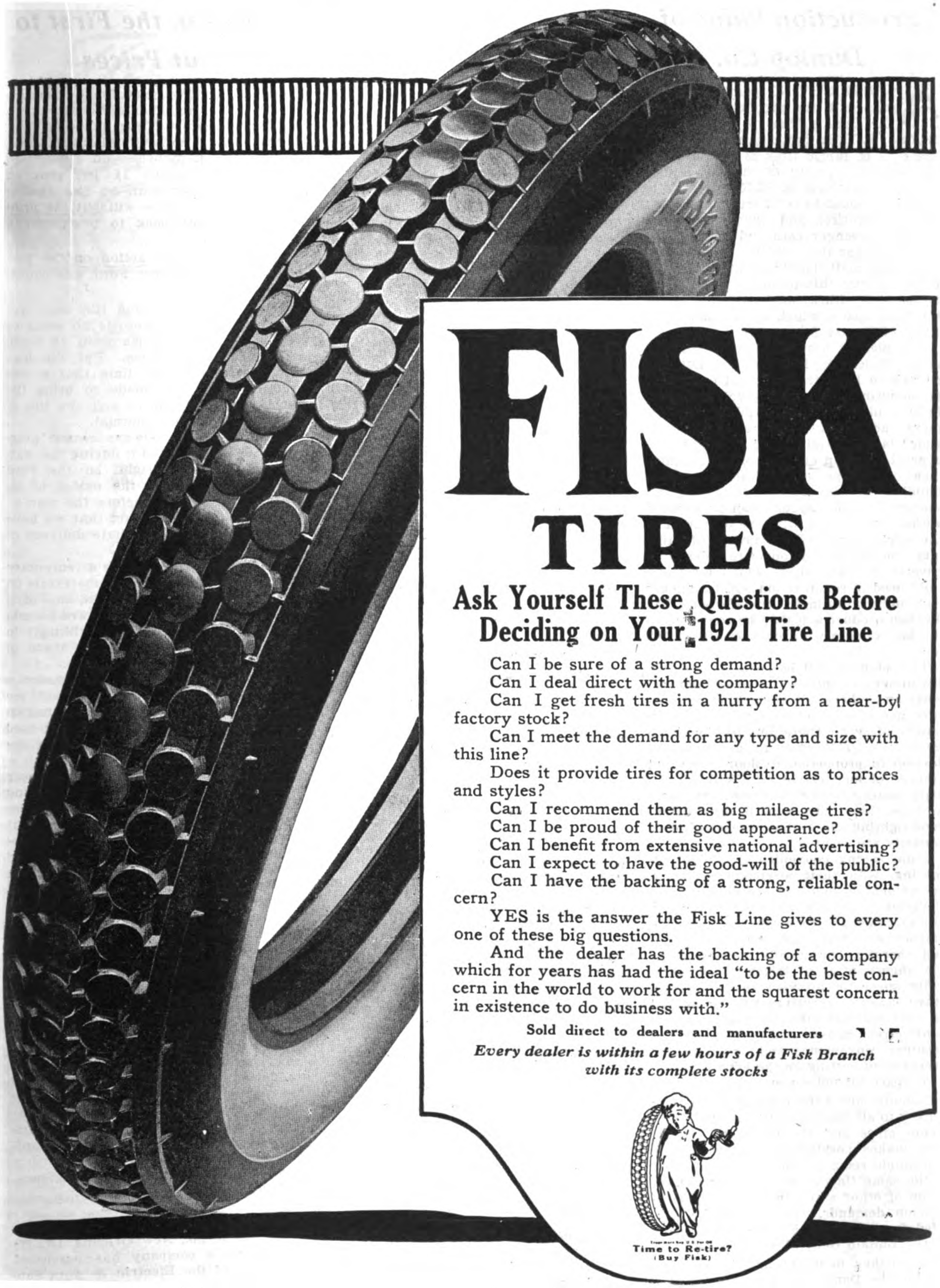
It is stated that pinching of the fingers or of the inner tube is reduced to a minimum, and that no other tools are required to remove a tire no matter how badly it may be rusted to the rim.

Manufactured by Jamcap Rim Tool Co., Caplan Brothers, sole agents, 77 Bedford Street, Boston, Mass. Price, $7.50 list.

Stone Shock Absorbers for Dodge Cars and others using a three-quarter or scroll end, elliptic type spring, is designed to add to the easy riding qualities of the car and prevent road shocks from reaching the occupants of the car. It is stated that Stone shock absorbers relieve the severe back-throw or rebound of stiff springs, in this manner saving the life of the spring.

The shock absorber is made in a cylindrical shape and is fitted at the end of three-quarter elliptic springs. It is composed of two springs, one inside of the other, which fit against an adjustment block at the top and the cylinder at the bottom. Adjustment is made by turning the long bolt which passes through the center of the springs and draws down the adjustment block, supplying more tension to the spring. Compression grease cups are fitted to the suspension bolts which pass through the spring ends, supplying sufficient lubrication to the bushings within the spring ends. Felt retainers are also supplied, which hold the oil precisely on the bearings which are to be lubricated. Stone shock absorbers are fully guaranteed against defects in material or workmanship for a period of one year from date of purchase.

Manufactured by the Stone Manufacturing Co., 1502 South Michigan Avenue, Chicago, Ill. Price, f. o. b. Chicago, $10 per pair for rear springs, war tax paid.



FISK
TIRES

Ask Yourself These Questions Before Deciding on Your 1921 Tire Line

Can I be sure of a strong demand?
Can I deal direct with the company?
Can I get fresh tires in a hurry from a near-by factory stock?
Can I meet the demand for any type and size with this line?
Does it provide tires for competition as to prices and styles?
Can I recommend them as big mileage tires?
Can I be proud of their good appearance?
Can I benefit from extensive national advertising?
Can I expect to have the good-will of the public?
Can I have the backing of a strong, reliable concern?

YES is the answer the Fisk Line gives to every one of these big questions.

And the dealer has the backing of a company which for years has had the ideal "to be the best concern in the world to work for and the squarest concern in existence to do business with."

Sold direct to dealers and manufacturers

Every dealer is within a few hours of a Fisk Branch with its complete stocks

Time to Re-tire?
(Buy Fisk)

Production Plans of Dunlop Co.

AN INTERESTING point in connection with the production plans of the Dunlop Tire & Rubber Co., Buffalo, N. Y., is that at present the manufacture of fabric tires is not included. The entire capacity of the big Buffalo factory, estimated at 12,500 tires daily, will be devoted to solid truck and pneumatic cord tires and inner tubes for trucks, passenger cars and motorcycles. Passenger car tires will be made in both large and small sizes, including Fords. It is stated that this production can easily be doubled without materially increasing the floor space, which now totals about 1,250,000 square feet.

The plan of production, while surprisingly efficient is, it is claimed, not new enough to be untried nor old enough to be shopworn. It simply involves a carefully studied plan of building arrangement, accessibility and a construction which is both original and interesting. In general the plan consists of the arrangement in groups, each of three parallel buildings, 560 by 120 feet, so located and spaced that the capacity can be doubled without interfering with the operation of the original units. These groups of buildings are located on opposite sides of a covered roadway upon which all materials used in construction will be quickly and uninterruptingly transferred. The finished product will then be conveyed to the big four-story warehouse, 546 by 162 feet.

This plan, it will be seen, has certain advantages of interest to production experts and others. It assures proper convergence of parallel operations and continuity of serial operations by the shortest routes. This, in turn, increases production in proportion to floor space and number of men employed. With all the main factory buildings of one-story monitor type, the rapid routing of the product, good lighting and easier increase of plant capacity are secured.

Time saving conveniences and direct routing, with their attendant economy, are evident in many of the detailed construction features of the Dunlop factory. For example, the roadways, for both employees and materials, will be covered and therefore practically immune from the uncertainties of inclement weather. Office space for foremen, inspectors and other factory executives will be located on this roadway, thus giving the occupants direct ingress and egress with the greatest convenience and obviating the necessity of cutting up the actual factory floor space for office use.

Conduits and subways will be used to convey to all the buildings the water and steam pipes and the electrical system. This makes possible great accessibility and ample room for the repair man and at the same time gives space for the addition of other wires and pipes when expansion demands. Power will be supplied from Niagara Falls and the plant of the Buffalo General Electric Co.

To further facilitate and insure production the Dunlop Co. has purchased a textile mill at Utica, N. Y. The date of the formal opening of the plant has not yet been announced, but it is expected that production will be fairly under way early in 1921.

Perry D. Saylor, vice president and general manager of the Dunlop Tire & Rubber Co. of America, Buffalo, N. Y., announces the following appointments on the staff organization of that company: Factory manager, George R. Johnson; engineering manager, John Flower; production manager, C. R. Redfield; sales manager, C. L. Landon; director of industrial relations, C. P. Berner. Messrs. Flower and Landon are former Goodyear executives.

SYRACUSE CO. INSTALLS CURING APPARATUS.

The Syracuse Rubber Co., Inc., Syracuse, N. Y., manufacturer of the Syra-Cord tires and tubes, has purchased a new curing device known as the automatic time and temperature controller that is proclaimed by tire experts to be the most accurate and efficient device in use today for its purposes. It is claimed to do away with the possibility of over or under-curing the tires as the steam and air pressure, by which this process is done, is shut off when it should be automatically and accurate temperature, which is so important in curing, is a certainty and loss of time, waste of steam and spoilage are all avoided. One operator can take charge of a number of vulcanizers and secure perfect results on them all.

Superintendent K. D. Smith states that although the initial cost of this automatic controller is high, in the end it will be a great economy, and it strictly complies with the company's policy of using only the most modern machinery in turning out as good a cord tire as there is on the market.

MILLER SELLS DIPPED GOODS DEPARTMENT.

Increased automobile tire business is stated as the reason of the sale by the Miller Rubber Co., Akron, O., of its dipped goods department to the Seamless Rubber Co., New Haven, Conn. The disposal of this department does not affect the balance of the Miller miscellaneous line of rubber goods, being confined only to dipped goods such as household, surgeons' and acid gloves, finger cots, bathing caps, drainage gauze covers, dilator covers, balloons, etc.

REORGANIZATION OF FURBER CO.

The Furber Manufacturing Co., manufacturer of automotive products, 614 Washington street, Lynn, Mass., has been reorganized with Horatio Gilbert as president, succeeding Mr. Furber, and the name of the concern has been changed to 100 Per Cent. Manufacturing Co.

The Automobile Tire Co., Inc., of New York, has opened a branch at 2446 Fifth avenue, Troy, N. Y., in charge of F Whitehouse.

Ford Co. the First to Cut Prices

One of the most sensational announcements in the automobile industry for a number of years was that made on Sept. 21 by the Ford Motor Co., Detroit, Mich., of a reduction in prices on all models, ranging from about 14 per cent. on trucks to 31 per cent. on the smaller passenger cars. This will put the price of this machine back to practically a pre-war basis.

In explaining this action on the part of his company, Henry Ford was quoted as follows:

"The war is over and it's time war prices were over. There is no sense or wisdom in trying to maintain an artificial standard of values. For the best interests of all it is time that a real practical effort was made to bring the business of the country and the life of the country down to normal.

"Inflated prices always retard progress. We had to stand it during the war, although it wasn't right, so the Ford Motor Co. will make the prices of its products the same as before the war.

"This in face of the fact that we have unfilled orders for immediate delivery of 146,065 cars and tractors.

"We must, of course, take a temporary loss because of the stock of materials on hand, bought at inflated prices, and until we use that stock up we will have to submit to a loss, but we take it willingly in order to bring about a going state of business throughout the country.

"Our country is rich beyond measure in natural resources. Rich in all the material things that go to make a nation great, and yet its progress is being held practically at a standstill because of the greed of the profiteers.

"Now is the time to call a halt on war methods, war prices, war profiteering and war greed. It may be necessary for everybody to stand a little sacrifice, but it will be most profitable after all, because the sooner we get the business of the country back to a pre-war condition and the lives of our people become more natural—progress, prosperity and contentment will occupy the attention of our people."

Edsel Ford, president of the Ford Motor Co., announced that the prices will be as follows:

Stripped chassis from $525 to $360; runabout from $550 to $395; with starter, from $625 to $465; touring car from $575 to $440; with starter, from $650 to $510; truck chassis from $640 to $545, including demountable rims and pneumatic tires; coupe from $850 to $745, including starting system and demountable rims; sedan from $975 to $795, including starting system and demountable rims; Fordson tractor from $850 to $790.

These prices went into effect at once. There is no cut in wages.

Percival Stern, president of the Interstate Electric Co., New Orleans, La., reports that his company has purchased the assets of the Electric & Auto Supply Co., Birmingham, Ala.

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Automotive Equipment Show Signal Event of Season

Big List of Exhibitors at Chicago Typical of Entire Industry—Comprehensive Directory of Manufacturing and Jobbing Concerns Which Will Be Represented.

THE stage is all set at the Chicago Coliseum for what will undoubtedly be the most significant event of the season in the automotive industry of the country—the annual convention and second annual exhibit of the Automotive Equipment Association, Nov. 15-20.

When last season saw the inauguration of a show for the members in connection with the annual convention of the national automotive equipment body, it was considered somewhat in the nature of an experiment, but the result proved so successful that it was unanimously voted to make it a regular feature at future conventions. It has, therefore, been anticipated for months in the industry and trade, with the consequence that the show committee has been confronted with the problem of providing adequate accommodation for the hundred of applicants, even in the increased capacity afforded by the immense Coliseum building, and many late comers have had to be content with space in the Annex, or by overflowing into the various hotels and making independent displays at their Chicago headquarters or locations as convenient as possible to the big main show.

The list of exhibitors supplied by the committee to date indicates that there will be 200 jobbers and manufacturers represented at this second annual show and the whole will form one of the most comprehensive offerings of automotive equipment imaginable, covering almost every conceivable fitting, appliance, material or part entering into the construction of the modern motor car, as well as contributing to their maintenance and repair, and for the thorough equipment and stocking of garages, repair shops, service stations, accessory and supply stores. And the displays themselves will be supplemented by a corps of competent officials and wide-awake sales representatives and, if the amount of business transacted at the initial show of 1919 can be considered any criterion, the stimulation to the industry this year should prove of sufficient volume to be most gratifying to the exhibiting members and management.

Directors' and Committee Meetings.

During the first two days of the convention meetings of the various boards of officials and committees will be held at the Congress Hotel as follows:

Board of Directors—English Room, Monday morning, Nov. 15, 10 o'clock.

Board of Governors—English Room, Tuesday afternoon, Nov. 16, 2:30 o'clock.

State Vice Presidents—Green Room, Tuesday afternoon, Nov. 16, 2:30 o'clock.

Membership Committee—Room A 6-8, Monday morning, Nov. 15, 10 o'clock.

Standardization Committee—French Room, Monday morning, Nov. 15, 10 o'clock.

Committee on Labor—Room A 22, Tuesday morning, Nov. 16, 10 o'clock.

Vigilance Committee—Room A 24, Tuesday afternoon, Nov. 16, 12:30 o'clock.

Committee on Railroad Classification — Room A 16, Tuesday morning, Nov. 16, 10 o'clock.

Committee on Good Roads and Highways—Room A 18, Tuesday morning, Nov. 16, 10 o'clock.

The first general session of the con-

R. R. Englehart, President of Automotive Equipment Association.

William W. Webster, Commissioner, Automotive Equipment Association.

vention will be held on the second floor of the Coliseum Annex and will be called to order at 10 a. m. Wednesday, Nov. 17, and continue until 12:30, when an adjournment will be made for the day, and there will also be sessions at the same time and place Thursday and Friday and Saturday also if necessary to finish up the business.

In order to make the sessions of the convention of vital interest, Commissioner Webster is going to ask every member to submit some question he would like to have taken up by the board of directors or on the convention floor.

There will not be, this year, separate afternoon sessions for jobbers and manufacturers, but the manufacturers' division will have a special meeting at the conclusion of the Wednesday morning session of the general convention to take up any matters that should properly come before that section. On Thursday afternoon, after the regular morning session, the jobbers will remain in convocation for the consideration of their particular problems.

Special Points of Information.

The registration room will be located in the Francis I room on the second floor of the Congress hotel and will be open to receive registrations and distribute credentials and official badges on Monday and Tuesday. On Wednesday the registration room will be transferred to the Coliseum.

As usual, ladies are cordially invited to attend the business sessions, and ample seating accommodations are provided in the gallery of the Annex, where the convention will be held, and no tickets nor badges will be required for admission.

A splendid musical programme will be rendered by a fine orchestra and, in addition, there will be vocal selections by well known artists from time to time in the main hall for the entertainment of the delegates and exhibitors and their guests.

An a la carte luncheon will be served in the northeast portion of the basement of the Coliseum immediately following the adjournment of the convention sessions. The afternoons will be given over to the exhibits.

The show will be open from 9:30 a. m. to 6 p. m. for the first five days of the week and will close at noon Saturday.

Cards of admission will be in the form of coupon tickets for delegates; guest cards for others desiring to attend the convention sessions; exhibitors' tickets for exhibitors and their salesmen, assistants and aids; dealers' badges and tickets, which may be sent by members to customers, which are in the form of a card of introduction that may be exchanged for a badge at the registration room; and guest tickets for the exhibit only for non member jobbers, engineers, architects and other parties who may be interested in the show or the automotive equipment line These last tickets will not admit to the convention.

The bulletin board and bureau of information will be located near the main entrance of the Coliseum.

Committees and Members of Association

Following is a complete roster of the officials, committees and membership of Automotive Equipment Association:

Board of Directors.

President, R. R. Englehart, Sieg Co., Davenport, Ia.

Vice president, R. A. Stranahan, Champion Spark Plug Co., Toledo, O.

Chairman, H. M. Dine, Dine-De Wees Co., Canton, O.

Vice Chairman, L. P. Halladay, L. P. Halladay Co., Streator, Ill.

J. S. Proctor, Minneapolis Iron Store Co., Minneapolis, Minn.

S. T. McCallum, Auto Equipment Co., Denver, Col.

F. T. Chase, Frank Mossberg Co., Attleboro, Mass.

F. A. Ferris, Ferris Dunlap Auto Supply Co., Dallas, Tex.

W. T. Walker, Walker Mfg. Co., Racine, Wis.

L. H. Van Briggle, Van Briggle Motor Device Co., Indianapolis, Ind.

G. L. Brunner, Brunner Mfg. Co., Utica, N. Y.

N. H. Oliver, Metal Specialties Mfg. Co., Chicago, Ill.

C. L. Carper, Nebraska Buick Auto Co., Lincoln, Neb.

Fred Campbell, Fred Campbell Auto Supply Co., St. Louis, Mo.

Chas. Stahl, Connecticut Tel. & Elec. Co., Meriden, Conn.

J. E. Millen, John Millen & Son, Ltd., Montreal, Quebec, Canada.

Wm. Von Elm, E. A. Laboratories, Inc., Brooklyn, N. Y.

J. Prescott, Prescott Auto Parts Co., Webster, Mass.

Ivan Goodrich, Goodrich-Lenhart Mfg. Co., Hamburg, Pa.

S. A. Fulton, The Fulton Co., Milwaukee, Wis.

Earl Reynolds, Reynolds & Reynolds, Tacoma, Wash.

Robert Weinstock, Weinstock-Nichols Co., San Francisco, Cal.

C. R. Churchill, Electric Appliance Co., New Orleans, La.

L. A. Cavanaugh, Motor Car Supply Co., Ltd., Calgary, Alta, Canada.

Commissioner—William M. Webster.
National Field Secretary—George Fritz.
Field Secretary—Charles P. Hughes.

STATE VICE PRESIDENTS.

Alabama—A. H. Johnson, Johnson Auto & Tire Co., Montgomery.

California—C. Hillis, Electric Appliance Co., San Francisco.

Colorado—J. Foster, Foster Auto Supply Co., Denver.

Connecticut—L. H. Woodruff, F. S. Mersick & Co., New Haven.

District of Columbia—Chas. Rubel, Chas. Rubel & Co., Washington.

Florida—G. N. Baughman, G. Norman Baughman Co., Tampa.

Georgia—W. E. Cody, W. E. Cody Co., Columbus.

Illinois—Theo. Bass, National Electric & Auto Supply Co., Peoria.

Indiana—C. J. Lomont, Lomont & Co., Fort Wayne.

Iowa—Geo. Hippee, Hippee-States Co., Des Moines.

Kansas—F. J. Mankoff, Motor Equipment Co., Wichita.

Kentucky—T. M. Williams, Peaslee-Gaulbert Co., Louisville.

Louisiana—W. Shuler, Shuler Auto Supply Co., New Orleans.

Maine—C. J. Bailey, James Bailey Co., Portland.

Maryland—S. D. Black, Black & Decker Mfg. Co., Baltimore.

Michigan—N. J. Clark, General Sales Co., Detroit.

Massachusetts—E. N. Tarbell, Tarbell-Waters Co., Springfield.

Minnesota—C. R. Williams, Williams Hardware Co., Minneapolis.

Missouri—J. S. McGauley, Beck & Corbitt Iron Co., St. Louis.

Montana—J. Stanley Clemence, Northwestern Auto Supply Co., Billings.

Nebraska—C. B. Knowles, Kopac Bros., Omaha.

New Jersey—N. Elin, Elin Auto Supply Co., Newark.

New York—C. S. Owen, Chapin-Owen Co., Rochester.

North Carolina—J. G. Fitzsimmons, Carolinas Auto Supply House, Charlotte.

North Dakota—J. D. Grant, J. D. Grant Co., Fargo.

Ohio—H. G. Smith, Pennsylvania R. & S. Co., Cleveland.

Oklahoma—L. C. Sammons, Ratcliff-Sanders Co., Tulsa.

Oregon—E. R. Wiggins, Wiggins Co., Inc., Portland.

Pennsylvania—C. E. Jackson, Jackson Motor Supply Co., Pittsburgh.

Rhode Island—A. E. Goodby, Goodby-Rankin Co., Providence.

South Carolina—C. B. Jenkins, Jr., General Asbestos & Rubber Co., Charleston.

South Dakota—H. F. Brownell, H. F. Brownell Co., Sioux Falls.

Tennessee—N. F. Ozburn, Ozburn-Abston Co., Memphis.

Texas—C. O. McCauley, McCauley-Ward M. S. Co., Waco.

Utah—A. D. McMullen, Motor Mercantile Co., Salt Lake City.

Virginia—R. W. Payne, Talman Auto Supply Co., Richmond.

Washington—G. G. Lemley, Ballou & Wright, Spokane.

West Virginia—R. W. Jones, Williams Hardware Co., Clarksburg.

Wisconsin—R. B. Dunlap, C. A. Shaler Co., Waupun.

Canada.

Eastern Division—Ludger Gravel, Ludger Gravel & Fils, Montreal.

Prairie Division—A. Bowman, Bowman Brothers, Saskatoon.

MEMBERSHIP COMMITTEE.

Chairman, W. E. Wissler, Herring Motor Co., Des Moines, Ia.

Vice chairman, P. Stern, Interstate Electric Co., New Orleans, La.

C. L. Stebbins, Double Fabric Tire Co., Auburn, Ind.

W. C. Hecker, Curtis Pneumatic Machinery Co., St. Louis, Mo.

L. Schwab, Stevens & Co., New York.

H. E. Patterson, Warner-Patterson Co., Chicago, Ill.

A. F. Durkee, Durkee-Atwood Co., Minneapolis, Minn.

F. H. Suter, Shadbolt & Boyd Iron Co., Milwaukee, Wis.

D. T. Talman, E. L. Taylor & Co., Inc., Richmond, Va.

H. D. McCoy, McCoy Motor Supply Co., San Francisco, Cal.

W. L. Moncur, Cutter & Foster, Toronto, Ontario, Canada.

FINANCE.

Chairman, R. R. Englehart, Sieg Co., Davenport, Ia.

J. W. Perry, H. W. Johns-Manville Co., New York.

H. H. Reinhard, Reinhard Brothers Co., Minneapolis, Minn.

FEDERAL TRADE COMMISSION.

Chairman, F. B. Caswell, Champion Spark Plug Co., Toledo, O.

W. W. Low, Electric Appliance Co., Chicago, Ill.

S. F. Beech, Motor Car Supply Co., Chicago, Ill.

RAILROAD CLASSIFICATION.

Chairman, J. W. Lawhead, Au-To Compressor Co., Wilmington, O.

G. Norman Baughman, G. Norman Baughman Co., Tampa, Fla.

T. Wildermuth, Front Market Motor Supply Co., Harrisburg, Pa.

W. S. Bellows, Walden Worcester, Inc., Worcester, Mass.

M. R. Anstice, Kellogg Mfg. Co., Rochester, N. Y.

W. Morris, American Chain Co., Bridgeport, Conn.

T. F. Wilson, Apco Mfg. Co., Providence, R. I.

STANDARDIZATION.

Chairman, F. R. Hall, Northwestern Chemical Co., Marietta, O.

S. B. Dean, Nicols, Dean & Gregg Co., St. Paul, Minn.

G. L. Pedersen, Higgins Spring & Axle Co., Racine, Wis.

J. G. Fitzsimmons, Carolinas Auto Supply House, Charlotte, N. C.

C. M. Bunnell, Edison Lamp Works of General Electric Co., Harrison, N. J.

R. A. Picard, A. J. Picard & Co., New York.

L. C. Gould, Bowman-Gould Co., Detroit, Mich.

G. Brown, Johnstown Automobile Co., Johnstown, Pa.

H. M. Cooper, Cooper Mfg. Co., Marshalltown, Ia.

GOOD ROADS AND HIGHWAYS.

A. H. Borden, Shuler Auto Supply Co., Inc., New Orleans, La.

N. B. Burwell, J. B. Burwell Supply Co., Oklahoma City, Okla.

G. H. Southard, Jr., J. & B. Mfg. Co., Pittsfield, Mass.

J. Liston, Hippee States Co., Des Moines, Ia.

H. B. Ramey, National Carbon Co., Inc., American Ever Ready Division, Long Island City, N. Y.

J. Shuford, Shurnuff Mfg. Co., St. Louis, Mo.

L. S. Upson, Kimball-Upson Co., Sacramento, Cal.

H. West, Western Rubber & Supply Co., Los Angeles, Cal.

LABOR.

Chairman, M. D. Campbell, Perkins Campbell Co., Cincinnati, O.

W. K. Norris, McQuay Norris Mfg. Co., St. Louis, Mo.

H. Beneke, Beneke & Kropf Mfg. Co., Chicago, Ill.

R. W. Procter, Black & Decker Mfg. Co., Baltimore, Md.

W. H. Parkin, National Standard Co., Niles, Mich.

VIGILANCE COMMITTEE.

Chairman, Noah Van Cleef, Van Cleef Bros., Chicago, Ill.

J. Prescott, Prescott Auto Parts Co., Webster, Mass.

F. R. Hall, Northwestern Chemical Co., Marietta, O.

A. J. Hopkins, Canadian Fairbanks-Morse Co., Ltd., Montreal, Quebec.

W. S. Isherwood, Champion Ignition Co., Flint, Mich.

JOBBERS.

ALABAMA.

Electric & Auto Sup. Co.....Birmingham
Johnson Tire & Auto Co....Montgomery

ARIZONA.

Motor Supply Co.................Phoenix

ARKANSAS.

Fort Smith Auto Supply Co..Fort Smith

CALIFORNIA.

Campbell-Collins Co...........San Jose
Chanslor & Lyon Co......San Francisco
Electric Appliance Co......San Francisco
E. A. Featherstone..........Los Angeles
Gavin-Williams Co............San Diego
Inlaid Iron Co.....................Fresno
Kimball Upson Co............Sacramento
McCoy Motor Supply Co....San Francisco
Motor Hdw. & Equipment Co..San Diego
James S. Remick Co..........Sacramento
Waterhouse & Lester Co..San Francisco
Weinstock-Nichols Co......San Francisco
Western Rubber & Sup. Co..Los Angeles

COLORADO.

Auto Equipment Co..............Denver
Denver Auto Goods Co...........Denver
Foster Auto Supply Co............Denver
General Auto Sup. Co....Colorado Springs
Motor Accessory & Tire Co.........Pueblo
B. K. Sweeney Electrical Co......Denver

CONNECTICUT.

Horton-Gallo-Creamer Co.....New Haven
The C. S. Mersick & Co......New Haven
Post & Lester Co.................Hartford

DISTRICT OF COLUMBIA.

Chas. Rubel & Co...........Washington
Rudolph & West Co..........Washington

FLORIDA.

G. Norman Baughman Co..........Tampa
Consolidated Grocery Co....Jacksonville
C. W. Greene Co.................Tampa
Wholesale Auto Supply House....Tampa

GEORGIA.

Alexander Seewald Co...........Atlanta
W. E. Cody Co.................Columbus
A. S. Hatcher Co..................Macon

ILLINOIS.

Automobile Supply Co...........Chicago
Chicago Auto Equipment Co.......Chicago
Chicago Automobile Sup. House..Chicago
E. B. Collins Co.................Danville
Electric Appliance Co............Chicago
Graham-Seltzer Co...............Peoria
Hine-Watt Mfg. Co...............Chicago
E. D. Kimball & Co..............Chicago
Motor Car Supply Co.............Chicago
National Elec. & Auto Sup. Co....Peoria
Universal Automotive Sup. Co....Chicago
Washington Auto Supply Co..Washington

INDIANA.

The Gibson Co..............Indianapolis
W. J. Holliday & Co........Indianapolis
Lomont & Co................Fort Wayne
Orr Iron Co....................Evansville
Terre Haute Auto Co., Inc...Terre Haute
W. R. Wheeler Co...........Indianapolis

IOWA.

Cedar Rapids Pump Co.....Cedar Rapids
R. Donahue Iron & Hdw. Co..Burlington
Downing Electrical Co.......Des Moines
John Ernsdorff Iron Co..........Dubuque
R. F. & W. B. Fitch Co........Oskaloosa
Herring Motor Co............Des Moines
Hippee States Co............Des Moines
Mid-West Auto Supply Co......Dubuque
Repass Auto Co.................Waterloo
Schultz Auto Sup. Co...........Sioux City
Sieg Co.........................Davenport
Wm. Warnock Co., Inc........Sioux City

KANSAS.

Auto Supply Co., The........Hutchinson
Johnson Bros. Auto Sup. Co......Wichita
Motor Equipment Co...........Wichita
Shattuck-George Co.............Wichita
Southwick Auto Supply Co........Topeka
Watson, Weldon Motor Sup. Co....Salina

KENTUCKY.

Andrew Cowan & Co., Inc......Louisville
Louisville Auto Supply Co.....Louisville
Peaslee-Gaulbert Co...........Louisville
Robinson Bros Co..............Louisville

LOUISIANA.

Electric Appliance Co.......New Orleans
Interstate Electric Co........New Orleans
Shuler Auto Sup. Co., Inc..New Orleans

MAINE.

The James Bailey Co...........Portland

MARYLAND.

Auto Supply Co.................Baltimore

MASSACHUSETTS.

Alsten-Goulding Co...........Worcester
American Motor Equipment Co...Boston
Butts-Ordway Co.................Boston
Linscott Supply Co...............Boston
Tarbell-Watters Co.............Springfield
Wetmore-Savage Co..............Boston

MICHIGAN.

Automobile Supply Co...........Detroit
Becker Auto Co............Grand Rapids
Bowman-Gould Co..............Detroit
Cumings Brothers...................Flint
General Sales Co..................Detroit
Michigan Tire & Acces. Co..Grand Rapids
Tisch Auto Supply Co......Grand Rapids

MINNESOTA.

Duluth Auto Supply Co.............Duluth
Minneapolis Iron Store Co...Minneapolis
Nicols, Dean & Gregg............St. Paul
Reinhard Brothers Co........Minneapolis
C. J. Smith & Co...................St. Paul
G. Sommers & Co.................St. Paul
Western Motor Supply Co....Minneapolis
Williams Hardware Co.......Minneapolis

MISSOURI.

Ayers-Farmer Auto Sup. Co....St. Joseph
Beck & Corbitt Iron Co..........St Louis
Bonniwell-Calvin Iron Co....Kansas City
Fred Campbell Auto Sup. Co....St. Louis
Equipment Co., The..........Kansas City
Geller, Ward & Hasner Hd. Co..St. Louis
Holthaus Sad. & Auto Sup. Co..St. Louis
Kansas City Auto. Sup. Co..Kansas City
Missouri Auto Specialty Co.....St. Louis
Motor & Machinists Sup. Co..Kansas City
Ozark Motor Supply Co........Springfield
The Straus Co..................St. Louis

MONTANA.

Northwestern Auto Supply Co....Billings

NEBRASKA.

W. M. Dutton & Sons Co........Hastings
J. H. Haney & Sons..............Omaha
Kopac Bros......................Omaha
Korsmeyer Co...................Lincoln
Master Sales Co..................Omaha
Nebraska-Buick Auto Co.........Lincoln
Powell Supply Co.................Omaha
U. S. Auto Supply Co.............Omaha
Western Automobile Supply Co....Omaha

NEW JERSEY.

Automotive Equipment Co........Newark
Economy Auto Supply Co........Newark
Elin Auto Supply Co.............Newark

NEW YORK.

Julius Bindrim.................Brooklyn
Chapin-Owen Co...............Rochester
Davis-Brown Electric Co.........Ithaca
Lowe Motor Supply Co.........New York
Martin-Evans Co...............Brooklyn
Thos. J. Northway.............Rochester
A. J. Picard Co................New York
W. E. Pruden Hdw. Co......New York
Jay A. Rickard Co...........Schenectady
W. R. Rowerdink & Son........Rochester
S. Smith & Sons, Ltd..........New York
Strauss, Jos., Inc..................Buffalo
Utica Cycle & Supply Co............Utica
John Van Benschoten......Poughkeepsie
Whittemore-Sim Co..............New York

NORTH CAROLINA.

Carolinas Auto Supply House..Charlotte
Ko-Mo Supply Co., Inc...........Charlotte

NORTH DAKOTA.

J. D. Grant Co.......................Fargo

OHIO.

C. & D. Auto Supply Co........Cincinnati
I. J. Cooper Rubber Co........Cincinnati
Dayton Iron & Steel Co..........Dayton
Dine-DeWees Co.................Canton
Griswold-Sohl Co...............Columbus
Justus & Parker Co.............Columbus
M. & M. Co......................Cleveland
Ohio Rubber Co...............Cincinnati
Pennsylvania Rub. & Sup. Co...Cleveland
Reed Supply Co...........Oklahoma City
Roberts-Toledo Auto Co...........Toledo
G. W. Shroyer & Co..............Dayton
Toledo Rubber Co..................Toledo
Union Supply Co...................Toledo
York Supply Co..................Greenville

OKLAHOMA.

J. B. Burwell Sup. Co.....Oklahoma City
Ratcliff-Sanders Co..................Tulsa
Severin Tire & Sup. Co....Oklahoma City
R. V. Smith Supply Co....Oklahoma City

OREGON.

Ballou & Wright.................Portland
Cronin Co., P. J..................Portland
Wiggins Co., Inc..................Portland

PENNSYLVANIA.

Berrodin Rubber Co.........Philadelphia
Cahall Motor Supply Co......Philadelphia
Front Market Motor Sup. Co..Harrisburg
Gaul, Derr & Shearer Co....Philadelphia
General Auto Supply Co.........Lancaster
Jackson Motor Supply Co......Pittsburgh
Johnstown Automobile Co......Johnstown
Lansing Hardware Co...........Scranton
Manufacturers Supplies Co..Philadelphia
J. H. McCullough & Son......Philadelphia
Motor Accessories Co..........Allentown
Geo. W. Nock, Inc..............Philadelphia
Pittsburgh Auto Eqpt. Co......Pittsburgh
H. C. Roberts Elec. Sup. Co..Philadelphia

RHODE ISLAND.

Goodby-Rankin Co............Providence
Miller, Inc......................Providence
Providence Auto Eqpt. Co....Providence
Waite Auto Supply Co.........Providence

SOUTH CAROLINA.

D. W. Alderman, Jr.............Florence
Cameron & Barkley Co........Charleston
C. D. Franke & Co............Charleston

SOUTH DAKOTA.

H. F. Brownell Co............Sioux Falls
Spaulding Supply Co............Aberdeen

TENNESSEE.

Ozburn-Abston & Co............Memphis
Southern Auto Supply Co....Chattanooga

TEXAS.

Archenhold Automobile Sup. Co....Waco
Borderland Auto Supply Co......El Paso
Electric Appliance Co..............Dallas
Equipment Co. of Texas........Ft. Worth
Ferris-Dunlap Auto Supply Co....Dallas
L. Frank Saddlery Co........San Antonio
G. W. Hawkins Auto Supply Co..Houston
Hans Johnson......................Dallas
McCauley-Ward Motor Supply Co..Waco
McLendon Hardware Co............Waco
Nelson-Bell Co......................Waco
Roper, Harris & Dunn Co.....Greenville
Southern Equipment Co............Dallas
Spencer Co., The...................Dallas
Texas Auto Supply Co...........Ft. Worth
Tri-State Accessories Corp.......El Paso

UTAH.

Capital Electric Co........Salt Lake City
Intermountain Elec. Co...Salt Lake City
Motor Mercantile Co......Salt Lake City
Salt Lake Hardware Co..Salt Lake City

VIRGINIA.

Benton-Bailey Co..............Richmond
Benjamin T. Crump Co.. Inc...Richmond
J. L. Lindsay, Inc..............Richmond
Meadows-Price Co..............Roanoke
Owens-Merritt Co., Inc..........Danville
Piedmont Hardware Co..........Danville
Talman Auto Supply Co........Richmond
E. L. Taylor & Co., Inc.........Richmond

WASHINGTON.

Child, Day & Churchill, Inc......Spokane
Reynolds & Reynolds............Tacoma
Whiton Hardware Co..............Seattle

WEST VIRGINIA.

H. P. Dils & Son Co........Parkersburg
T. T. Hutchisson & Co.........Wheeling
Williams Hardware Co........Clarksburg

WISCONSIN.

Auto Supply Co..............Milwaukee
Phillip Gross Hardware Co....Milwaukee
Shadbolt & Boyd Iron Co......Milwaukee
Wisconsin Auto Supply Co......Wausau

CANADA.

Bowman Brothers. Ltd..Saskatoon, Sask.
Canadian Fairbanks-Morse Co., Ltd.... ....Montreal, Quebec
The Chapin Co...........Calgary, Alberta
Cutten & Foster........Toronto, Ontario
R. G. Edgecomb & Co., Ltd..London, Ont.
Ludger Gravel & Fils Co..Montreal, Que.
Hyslop Brothers, Ltd....Toronto, Quebec
Independent Electric Co....Regina, Sask.
Keyes Supply Co., Ltd...Ottawa, Ontario
LaMontagne, Ltd...............Montreal
John Millen & Son, Ltd....Montreal, Que.
Motor Car Supply Co....Calgary, Alberta
Northern Elec. Co., Ltd..Montreal. Quebec
H. W. Petrie of Montreal, Ltd.......... ....Montreal, Quebec

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MANUFACTURERS.

CALIFORNIA.

Boyle Manufacturing Co....Los Angeles
S. & M. Lamp Co............Los Angeles
Stewart Manufacturing Co.......Oakland

COLORADO.

Gates Rubber Co.................Denver

CONNECTICUT.

American Chain Co...........Bridgeport
Bridgeport Brass Co..........Bridgeport
Clover Mfg. Co..................Norwalk
Coe Stapley Mfg. Corp......West Haven
Connecticut Tel. & Elec. Co.....Meriden
Corbin Screw Corporation....New Britain
Fitzgerald Mfg. Co............Torrington
Hall-Thompson Co..............Hartford
The Raybestos Co.............Bridgeport
Russell Mfg. Co..............Middletown

ILLINOIS.

Advance Automobile Acces. Corp..Chicago
Advance Felt. Spec. & Cut. Co..Chicago
American Bureau of Eng., Inc....Chicago
Anderson Electric & Eqpt. Co....Chicago
Apex Electric Mfg. Co............Chicago
Atlas Specialty Mfg. Co..........Chicago
B. & W. Mfg. Co..................Chicago
Beneke & Kropf Mfg. Co........Chicago
Burd High Compres. Ring Co..Rockford
Canedy-Otto Mfg. Co....Chicago Heights
Casey-Hudson Co..................Chicago
Chicago Fuse Mfg. Co............Chicago
Dole Vale Co......................Chicago
J. W. Duntley.....................Chicago
E. Edelmann & Co................Chicago
Federal Brass Co..................Chicago
Federal Miniature Lamp Division of General Electric Co............Chicago
Gardner Governor Co..............Quincy
Gill Mfg. Co......................Chicago
Guthard Co., Edgar C............Chicago
Halladay Co., L. P................Streator
Hill Pump Valve Co...............Chicago
Howe Lamp Mfg. Co..............Chicago
Illinois Brass Mfg. Co............Chicago
Imperial Brass Mfg. Co..........Chicago
Jefferson Electric Mfg. Co.......Chicago
William R. Johnson Mfg. Co......Chicago
Mayo-Skinner Mfg. Co............Chicago
Metal Specialties Mfg. Co........Chicago
Mutual Wheel Co ....Moline
Paul G. Niehoff & Co............Chicago
A. Nelson Mfg. Co................Chicago
Osgood Lens & Supply Co........Chicago
Peoria Overhead Washer Co......Peoria
Protexal Co....................Abingdon
Romort Mfg. Co....................Chicago
Stahl Rectifier Co................Chicago
Stewart Mfg. Co., F. W..........Chicago
Sunderland Mfg. Co..............Chicago
Templeton, Kenley & Co..........Chicago
Tuthill Spring Co.................Chicago
Van Cleef Brothers...............Chicago
Van Sicklen Co.....................Elgin
Victor Mfg. & Gasket Co.........Chicago
Warner-Patterson Co.............Chicago
Weaver Mfg. Co...............Springfield
Jos. H. Weidenhoff...............Chicago

INDIANA.

The Anderson Co............South Bend
Continental Auto Parts Co......Columbus
Double-Fabric Tire Co............Auburn
H. & D. Co., Inc..........Crawfordsville
Haywood Tire & Eqpt. Co...Indianapolis
Indiana Lamp Co............Connersville
Van Briggle Motor Device Co.Indianapolis
Wheeler-Schebler Car. Co...Indianapolis

IOWA.

Albertson & Co...............Sioux City
Auto Metal Parts Co..........Des Moines
Carswell-Hammond Mfg. Co........Boone
Cooper Mfg. Co...........Marshalltown
Western Mfg. Co..............Oskaloosa

MARYLAND.

American Ham. Piston Ring Co.Baltimore
Black & Decker Mfg. Co......Baltimore
No-Leak-O Piston Ring Co....Baltimore

MASSACHUSETTS.

Conant & Donelson Co............Conway
Culver-Stearns Mfg. Co........Worcester
Gray & Davis, Inc...............Boston
Hill-Smith Metal Goods Co........Boston
J. & B. Mfg. Co.................Pittsfield
F. W. Mann Co....................Milford
Frank Mossberg Co.............Attleboro
Motor Specialties Co............Waltham
Multibestos Co...................Walpole
Prescott Auto Parts Co..........Webster
Walden-Worcester, Inc.........Worcester

MICHIGAN.

Champion Ignition Co..............Flint
Hastings Mfg. Co..............Hastings
Kalamazoo Railway Sup. Co..Kalamazoo
Kales Stamping Co...............Detroit
Lockwood-Ash Motor Co..........Jackson
Luthy Hydrometer Co.............Detroit
Monroe Auto Equipment Co......Monroe
National Standard Co..............Niles
Neville Steer. Wheel & Mfg. Co..Detroit
New Era Spring & Spec. Co.Grand Rapids
Piston Ring Co................Muskegon
Lewis Searing Co.................Detroit
Universal Tool Co.................Detroit

MINNESOTA.

Durkee-Atwood Co..........Minneapolis
Midwest Manufacturing Co...Minneapolis

MISSOURI.

Bussman Mfg. Co................St. Louis
Curtis Pneumatic Mchy. Co......St. Louis
Heiser Special Tool Co......Kansas City
Inland Machine Works..........St. Louis
Lockwood Mfg. Co..........Kansas City
McQuay-Norris Mfg. Co.........St. Louis
Nu-Back Mfg. Co.................St. Louis
Replacement Parts Co.......Kansas City
Shurnuff Mfg. Co...............St. Louis
A. J. Stephens Rubber Co....Kansas City
Stiles Mfg. Co...................St. Louis

NEW HAMPSHIRE.

Arthur S. Brown Mfg. Co..........Tilton

NEBRASKA.

Frank Rose Mfg. Co..............Hastings

NEW JERSEY.

The Auto Leather Mfg. Co......Arlington
Edison Lamp Works of General Electric Co. ....Harrison
Edward V. Hartford, Inc....Jersey City
Klaxon Co.........................Newark
LeCompt Co........................Newark
Rajah Auto Supply Co.........Bloomfield
Splitdorf Electrical Co..........Newark
Thermoid Rubber Co.............Trenton
Chas. O. Tingley Co..............Rahway
Voorhees Rubber Mfg. Co....Jersey City
E. A. Whitehouse Mfg. Co..........Newark

NEW YORK.

Acheson Graphite Co......Niagara Falls
Allen Auto Specialty Co........New York
American Ever Ready Works....L. I. City
Arrow Grip Mfg. Co..........Glens Falls
Automatic Saf. Tire Valve Corp.New York
Barcalo Mfg. Co...................Buffalo
Boyce-Veeder Corp.....Long Island City
Brunner Mfg. Co....................Utica
The Carborundum Co........Niagara Falls
Corning Glass Works............Corning
Crescent Tool Co.............Jamestown
E. A. Laboratories, Inc..........Brooklyn
Hart-Bell Co., Inc.............New York
H. W. Johns-Manville Co......New York
Judd & Leland Mfg. Co..Clifton Springs
Kellogg Mfg. Co................Rochester
Laminated Shim Co............New York
Manhattan Elec. Sup. Co......New York
Mayhew Steel Products Co., Inc.New York
Metal Stamping Co....Long Island City
A. R. Mosler & Co.........Mount Vernon
Moto-Meter Co..........Long Island City
G. Piel Co..............Long Island City
Pouvailsmith Corporation...Poughkeepsie
Pyrene Mfg. Co................New York
Sidel-Rattner Mfg. Co..........Brooklyn
Stevens & Co...................New York
Tide-Water Oil Sales Corp....New York
Tri Co. Products Corp............Buffalo
Troy Foundry & Machine Co........Troy
Westinghouse Lamp Co........New York
Wire Wheel Corp. of America.....Buffalo
X Laboratories...............New York

OHIO.

Adamson Mfg. Co..........East Palestine
Ashland Mfg. Co..................Ashland
Ashland Products Co............Ashland
Au-To Compressor Co........Wilmington
Canton Auto Parts Mfg. Co........Canton
Central Brass & Fixture Co..Springfield
Champion Spark Plug Co...........Toledo
Cincinnati Auto Specialty Co..Cincinnati
Columbus Varnish Co...........Columbus
Thomas J. Corcoran Lamp Co..Cincinnati
Corcoran Mfg. Co.............Cincinnati
Corcoran-Victor Co...........Cincinnati
Davies-Young Soap Co............Dayton
Dayton Wire Wheel Co.............Dayton
Elite Mfg. Co.....................Ashland
Firestone Tire & Rubber Co.........Akron
General Tire & Rubber Co..........Akron
Globe Machine & Stamping Co..Cleveland
J. P. Gordon Co................Columbus
Jiffy-Jack Co....................Cleveland
K-D Lamp Co....................Cincinnati
K-W Ignition Co.................Cleveland
F. H. Lawson Co...............Cincinnati
Marvel Accessories Mfg. Co....Cleveland
National Lamp Works of General Electric Co......................Cleveland
Northwestern Chemical Co.......Marietta
Packard Electric Co...............Warren
Pennsylvania Piston Ring Co..Cleveland
Perkins-Campbell Co...........Cincinnati
Polson Rubber Co...............Cleveland
Presto-Felt Mfg. Co...............Toledo
Reliable Mfg. Co.................Cleveland
The Service Products Co......Springfield
Sharp Spark Plug Co............Cleveland
Spencer Metal Products Co.......Spencer
Sterling Mfg. Co.................Cleveland
Temco Electric Mfg. Co..........Leipsic
Vichek Tool Co...................Cleveland

PENNSYLVANIA.

Alvord Reamer & Tool Co..Millersburg
Atwater-Kent Mfg. Co......Philadelphia
Bonney Vise & Tool Works....Allentown
L. H. Gilmer Co....Tacony, Philadelphia
Goodrich-Lenhart Mfg. Co......Hamburg
Iron City Products Co...........Pittsburgh
Keystone Reamer & Tool Co..Millersburg
Macbeth-Evans Glass Co......Pittsburgh
Manley Mfg. Co......................York
Motor Parts Co..................Philadelphia
N. A. Petry, Inc.............Philadelphia
Philbrin Co..................Kennett Square
Silvex Co.....................South Bethlehem
Trexler Co.....................Philadelphia

RHODE ISLAND.

Apco Mfg. Co....................Providence

SOUTH CAROLINA.

General Asbestos & Rub. Co..Charleston

TENNESSEE.

Continental Piston Ring Co.....Memphis

WISCONSIN.

American Grinder Mfg. Co....Milwaukee
American Metal Parts Co.......Milwaukee
Badger Mfg. Corp..............Milwaukee
Federal Rubber Co................Cudahy
The Fulton Co....................Milwaukee
Gemco Mfg. Co..................Milwaukee
Giant Grip Mfg. Co..............Oshkosh
Harvey Spring & Forging Co......Racine
Higgins Spring & Axle Co.........Racine
Madison Kipp Corp...............Madison
Milwaukee Auto Engine & Supply Co. ....Milwaukee
Modine Mfg. Co.....................Racine
C. A. Shaler Co...................Waupun
Walker Mfg. Co......................Racine

CANADA.

Adamson Mfg. Co. of Can..Hamilton, Ont.
Wm. H. Banfield & Son..Toronto, Ontario

Canadian Lamp & Stamping Co., Ltd. ....Ford City, Ontario
Canadian National Carbon Co., Ltd. ....Toronto, Ontario
Champion Spark Plug Co. of Canada.. ....Windsor, Ontario
Kelsey Wheel Co., Ltd..Windsor, Ontario
Kinzinger Bruce & Co., Ltd. ....Niagara Falls, Ontario
McKinnon Industries, Ltd. ....St. Catharines, Ontario
Motor Prod. Corp...Walkerville, Ontario
Splitdorf Electrical Co. of N. Y. (Toronto Branch)........Toronto, Ontario

List of Exhibitors

Following is a list of the exhibitors with their space numbers:

Name	Space
Acheson Graphite Co	157
Advance Auto Accessories Corp	137
Advance Felt Spec. & Cut. Co	220
Albertson & Co	189
Allen Auto Specialty Co	64
Alvord Reamer & Tool Co	168½
American Bureau of Eng., Inc	46
American Chain Co	48, 49
American Ever Ready Works	166
American Grinder Mfg. Co	190, 191
American Hammered Piston Ring Co.	88½, 89 & 89½
American Metal Parts Co	57
Anderson Co	209
Anderson Elec. & Eqpt. Co	83, 84
Apco Mfg. Co	109
Apex Electric Mfg. Co	63
Arrow Grip Mfg. Co	156
Ashland Products Co	165½
Atlas Specialty Mfg. Co	166½
Au-To Compressor Co	25
Auto Leather Mfg. Co	169½
Automatic Safety Tire Valve Corp	135
Automobile Journal Pub. Co	171½
B. & W. Mfg. Co	214
Badger Mfg. Corp	109½, 110
Barcalo Mfg. Co	198
Beneke & Kropf Mfg. Co	188
Bethlehem Spark Plug Co	19, 20
Black & Decker Mfg. Co	42, 43
Bonney Vise & Tool Works, Inc	95, 96
Boyle Mfg. Co	61, 62
Bridgeport Brass Co	125
Brown Mfg. Co., Arthur S	157½
Brunner Mfg. Co	38, 39, 40
Burd High Compression Ring Co	175
Bussman Mfg. Co	151
Canedy-Otto Mfg. Co.	149, 149½, 150, 150½
Carborundum Co	35
Carswell Hammond Mfg. Co	103
Casey-Hudson Co	108
Central Brass & Fixture Co	178
Champion Ignition Co	129
Champion Spark Plug Co	76, 77
Champion Spark Plug Co. of Canada	222
Chicago Fuse Mfg. Co	127
Chilton Co	230
Cincinnati Auto Specialty Co	115
Class Journal Co	179
Clover Mfg. Co	90½, 91
Coe-Stapley Mfg. Co	28
Columbus Varnish Co	24
Conant & Donelson Co	167½
Connecticut Tel. & Elec. Co	59
Continental Auto Parts Co	93, 94
Continental Piston Ring Co	73
Cooper Mfg. Co	56
Corcoran Lamp Co., Thos. J	219
Corcoran Mfg. Co	9, 9½
Corcoran-Victor Co	205
Corning Glass Works	158½
Culver Stearns Mfg. Co	3
Curtis Pneumatic Mach. Co	118, 119, 120
Davies-Young Soap Co	52
Dayton Wire Wheel Co	108½
Dole Valve Co	181
Double Fabric Tire Co	97
Duntley, J. W	172½
Durkee-Atwood Co	34
E. A. Laboratories, Inc	79, 80
E. Edelmann & Co	136
Edison Lamp Wks. of Gen. Elec. Co	168
Elite Mfg. Co	124
Federal Brass Works	170½, 171
Federal Min. Lp. Wks. of Gen. El. Co	174
Fitzgerald Mfg. Co	210
Fulton Co	57
Gates Rubber Co	144, 145
Gemco Mfg. Co	17, 18
General Asbes. & Rub. Co	163, 163½, 164
General Tire & Rubber Co	208
Giant Grip Co	16
Gill Mfg. Co	11, 12
Gilmer Co., L. H	32
Globe Machine & Stamping Co	75
Goodrich-Lenhart Mfg. Co	138
Guthard Co., Edgar C	101, 102
H. & D. Co	207
Hall-Thompson Co	195
Halladay Co., L. P	139
Hart-Bell Co	143
Hartford, Inc., Edw. V	90
Harvey Spring & Forging Co	203
Hastings Mfg. Co	196½, 197
Haywood Tire & Equipment Co	204
Higgins Spring & Axle Co	74
Hill Pump Valve Co	105
Howe Lamp & Mfg. Co	60
Illinois Brass Mfg. Co	162½
Imperial Brass Mfg. Co	78
Indiana Lamp Co	106
Interstate Electric Co	13
Iron City Products Co	66
J. & B. Mfg. Co	45
Jefferson Elec. Mfg. Co	70½
Johns-Manville Co., H. W	176, 177
Johnston Mfg. Co., Wm. R	206
Judd & Leland Mfg. Co	134
Kales Stamping Co	131
K-D Lamp Co	22
Kellogg Mfg. Co	111, 112
Kent, Atwater Co	201, 202
Keystone Reamer & Tool Co	44
Kininger, Bruce & Co., Ltd	227
Klaxon Co	99, 100
K-W Ignition Co	140, 141
Lawson Co., F. H	185, 185½
Le Compte Co., The	219½
Lockwood Mfg. Co	226
Macbeth-Evans Glass Co	182, 183
McKinnon Industries, Ltd	54
McQuay-Norris Mfg. Co	121, 122, 123
Madison-Kipp Corp	196
Manley Mfg. Co	192, 192½
Mann Co., F. W	158
Mayhew Steel Products, Inc	184
Mayo Skinner Mfg. Co	128
Metal Specialties Mfg. Co	41
Metal Stamping Co	6, 7
Mid-West Mfg. Co	187
Milwaukee Auto Eng. & Sup. Co	52½, 53
Modine Mfg. Co	104
Monroe Auto Equipment Co	55
Mosler & Co., A. R	199
Mossberg Co., Frank	68, 69
Moto Meter Co	132, 133
Motor Parts Co	215
Motor Specialties Co	107½
Multibestos Co	114
National Carbon Co., Inc	180
National Standard Co	67
Nelson Mfg. Co., A	65
Neville Steering Wheel & Mfg. Co	194
New Era Spring & Specialty Co	71, 71½
Niehoff Mfg. Co., Paul G	186
No-Leak-O Piston Ring Co	211, 212
Northwestern Chemical Co	85, 86
Nu-Back Mfg. Co	92
Packard Electric Co	33
Pennsylvania Piston Ring Co	200
Perkins-Campbell Co	29, 30
Petry Co., Inc., N. A	216
Piel Co., Geo	159
Polson Rubber Co	58
Pouvailsmith Corp	221
Prescott Auto Parts Co	14
Presto Felt Mfg. Co	50
Protexall Co	162
Pyrene Mfg. Co	217
Raybestos Co	154, 155
Reliable Mfg. Co	224
Replacement Parts Co	130
Romort Mfg. Co	107
Rose Mfg. Co., Frank	87
Russell Mfg. Co	21
S. & M. Lamp Co	223
Service Products Co	72
Shaler Co., C. A	116, 117
Sidel Rattner Mfg. Co	165
Spencer Metal Products Co	50½, 51, 51½
Splitdorf Electrical Co	10
Stahl Rectifier Co	152
Stark Inland Machine Works	4
Sterling Mfg. Co	148
Stevens & Co	23
Stewart Mfg. Co	229
Stewart Mfg. Corp, F. W	88
Stiles Mfg. Co	193
Temco Electric Motor Co	170
Templeton, Kenly Mfg. Co	31
Tingley & Co., Chas. O	153
Thermoid Rubber Co	173
Trade Press Pub. Co	167
Trexler Co	114
Trico Products Co	225
Troy Fdy. & Machine Works	160
Tuthill Spring Co	98
Universal Tool Co	142
Van Cleef Bros	1, 2
Victor Mfg. & Gasket Co	36, 37
Voorhees Rubber Co	8, 8½
Walden-Worcester, Inc	26, 27
Walker Mfg. Co	81, 82
Warner Patterson Co	15
Weaver Mfg. Co	69½, 70
Weidenhoff Products	126
Wheeler, Schebler Carburetor Co	47
Wire Wheel Corp. of America	5
"X" Laboratories	146, 147

OTHER SHOW NOTES.

RECORDS IN EXHIBITS AND ATTENDANCE BROKEN AT PITTSBURGH.

At the annual automobile show in the Motor Square Garden at Pittsburgh, Pa., the week of Oct. 16, all records for number of exhibits and attendance were broken. The displays included the products of 84 manufacturers and there were 72 accessory exhibits.

The affair was held under the auspices of the Automobile Association, Inc., of Pittsburgh, arrangements being in the hands of its officers and directors, as follows: President, Frank D. Saupp; general manager and assistant secretary, John J. Bell; first vice president, E. J. Thompson; second vice president, L. C. Myers; treasurer, W. W. Bennett; secretary, E. H. Kiser; directors, E. C. Bald, E. E. Wilbar, H. H. May and S. G. Anderson.

CLEVELAND PLANS FOR A BIGGER SHOW.

The extensions made to the Wigmore Coliseum at Cleveland, O., during the past year will make more than 100,000 feet on a single floor available to the 20th annual automobile show of the Cleveland Automobile Manufacturers and Dealers' association, Jan. 22-29. The usual policy of restricting exhibits to passenger cars and accessories will be followed this season.

The officers and directors of the Cleveland Automobile Manufacturers and Dealers association are: President, R. J. Schmunk; first vice president, G. G. Peckham; second vice president, F. E Stuyvesant; secretary and manager, Fred H. Caley; treasurer, M. B. McLaughlin; directors, A. R. Davis, C. A. Forster, T. H. Towell, C. S. Carris, A. L. Englander, H. L. Lance and H. O. Secrest.

MONTREAL'S ANNUAL EVENT.

The annual motor car show, under the auspices of the Montreal Automobile Trade Association, Ltd., will be held in the Motordrome building, in that city, Jan. 22-29. It will be modeled after the successful event of last season, but will be staged on a somewhat larger scale. Dealers throughout that section of the Dominion are anticipating a general sales impetus.

Directory of Automotive Concerns, Representatives and Location at Chicago During Show.

Advance Automobile Accessories Corporation, 1603 South Michigan Boulevard, Chicago, Ill.—H. Cory, President; O. D. Gray, Vice President; C. B. Johnson, Manager of Eastern Sales; W. A. Richards, Manager of Western Sales; R. M. Sheridan, Assistant Sales Manager; Space 137.

Advance Felt & Cutting Co., 320 South Jefferson St., Chicago, Ill.—S. W. Sidney, General Manager; Space 220.

American Auto Supply Co., Inc., 527-529 Linden St., Scranton, Pa.—Josef A. Tannenbaum, General Manager; Hotel Morrison or New Era Spring & Specialty Co.'s Booth.

American Bureau of Engineering, Inc., 1601-1603 South Michigan Ave., Chicago, Ill.—C. J. Buckwalter, President and General Manager; H. Edsall Olson, Vice President and Sales Manager; R. W. Merchant, Sales Engineer; C. J. Stout. Sales Engineer; Booth 46, or Congress Hotel.

American Distributing Co., Woodward and Warren Ave., Detroit, Mich.—N. A. Crawford, Jr., Manager; Congress Hotel.

American Grinder Manufacturing Co., Milwaukee, Wis.—C. N. and F. W. Jonas, Booths 190 and 191.

American Hammered Piston Ring Co., Bush and Hamburg Sts., Baltimore, Md.—Albert C. Bruce, Vice President; W. P. Coghlan, Sales Manager; Joseph S Jacobs, Advertising Manager; Hotel Blackstone, Chicago.

American Metals Corporation, 1022 East Michigan St., Indianapolis, Ind.—J. F. Worman, President; Jack B. Vos, Auditorium Hotel.

Anderson Electric & Equipment Co., 154-160 Whiting St., Chicago, Ill.—B. J. Grigsby, Vice President; O. Q. Hinds, Assistant Sales Manager; E. W. Mack, Travelling Sales Manager; Stands 83 and 84, or Offices.

Apco Manufacturing Co., 1200 Eddy St., Providence, R. I.—T. F. Wilson, President; C. H. McKeen, Road Sales Manager. Show Space or Congress Hotel.

Apex Electric Manufacturing Co., 1410 West 59th St., Chicago, Ill.—P. F. Nichols, Sales Manager; A. C. Johnson, Office Manager; John F. Prince, Secretary. Space 62, Coliseum.

Ashland Products Co., Ashland, O.—E. I. Secor, Booth 16½.

Ashton, G. A. Co., 1547 University Ave., St. Paul, Minn.—G. A. Ashton, John F. Tenner, J. E. Kirchbaum, Frank R. Price. Room J-10, Brevoort Hotel.

Atlas Specialty Manufacturing Co., 18-22 East 24th St., Chicago, Ill.—Caesar J. Wollheim, President and Manager; Joseph M. Grace, Salesman. Space 166½, Chicago Coliseum.

Au-To Compressor Co., Mulberry St., Wilmington. O.—J. W. Lawhead. President, and E. S. Lee, Jr., Sales Manager, Congress Hotel; R. O'Keefe, Eastern Traveling Salesman, and E. J. McNerny. Western Travelling Salesman. 6146 Rhodes Ave.

Auto Equipment Co., Denver, Col.—S. T. McCollum. President: F. Rogers, Buyer; Congress Hotel.

Auto-Kamp Equipment Co., Saginaw, Mich.—Allen Jackson, Sales Manager; James A. Dean, Sales Representative; Morrison Hotel.

Automatic Safety Tire Valve Corporation, 1753-1755 Broadway, Room 504, New York City—G. H. Crossan, President; S. X. Newman, Vice President; J. G. Pressler, W. W. Nevins, R. W. Stoddard, District Sales Managers; Hotel Congress.

Automobile Supply Co., 1335 South Michigan Boulevard, Chicago, Ill.—W. W. Ruhrmann, Buyer; at Store.

Automotive Supply Co., 124-126 West 14th Avenue Parkway. Denver, Col.—J. C. Hadley, Congress or Sherman Hotel.

Autoquip Manufacturing Co., Inc., 495 St. Paul St., Rochester, N. Y.—E. G. Edwards, Salesman; 3204 North Clark St.

Badger Manufacturing Corporation, 313-317 Milwaukee St., Milwaukee, Wis.—C. H. Hathaway, President; W. V. Isgrig, General Manager; J. E. Colley, L. F. McEvoy, H. L. French, W. F. Minnich; Congress Hotel.

Baldwin Supply Co., 22 Summer St., Charleston, W. Va.—H. F. Shepherd; Herman Hotel.

Baltimore Hub Wheel & Manufacturing Co., Gay St. and Fallsway, Baltimore, Md.—Irwin H. Loock; Congress Hotel.

Banner Accessory Manufacturing Co., 2629-2631 La Salle St., St. Louis, Mo.—Hy R. Koslowsky, G. W. K. Voigt, G. W. Curtis, Charles H. Koslowsky; Congress Hotel.

Beck & Corbitt Iron Co., 1232-1244 Main St., St. Louis, Mo.—A. R. Rooch, Sales Manager; J. S. McGauley, Purchasing Agent; E. W. Althege, Equipment Department; Congress Hotel.

Bethlehem Spark Plug Corporation, Bethlehem, Pa.—E. H. Schwab, President; W. N. Davidson, Vice President; A. D. Williams, C. M. Swain; Congress Hotel.

Black & Decker Manufacturing Co., Towson Heights, Baltimore, Md.—S. D. Black, President; R. W. Proctor, Sales Manager; G. W. Brogan, Advertising Manager; R. D. Black, Assistant Sales Manager; R. G. Ames, Chicago Branch Manager; Congress Hotel.

Braender Rubber & Tire Co., Rutherford, N. J.—F. M. Hutchinson, Branch Manager, 64-72 East 14th St.

Brunner Manufacturing Co., Broad and Gilbert Sts., Utica, N. Y.—G. L. Brunner, General Manager; J. H. Mehan, Sales Manager; A. B. Jenkins, H. S. Atherton and G. W. Chandler, District Managers; Congress Hotel.

Burd High Compression Ring Co., Rockford, Ill.—O. P. Hand, President and General Manager; F. C. Batchelder, Sales Representative; H. Jorgensen, Chicago Representative; Space 176.

Burgess, Walter S., Manufacturing Co., St. Joseph. Mich.—W. S. Burgess, President; P. H. Patton, Sales Manager; Congress Hotel.

Bussman Manufacturing Co., 3819 North 23rd St., St Louis, Mo.—George W. Curtis, Hy R. Koslowsky, Charles H. Koslowsky, George W. K. Voight, A. Ellis Bosley; Congress Hotel.

Butts & Ordway Co., 33 Purchase St., Boston, Mass.—F. Marsena Butts; Congress Hotel.

B. & W. Manufacturing Co., 5235 Ravenswood Ave., Chicago. Ill.—Coliseum.

Canedy-Otto Manufacturing Co., Main St. and East End Ave., Chicago Heights, Ill.—L. Z. McKee, Sales Manager; W. F. Wendel, Eastern Manager; W. H. Davis, R. D. Thomas, C. L. Hughes, Salesmen; Spaces 140-150½ Coliseum and Congress Hotel.

Carswell, J. S., Factory St., Boone, Ia.—J. S. Carswell, A. R. Hammond; Congress Hotel.

Carter Carburetor Co., 2838-2842 North Spring Ave., St. Louis, Mo—H. H. C Weed and G. M. Bicknell, Vice Presidents; H. S. Staton, Sales Manager; C. E. Burg, District Manager, Detroit; V. J. Lowenstein, Chicago Representative, and others.

Central Auto Supply Co., 1111 Locest St., Des Moines, Ia.—A. W. Eggertsen, President; Sherman House.

Champion Spark Plug Co., Corner Avondale and Upton Ave., Toledo, O—F. B. Caswell, Director of Sales; R. H. Rowland. Manager, Chicago Territory; W. J. Shay, Territory Supervisor; Congress Hotel.

Chicago Automobile Supply House, 1349-1353 South Michigan Boulevard, Chicago, Ill.—L. S. Brown, Purchasing Department, 1349 South Michigan Boulevard.

Chicago Fuse Manufacturing Co., Laflin and 15th Sts., Chicago. Ill.—A. S. Merrill, Sales Manager; H. P. Collins; Space 127.

Cincinnati Auto Specialty Co., 312 Main St., Cincinnati, O.—A. W. Connor, President; E. R. Christensen, George L. Holmes; Booth 115.

Cincinnati Ball Crank Co., Cincinnati, O.—Clifford Greene, President; A. B. Breeze, General Manager; V. A. Davison, General Sales Manager; J. K. Gilchrist, Sales Manager Automotive Equipment Division; W. W. Peterson, District Manager; Congress Hotel.

Clover Manufacturing Co., Norwalk, Conn.—E. B. Gallagher, Treasurer; Earl Benjamin Mix, Sales Promotion Manager; George A. Fish. Chicago Manager; T. L. L. Ryan, Advertising Department; Booths 90½ and 91.

Coe-Stapley Manufacturing Corporation, Campbell Ave., Corner Brown, West Haven, Conn.—J. M. Harding, Sales Manager; E. W. Kronbach, Assistant Sales Manager; A. D. Fortier, P. H. Hall, A. B. Birge, E. R. Abbott and A. H. Mitchell, Salesmen; Morrison Hotel.

Colley-Minnich Co., Chamber of Commerce Building, Atlanta, Ga.—W. F. Minnich, J. E. Colley; Congress Hotel.

Columbus Varnish Co., 264 Cozzens St., Columbus, O.—W. S. Hanna, President; S. W. Hanna, Vice President; C. M. Simpson, Special Representative; T. W. Williams and J. F. Nye, Salesmen; Space 24 at Show and Congress Hotel.

Connecticut Telephone & Electric Co., Meriden, Conn.—C. E. Stahl, General Manager; E. C. Anderson, Manager Resale Division; D. F. Linneen, R. L. Sessions, Francis Abeles, Salesmen; Section 59. Coliseum, or Congress Hotel.

Continental Piston Ring Co., Memphis, Tenn.—P. McCadden, Field Director of Sales; Atlantic House.

Cooper, I. J., Rubber Co., Eighth and Main Sts., Cincinnati, O.—A. L. Johnson, Purchasing Agent; H. H. Brenner, General Sales Manager; J. W. Brumbaugh, Vice President; G. Gunderson, General Stock Auditor; Congress Hotel.

Corcoran, Thomas J., Lamp Co., 4900 Spring Grove Ave., Cincinnati, O.—G. P. Doll, Treasurer, C. J. Wuebler. Secretary; Show Space 219 and Congress Hotel.

Corcoran Victor Co., 712 Reading Road, Cincinnati, O.—James A. Muir, Vice President and Sales Manager; L. I. Hubbell, Service Manager; L. K. Cohn, C. A. Bissonnette and W. E. Earley, Salesmen; Space 205 and Congress Hotel.

Curtis Pneumatic Machinery Co., Hamburger and Lienlen Ave., St. Louis, Mo.—Walter C. Hecker, Vice President, Congress Hotel; L. C. Blake, Joseph Macksey, J. D. Lodwick, H. R. Bourne, W. G. Kuehnel, Milburn A. Brinsa; La Salle Hotel.

Detroit Steering Wheel Corporation, Detroit, Mich.—R. L. Hanrahan, 1256 South Michigan Ave.

Double Fabric Tire Co., Auburn, Ind.—C. L. Stebbins, Sales Manager; F. D. Higgins, Special Representative; S. G. Biddle, Eastern Representative; Booth 97 or Congress Hotel.

Durkee-Atwood Co., Minneapolis, Minn.—A. F. Durkee, President; L A. Vandersloot, B. V Stokes, E. V. Whiton and E. P. Atwood, from Sales Division; Congress Hotel.

E. A. Laboratories, Inc., 696 Myrtle Ave., Brooklyn, N. Y.—William Von Elm, Secretary; Congress Annex Hotel.

Eckhouse, Walter & Co., 616 South Michigan Boulevard, Chicago, Ill—Walter Eckhouse, Manager; Henry Lansing, H. H. Eckhouse, T. Hart, Salesmen; 616 South Michigan Boulevard or Congress Hotel.

Elite Manufacturing Co., Ashland, O.—E. L. Kilhefner, P. E. Countryman and J. H. Burkholder, Proprietors; J. W. Fribley, Sales Manager; R. A. Cole and L. M. O'Loane, Salesmen; Space 124 and Brevoort Hotel.

Equipment Co., 1520 Walnut St., Kansas City, Mo—H. J. Mavers, President; N. McK. Kneisly, Vice President and Sales Manager; W. A. Riggs, Buyer; Congress Hotel.

Faw, J. H., Inc., 27 Warren St., New York City—J. H. Faw, President; William

W. Faw, Vice President; D. W. Van Keuren, Representative; Congress Hotel.

Ferris-Dunlap Auto Supply Co., 2029 Commerce St., Dallas, Tex.—F. A. Ferris, Manager; J. N. White, Buyer; B. F. Stevenson, Sales Manager; Hotel La Salle.

Fibre Finishing Co., 73 Tremont St., Boston, Mass.—Charles S. Livingston, Sales Manager; Congress Hotel.

Gates Rubber Co., South Broadway and Tennessee Sts., Denver, Col.—C. C. Gates, President; J. H. Gary, Jr., Manager Accessories Division; C. C. Barnet, Accessories Sales Manager; J. T. Brunton; La Salle Hotel.

Gemco Manufacturing Co., 742 South Pierce St., Milwaukee, Wis.—George H. Trevirans, Sales Manager; A. A. Lightfoot, Salesman; E. A. Haertlein, Assistant Sales Manager; Donald M. Wall, Assistant Advertising and Export Manager; at Booth.

Gemmer Manufacturing Co., Detroit, Mich.—E. P. Hammond, President and General Manager; G. E. Wilder, Vice President and Sales Manager; Hotel Commodore.

General Asbestos & Rubber Co., 27 Cumberland St., Charleston, S. C.—C. B. Jenkins, Jr., Second Vice President; F. C. Riddick, Assistant Sales Manager; Raymond E. Corcoran, Manager New York Branch; H. L. Parmenter, Manager Chicago Branch; J. H. Bricker, Manager Pittsburgh Branch; at Exhibit, the La Salle Hotel or Chicago Office, 14 North Franklin St.

General Auto Supply Co., 117-119 East King St., Lancaster, Pa.—R. W. Sheiner, Manager; L. V. Good, Purchasing Agent; Congress Hotel.

Gill Manufacturing Co., 8300 South Chicago Ave., Chicago, Ill.—E. J. Smith, Treasurer; W. S. Keefe, Secretary; W. J. Ford, Manager Chicago Branch; Booths 11 and 12 or Office, or Gill Piston Ring Co., 2231 Michigan Ave.

Globe Manufacturing Co., 64 Grant St., Battle Creek, Mich.—Fred W. Wilbur, Morrison Hotel; John E. Brandon, 4500 North Lawndale Ave.

Goodrich-Lenhart Manufacturing Co., Hamburg, Pa.—A. S. Lenhart, Fred Ihrig; Booth 138 or Congress Hotel.

Gordon, J. P. Co., 270 North Fourth St., Columbus, O.—William R. Daugherty, Assistant Secretary; H. M. Tucker, Salesman; Hotel Sherman.

Greb Co., 172-173 State St., Boston, Mass.—George W. Grebenstein, President; Charles P. Beach, Chief Engineer; La Salle Hotel.

Grundy Manufacturing Corporation, 688 Meldrum Ave., Detroit, Mich.—Frank Grundy, President; G. W. Boynton, Special Representative of Sales; Hotel Pennsylvania.

Guthard, Edgar C., Co., 361 East Ohio St., Chicago, Ill.—E. C. Guthard, President; J. H. Cooper, Eastern Sales Manager; H. E. Witherspoon, Southern Sales Manager; E. Sampson, Eastern Office; H. L. Hardwick, Pacific Coast Sales Manager; R. S Longstaff, Northwestern Sales Manager; Paul J. Barnard, Southwestern Sales Manager; George K. Brandrift and Dan Chenier, Chicago Office; at Show.

Halladay, L. P. Co, Streator, Ill.—Dean L. Moberley and W. J. Heineke, Sales Department; L. P. Halladay, President; Space 139, Coliseum, or Congress Hotel.

Harvey Spring & Forging Co., Racine, Wis—T H. Van Horn, Sales Manager; E. Murphy, Salesman; L. P. Monk, Assistant Manager; Space 203, Coliseum Annex.

Hastings Manufacturing Co., 316 East Mill St., Hastings, Mich.—Howard K. Ford, Sales Manager; F. V. Coolahan and A. A. Crothers, Salesmen; Booth Spaces 196½ and 197, Illinois Athletic Club and Congress Hotel.

Haywood Tire & Equipment Co., 526 North Capitol Ave., Indianapolis, Ind.—E. L. Baker, Assistant to the President; E. G. White, Jobbing Department; Booth 204.

H & D Co., Crawfordsville, Ind—D. M. Peck, President; H. H. Walter, Sales Department; Space 207, Coliseum, or Congress Hotel.

H-D Lamp Co., 108-112 West Third St., Cincinnati, O.—E. W. Driemeyer, President; H. R. Krans, Secretary-Treasurer; R. D. Swin Burne, Salesman; Space 22 or Congress Hotel.

Heil Co., 26th and Montana Aves., Milwaukee, Wis.—H. F. Kneppreth, Chicago Branch Manager, 2718 Wentworth Ave.

H and H Specialties, Inc., 755 Boylston St., Boston, Mass.—John L. Hamilton, President; at Booths of Apex Electric Manufacturing Co. and Buell Manufacturing Co.

Higgins Spring & Axle Co., Racine, Wis.—James Higgins, Secretary-Treasurer; George L. Pederson, Sales Manager; at the Show.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.—George Q. Hill, President; Rodney R. Talbott, Salesman; Hotel La Salle.

Howard Cranfill Co., South Bend, Ind.—William Bender, Jr., Buyer; La Salle Hotel.

Howe Lamp & Manufacturing Co., 115 East Ontario St., Chicago, Ill.—Bert G. Cochrane, Vice President; W. G. Hirsig, Norman Cowan and Joseph St. Mars, Representatives; Booth 60.

Imperial Brass Manufacturing Co., 1200 West Harrison St., Chicago, Ill—W. S. Noyes, Manager Welding Apparatus; J. T. Greenlee, Manager Auto Equipment; E. W. Stevens, Welding Sales Department; C. E. Young, Manager Sales Promotion; Space 78 or at Plant, Corner Harrison St. and Racine Ave.

Indiana Lamp Co., Connersville, Ind.—L. P. Zinke, Sales Department; W. F. Thoms, Vice President; F. W. Kohl, George Woelfel, Jr., J. A. Kohl, David Jenkins, P. L. Ross, 1323-1325 Michigan Ave.

Inland Machine Works—Name changed to Stark-Inland Machine Works.

Interstate Electric Co., New Orleans, La.—P. Stern, Hotel Sherman; S. B. Corby, Hotel Morrison.

Jackson Motor Supply Co., 5636 Baum Boulevard, Pittsburgh, Pa—C. E. Jackson, President and Manager; Congress Hotel.

J. & B. Manufacturing Co., 65 Eagle St., Pittsfield, Mass.—George H. Southard, Jr., Treasurer and General Manager; Floyd A. Knight, Vice President and Sales Manager; Space 45.

Johnston, William R., Manufacturing Co., 451-469 East Ohio St., Chicago, Ill.—William R. Johnston, President and General Manager; Stanhope Hudson and W. P. Loveless, Sales Department; Space 206.

Judd & Leland Manufacturing Co., Clifton Springs, N. Y.—M. L. Harlem, L. B. Leland; Space 134.

Justus & Parker Co., 129 East Gay St., Columbus, O.—C. E. Justus, K. D. Zahn, E. E. Parker; Congress Hotel.

Kales Stamping Co., 441-459 Lafayette Boulevard, Detroit, Mich—J. Frazer Whitehead, Secretary and Treasurer; C. H. McClellan and Ralph M. Prince, Sales Department; Congress Hotel.

Kant Sag Corporation, 11 Abbott St., Detroit, Mich.—Frank J. Lasecki, General Manager; Congress Hotel.

Kellogg Manufacturing & Sales Co., 615 State St., Bridgeport, Conn.—Stanley T. Kellogg, President; John F. Goll; Booth 177.

Kent, Atwater, Manufacturing Co., 4937 Stenton Ave., Philadelphia, Pa.—H. R. Carlisle, Manager Class R Sales; V. W. Colamore, Service Manager; H. T. Stockholm, Field Representative; Congress Hotel.

Kentucky Wagon Manufacturing Co., Louisville, Ky.—S K. Miller, Sales Manager; E. Palmer, Export Manager; George Lloyd, Eastern Field Manager; the Annex.

Keystone Reamer & Tool Co., Millersburg, Pa.—W. Bradenbaugh, Production Manager; George H. Wilkins, Sales Manager; Booth 44 or Western Sales Division and Advertising Department, 180 North Market St.

Laminated Shim Co., 47 West 34th St.—Bradford Darrach, Jr., General Manager; Blackstone Hotel.

Lawson, F. H., Co., Evans and Whateley Sts., Cincinnati, O.—J. Arthur Buhr, Secretary; H. L. Hillson, Salesman; Congress Hotel or Exhibits 185 and 185½.

Levett, Walker M. Co., 417 East 23rd St., New York City—Booth 25.

Lowe Motor Supplies Co., 245-247 West 55th St., New York City—Joseph W. Lowe; at the Show.

McKinnon Dash Co., 252 Amherst St., Buffalo, N. Y.—Space 54.

Manley Manufacturing Co., York, Pa.—H. A. Winterknight, Jr., Sales Manager; Robert E. Manley, M. E., President; Paul V. Spain, Middle West Representative; Congress Hotel.

Metal Specialties Manufacturing Co., 338 North Kedzie Ave., Chicago, Ill.—N. H. Oliver, General Sales Manager; Ben Steinberg, General Travelling Sales Manager; L. M. Clifford, Salesman; Booth 41 and Congress Hotel.

Mid-West Manufacturing Co., 710 McKnight Building, Minneapolis, Minn.—M. C. Smith, Vice President; C. D. Kimball, Sales Manager; R. E. Rhoads, Eastern Representative; Brevoort Hotel.

Milwaukee Auto Engine and Supply Co., 742-746 30th St., Milwaukee, Wis.—Harriet R. Williams, Director of Sales; Jack C. Harris, Eastern Representative; J. Frank Keegan, Central Representative; H. C. Brenizer, Western Representative; R. J. Traupmann, Chief Engineer; Spaces 53 and 53½ or Congress Hotel.

M. & M. Co., 500 Prospect St., Cleveland, O.—J. C. McLean, President; W. B. Davis, Secretary-Treasurer; L. R. Fuller, Manager Battery Department; Congress Hotel.

Monson, Charles S., 2113 Dime Bank Building, Detroit, Mich.—Charles S. Monson; Edward W. Griffith, Branch Manager; at the Show or Chicago Office, 1118 South Michigan Boulevard.

Mosler, A. R. & Co., South Railroad Ave., Mt. Vernon, N. Y.—J. W. Discher, Sales Manager; C. D. Parr, Western Assistant Sales Manager; Sherman Hotel.

Mossberg, Frank Co., Lamb St., Attleboro, Mass.—Frank T. Chase, Sales Manager; H. E. Ring, Eastern Representative; E. W. Scott, Middle West Representative; D. L. Herman, Northwest Representative; Louis Lewis and Orville Ewing, California Representatives; Frank W. Lynn and Wallace R. Lynn, Southwest Representative; Prescott W. Robinson, Canadian Representative; W. F. Minnich and J. E. Colley, Southern Representatives; Congress Hotel.

Motor Car Supply Co., 1453 Michigan Ave., Chicago, Ill.—Sidney F. Beech, President; Henry Wilhelmi, Purchaser; 1453 Michigan Ave.

Motor Specialties Co., Waltham, Mass.—F. C. Hersee, General Manager, and A. Fraser, Sales Manager, at Auditorium Annex; G. N. Jordan, Factory Representative, Hotel New Southern.

National Body Manufacturing Co., 810 17th Ave., North, Nashville, Tenn.—J. N. Moorehead, General Manager; Hotel La Salle.

National Carbon Co, Inc., Box 400, Cleveland, O.—E. F. Meyers and E. A. Lanterman, Salesmen; F. J. Kysela and W. H. Talkes, Field Sales Managers; Booth 180; C. W. Wilkins, Field Sales Manager, 407-415 Manhattan Building, 431 South Dearborn St.

Never Break Products Co., South Murray St., Bangor, Pa.—E. E. Coltch, Representative; E. J. Lee, Manager; Hotel Congress.

Neville Steering Wheel & Manufacturing Co., Detroit, Mich.—E. W. Husen, Sales Manager; at Show or Congress Hotel.

New Era Spring & Specialty Co., 49 Cottage Grove Ave., Grand Rapids, Mich.—Smalley Daniels, L. D. Kent and George B. Daniels, Hotel Sherman; Edward F. Lindsey, New Southern Hotel.

Niehoff, Paul G. & Co., Inc., 232-242 East Ohio St., Chicago, Ill.—Paul G. Niehoff, President; C. E. Niehoff, Secretary and Treasurer, 242 East Ohio St.; A. Wisersky, Representative, Automotive Accessory and Machine Exhibition, 1533-1537 South Michigan Ave.

No-Leak-O Piston Ring Co., 824 West North Ave., Baltimore, Md.—John E. Norwood, Jr., President; W. M. Harkrader, General Western Representative; F. E. Paige, General Eastern Representative; John E. Norwood, Jr., Factory Manager;

L. G. Matthews, Manager; L. E. Malican, H. L. Strasburger, F. B. Archibald, F. J. Holmes, C. E. Stevenson, J. W. Van De Grift, W. S. Gardner, T. A. Wensink, W. L. Hunsaker, Representatives; Booths 211 and 212 and Congress Hotel.

Northern Hardware & Supply Co., Menominee, Mich.—J. Gilbert Taylor, Manager Automotive Department; Planters' Hotel or Power Oil Co., 633 West 39th St.

Northway, Thomas J., Inc., 100 Exchange St., Rochester, N. Y.—Clarence H. Ager, Secretary and Manager Accessory Department; Congress Hotel.

Northwestern Chemical Co., State St., Marietta, O.—R. M. Tussing, General Sales Supervisor; F. R. Hall, President; V. V. Casey, Eastern Sales Supervisor; L. D. Speed, Central Sales Supervisor; I. D. Cross, Western Sales Supervisor; Auditorium Hotel.

Nu-Back Mfg. Co., St. Louis, Mo.—Space 92.

Onan, David W., 43 Royalston Ave., Minneapolis, Minn.—David W. Onan, Manager; Congress Hotel.

Packard Electric Co., Warren, O.—Space 33.

Pandolfo Manufacturing Co., St. Cloud, Minn.—Ben Forsyth, Marketing Manager, Sales and Advertising; E. J. Gallagher and J. E. Jones, Sales Department; F. L. Holman, Research Department; at Show, aL Salle or Morrison Hotels.

Perfection Heater & Manufacturing Co., 6545 Carnegie Ave., Cleveland, O.—C. S. Peton, General Manager; E. L. Casey Jones, Sales Manager; S. V. Rose, Service Engineer; Commodore Hotel.

Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill.—H. A. Pantke, Sales Manager; E. A. Joyce and R. A. Drum, Factory Representatives; 2635 Michigan Ave.

Petry, N. A. Co., Inc., 328-334 North Randolph St., Philadelphia, Pa.—C. C. T. Smith, Vice President; A. L. Mitchell, Salesman; Booth 216, Coliseum, or Congress Hotel.

Philbrin Corporation, 501 South Broad St., Kenneth Square, Pa.—H. L. Archey, C. A. Mattison; New Southern Hotel.

Philectric Co., 1745 Euclid Ave., Cleveland, O.—Joseph Phillips, President; Ben Phillips, Secretary; Congress Hotel.

Picard, A. J. & Co., Inc., 9 West 61st St., New York City—R. A. Picard, Vice President; G. G. Hansen, Purchasing Agent; Congress Hotel.

Piel Co., George, Long Island City, N. Y.—Space 159.

Polson Rubber Co., Cleveland, O.—Space 58.

Pouvailsmith Corporation, Smith St., Poughkeepsie, N. Y.—J. Schreyer, Manager of Sales; Congress Hotel.

Prescott Auto Parts Co., Webster, Mass.—Space 14.

Presto Felt Manufacturing Co., Toledo, O.—Space 50.

Protexall Co., Abingdon, Ill.—Space 162.

Pyrene Manufacturing Co., New York City—Space 217.

Quality Electrical Products Co., 907 East 15th St., Kansas City, Mo.—Rutler J. Haskins, President; B. G. Olson, Sales Manager; Great Northern Hotel.

Raybestos Co., Bridgeport, Conn.—M. F. Judd, Sales Manager; A. C. Stamm, A. P. McAleese, I. Bennett, H. F. Reid, N. U. Huber, W. E. Washburn; Congress Hotel.

Reliable Manufacturing Co., Cleveland, O.—Space 224.

Replacement Parts Co., Kansas City, Mo.—Space 130.

Rose, Frank, Manufacturing Co., Hastings, Neb.—Space 87.

Romort Manufacturing Co., Oakland, Wis. (Zinke Co., Sales Department, 1323 Michigan Ave., Chicago, Ill.)—L. P. Zinke, Vice President and Sales Manager; F. W. Kohl, Sales Department; A. A. Ewald, President; George Woelfel, Jr., J. A. Kohl, David Jenkins, P. L. Ross, 1323 Michigan Ave.

Rowerdink, W. H. & Son, 78-82 North St., Rochester, N. Y.—W. H. Rowerdink, President; H. J. Rowerdink, Vice President; Congress Hotel.

Russell Manufacturing Co., Middletown, Conn.—L. J. Miley, Chicago Manager; S. T. Gardiner, Atlanta Manager; Congress Hotel or 1438 Michigan Ave.

Security Auto Lock Co., 410 North Paulina St., Chicago, Ill.—John A. Mulvihill, M. J. Bucky, J. C. Lane; 410 North Paulina St.

Service Products Co., Greenawalt Building, Springfield, O.—R. B. Miller, General Manager; J. A. Cadle, Sales Manager; C. Ringwald, Chief Engineer; R. C. Herren, Factory Superintendent; Congress Hotel and Booth 72, Coliseum.

Shadboldt & Boyd Iron Co., Milwaukee, Wis.—Price M. Davis, Vice President; F. Hamilton Suter, Manager; Annex Hotel.

Shaler, C. A. Co., 21 Jefferson St., Waupun, Wis.—Robert B. Dunlap, Sales Manager; R. E. Malone, Assistant Sales Manager; E. B. Carroll, Service Manager; Hotel La Salle.

Shultis Automotive Corporation, 16 West 61st St., New York City—F. Shultis, President; Mr. Zust, Sales Representative; Hotel Sherman.

Sidel Rattner Manufacturing Co., Inc., 254 36th St., Brooklyn, N. Y.—Charles Rattner, President; Hotel Auditorium.

S. & M. Lamp Co., Los Angeles, Cal.—Space 223.

Sorber-Kuhn Auto Supply Co., Fifth and Wall Sts., Joplin, Mo.—Edward Kuhn; La Salle Hotel.

Southern Auto & Equipment Co., 111 South Third and Forsyth Sts., Atlanta, Ga.—B. Frank Hall, Vice President and Manager, at Office of Beneke & Kropf.

Spencer Metal Products Co., Spencer, O.—George G. Bouthinon, President; B. M. Asch, Sales Manager Eastern Territory; F. C. West, Sales Manager Western Territory; Congress Hotel and Chicago Office.

Spencer-Smith Machine Co., Howell, Mich.—A. W. Lines, Sales Manager; H. N. Spencer, President; W. McP. Smith, Secretary-Treasurer; H. Franklin Libby, Representative; Congress Hotel.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.—P. Arthur Tanner, Director of Branches; E. R. Waterman, Eastern District Manager; at Splitdorf Electrical Co., 2900 South Michigan Ave.

Stadeker Metal Specialty Co., 310 South Canal St., Chicago, Ill.—G. I. Stadeker, 310 South Canal St.

Staff, J. Wadsworth, 122 South Michigan Boulevard, Chicago, Ill.—J. Wadsworth Staff, Manufacturers' Representative; Robert C. Renner; Booths 93 and 94, Coliseum and Congress Hotel.

Stahl Rectifier Co., 1401-1405 West Jackson Boulevard, Chicago, Ill.—William R. Whiteman, William J. Lohman; Booth 152.

Stark-Inland Machine Works, Jefferson and Lucas Aves., St. Louis, Mo.—O. G. Stark, President and Treasurer; B. G. Brennan, Assistant Treasurer and Manager Foreign Department; James E. Fentress, Manager Chicago Branch, 1919 South Michigan Ave.; Morrison Hotel or Exhibition Booth.

Sterling Manufacturing Co., 2845 Prospect Ave., Cleveland, O.—W. M. Scott, Secretary; C. E. White, Manager Field Sales; Congress Hotel.

Stevens & Co., New York City—Space 23.

Stewart Manufacturing Co., 1527-1531 Jackson St., Oakland, Cal.—W. J. Seroy, Sales Manager; L. M. Mathieu, Eastern Representative; Booth 229 or Congress Hotel.

Stewart, F. W., Manufacturing Corporation, Chicago, Ill.—Space 88.

Stiles Manufacturing Co., 4423 Gravois Ave., St. Louis, Mo.—J. C. Stiles, President; P. H. MaGauley, Advertising Manager; Booth 193 and Congress Hotel.

Stokes Carburetor Co., Inc., and Stokes Engineering Co., Inc., 384-386 East 133rd St., New York City—W. O. Stokes; Fourth Floor.

Storm Manufacturing Co., 406 Sixth Ave., South, Minneapolis, Minn.—Adolph Storm, Inventor; Con Althen, Sales Manager; 1502 Wabash Ave., Opposite Main Entrance of Coliseum.

Temco Electric Motor Co., Leipsic, O.—Space 170.

Templeton, Kenly Manufacturing Co., Chicago, Ill.—Space 31.

Thermoid Rubber Co., Trenton, N. J.—Space 173.

Times Square Auto Supply Co., 1210 Michigan Ave., Chicago, Ill.—W. W. Dreyfus, B. M. Kearne, 1210 Michigan Ave.

Tingley, Charles O. & Co., Rahway, N. J.—William McCollum, Proprietor; Planters' Hotel.

Trexler Co., 1418 Walnut St., Philadelphia, Pa.—E. J. Flannery, H. J. Adair; Congress Hotel.

Troy Foundry & Machine Works, Troy, N. Y.—Space 160.

Tuthill Spring Co., 760 Polk St., Chicago, Ill.—D. S. Campbell, Sales Manager; A. A. Dailey, Assistant Sales Manager; H. H. Osborne, Service Manager; Space 98, Coliseum.

United States Auto Bumper Co., 3021-3023 Michigan Boulevard, Chicago, Ill.—At Office.

United States Automobile Supply Co., 606-612 South 14th St., Omaha, Neb.—L. C. Kohn, President and Manager; M. L. Cohn, Treasurer; W. M. Wilson, House Manager; Sherman Hotel.

United States Rubber Co., 212 South Clinton St., Syracuse, N. Y.—W. F. Martin, Manager Department of Automobile Equipment; United States Rubber Co., 218 West Madison St.

Universal Sales Co., 507 Odd Fellows' Building, Indianapolis, Ind.—Sanford Brothers, 30 West Walton St.

Universal Tool Co., Inc., 435 Woodward Ave., Detroit, Mich—R. E. Roseberry, President; E. H. Herman, Sales Manager; Booth 142 and Congress Hotel.

Valve Remover Sales Co., 1205-1211 Oak St., Kansas City, Mo.—The Trexler Co.; at Booth in Show.

Van Cleef Brothers, Chicago, Ill.—Spaces 1 and 2.

Victor Manufacturing & Gasket Co., 5750 Roosevelt Road, Chicago, Ill.—A. C. Delson, General Sales Manager; E. L. Dailey, Assistant Sales Manager; at Booth and at Office.

Vlchek Tool Co., 3000 East 87th St., Cleveland, O.—A. L. Whittemore, Chicago Representative, 40 South Clinton St.; L. L. Schnetzler and W. L. Baldwin; Congress Hotel.

Wainwright Engineering Corporation, Connersville, Ind.—H. A. Wainwright, Vice President, and D. P. Shaw, Sales and Advertising Manager, Congress Hotel; R. L. Longstaff, V. Priddy, P. J. Barnard and H. L. Hardwick, 20 East Jackson Boulevard. (Display at Congress Annex, Congress Hotel.)

Walden-Worcester, Inc., 475 Shrewsbury St., Worcester, Mass.—W. S. Bellows, L. H. Bellows, F. H. Bellows, L. H. Craig, H. H. Seward, L. A. Raasch, G. R. Williams, F. H. Harper, P. H. Knowles, A. F. Smith, John Craig, E. L. Edwards, H. A. Adams, O. B. Hewitt, T. H. Stenberg, S. C. Barnes, R. K. Flanagan; Booths 26 and 27, Coliseum, the Auditorium Hotel and Chicago Office, 452 Monadnock Building.

Washington Auto Supply Co., Washington, Ill.—George Runkenberger, Manager; Atlantic Hotel.

Weaver Manufacturing Co., Springfield, Ill.—I. A. Weaver, President; G. E. Weaver, Treasurer and General Manager; C. F. Hodgson, Secretary and Sales Manager; F. A. Bohnhorst, Assistant Sales Manager; H. L. DePoyster, Service Department; A. B. Crawford, W. J. Whaley, Ralph Waldt, Orville Ewing, L. S. Lewis, P. A. C. McIntyre, Special Representatives; Congress Hotel.

Western Vulcanizer Manufacturing Co., 150 North Desplaines St., Chicago, Ill.—H. K. Wheelock, Walter Jarrott; Auditorium Hotel.

Wiggins Co., Inc., Park and Couch St., Portland, Ore.—E. R. Wiggins, President; Congress Hotel.

Wilson, John V. Co., 76 Brookline Ave., Boston, Mass.—John V. Wilson; Congress Hotel.

WorkRite Manufacturing Co., 5606 Euclid Ave., Cleveland, O.—V. H. Meyer, President; Branch Office, 2204 Michigan Ave.

"X" Laboratories, 25 West 45th St., New York City—C. C. Boynton, D. L. Conklin, E. C. Narnlin, H. C. Marshall; Congress Hotel.

Zinke Co., Inc., 1324-1325 Michigan Ave., Chicago, Ill.—L. P. Zinke, F. W. Kohl, George Woelfel, Jr., J. A. Kohl, David Jenkins, P. L. Ross, P. J. Werner; Booths 103-107, or at Offices.

NOTES OF TRADE AND INDUSTRY

The Colonial a New England Industry

One of the latest motor car manufacturing enterprises to be announced proposes to occupy a unique position in the industry in that it emphasizes the fact that it is a New England industry and its policy, temporarily at least, will be to limit the sale of its product to the New England states, appealing to the high-class conservative clientele in that section. This is the Colonial Motors Corporation, with executive offices at 1108 Boylston street, and engineering plant at 926 Commonwealth avenue, Boston. Its product is known as the Colonial Six, and it is stated to be a car which typifies the character, strength and fortitude of the Colonial era, at the same time affording the grace, power, speed and luxury demanded of the modern automobile. It is designed to combine the riding qualities and flexibility of the heavy car with the economy of operation and maintenance of the light weight model.

The Colonial Six is offered in four body types and is constructed to the following major specifications:

Motor, Colonial special six-cylinder, overhead valves, 3½-inch bore and 5¼-inch stroke; Bijur starting and lighting; Warner transmission; multiple-disc clutch; Thermoid universal joints; full-floating rear axle, spiral gear; wheelbase, 130 inches; complete equipment.

The Colonial Motors Corporation is directed and managed by executives of experience in all phases of the industry. Among the officers and members of the executive board are Gen. John H. Sherbourne and Melvin F. Hill, Brookline, Mass.; James W. Milne, Newton, Mass.; Earl E. Beveridge, Springfield, Mass.; James J. Donahue, Lynn, Mass.; Hugh H. Lally, Braintree, Mass. Heading the advisory board are V. A. Charles, Harry A. Eisner and Judge George H. Bruce.

The company proposes to soon start work on the erection of a large, modern, completely equipped plant, pending the construction of which the Colonial Six is being assembled at the corporation's engineering plant at 926 Commonwealth avenue, in the heart of Boston's automobile district, production at the rate of 500 cars a year now being established pending the construction of the factory.

By concentrating distribution of the Colonial Six in New England the Boston factory dominates its sales territory and this means 100 per cent. service, a saving in freight charges, immediate deliveries and a low sales cost. Colonial service stations are being established all over New England. A limited number of cars are also available for export.

T. B. Funk, Appointed Chief Engineer of the Utilitor Division of the Midwest Engine Co.

The Texas Motor Car association, Fort Worth, Tex., has reinforced its organization by the addition of four new departmental heads, as follows: H. C. Comey, general manager of factory; H. D. Garsner, purchasing agent; E. M. Pfauser, chief engineer; E. A. Davenport, sales manager.

Funk Becomes Utilitor Chief Engineer

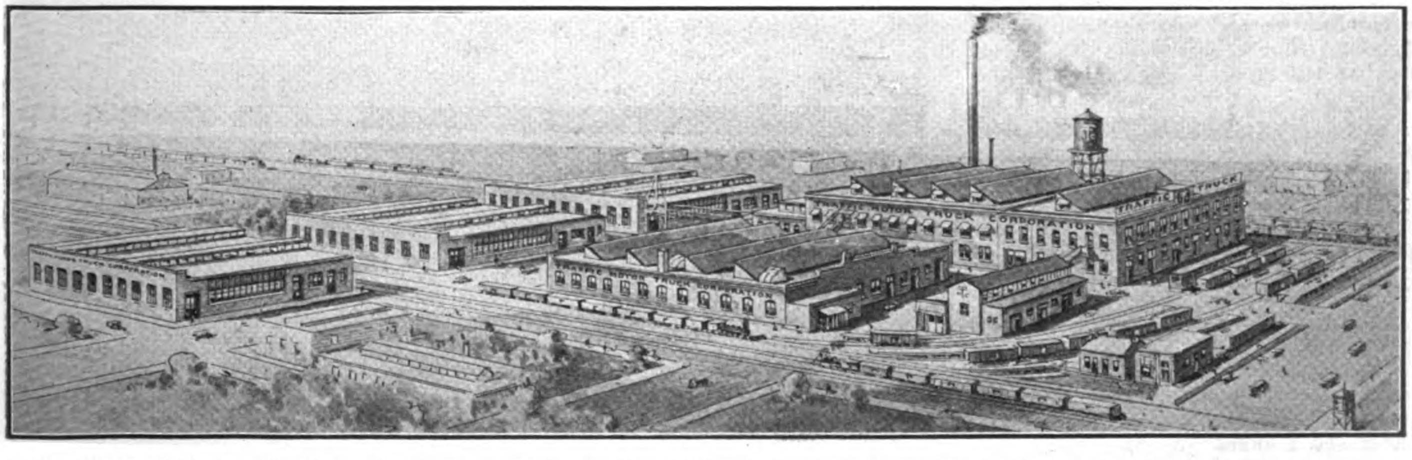
Announcement is made by the Midwest Engine Co. of Indianapolis, Ind., of the appointment of T. B. Funk as chief engineer of the Utilitor division of the Midwest Co. It is stated that perhaps no other man has spent so much time and energy in the development of the smaller sized tractors as has Mr. Funk, who began work on a small cultivating type in 1911. At that time it was not his intention to design a machine that would do plowing. His first efforts led to continued work on tractor designs, which resulted in the original drawings for what is now the Moline tractor, but he later continued to study the possibilities of the one-horse type of machine capable of plowing as well as cultivating. He spent several years as chief engineer of the Moline Co. and then founded the Engineering Development Co.

PEERLESS GASKET SHELLAC.

The latest addition to the well known Quality line of Peerless automobile specialties, manufactured by the Columbus Varnish Co., Columbus, O., is the Peerless Gasket Shellac.

The field of the use of gasket shellac is almost unlimited. Every time a motor is overhauled, a gasket removed or a motor assembled, shellac is needed to make a tight seal. Many times motors have been assembled without the use of gasket shellac owing to the inability of mechanics to obtain the right product, which should be heavy bodied, preferably an orange color, and made of alcohol so that it will go in tack quickly. The heavy body will cover up all defects in worn gaskets as well as imperfections in the new ones. It must not dry out hard or brittle to blow out or cause leaks. It must remain gummy for months.

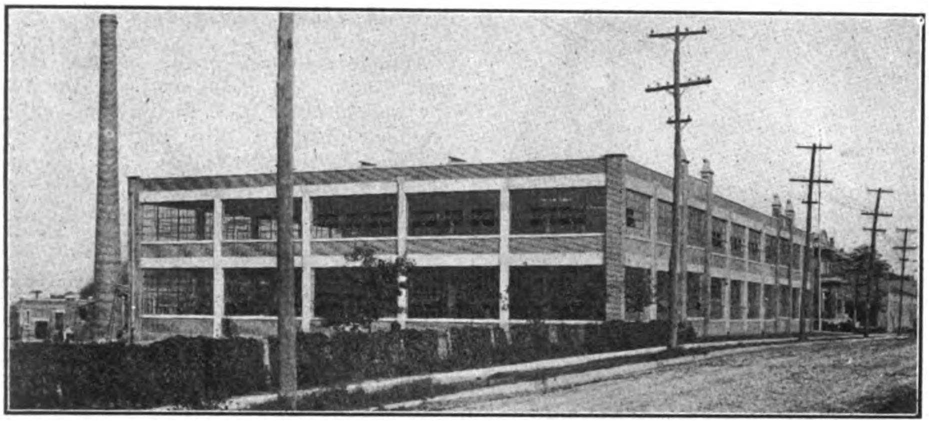
All these points were carefully studied in the experimental stages of Peerless Gasket Shellac.



The Plant of the Traffic Motor Truck Corp., St. Louis, Mo., Which Is Devoted to the Production of Standardized Two-Ton Vehicles, Illustrating the Remarkable Growth of the Industry.

NEW FACTORY FOR BEARINGS CO.

The accompanying illustration shows the new concrete and steel building recently completed for the Bearings Co. of America at Lancaster, Pa., in which new machinery is now being installed.



New Factory of the Bearings Co. of America at Lancaster, Pa.

The addition of this unit to its group of buildings increases the capacity of the Bearings company's plant about 50 per cent. for the manufacture of its well known products, thrust ball bearings and Star ball retainers.

In the background of the illustration will also be noticed the power plant of the Bearings Co. of America, but recently completed, which is also one of the best of its class.

MARVEL SPARK INTENSIFIERS.

Marvel Spark Intensifiers, which are being manufactured by the Brosnan Co., Springfield, Mass., are stated to be not a new fad or novelty, but a proven, practical invention, as for years they have been in use by many prominent racing drivers.

The Marvel Spark so intensifies the current that it shoots through and ignites the charge, disregarding all obstructions. By its use it is claimed that plugs that under ordinary conditions produced a poor, yellowish spark, will give a blue, intense and efficient spark; that not only is perfect ignition insured, and ignition trouble positively and quickly located, but there is a tendency to eliminate carbon and spark plug trouble, and that the hotter and fatter spark obtained gives greater power with more mileage.

The list price of the Marvel Spark Intensifier is 50 cents.

KELLY-SPRINGFIELD STOCK ISSUE.

The Kelly-Springfield Tire Co., New York city, has authorized an issue of approximately 82,000 shares of common stock, par value $25, to be offered to holders of common shares of record Oct. 15 at $50 a share, payable 50 per cent. Nov. 10 and the balance Dec. 10.

Dyer Co. Completes New Plant

The Dyer Co. of Cambridge, Mass., maker of special garage equipment, and one of the largest manufacturers of pistons in the East, is completing a new and large addition to its plant in Brookline street, the erection of which was made necessary by a steady increase in business. It is planned to have the new plant equipped with the most modern machinery within a few weeks, in order to begin production for the trade of 1921.

The Dyer Co. manufactures pistons and wrist pins for replacement purposes and the output includes pistons for every type of motor on the market.

The present output of the factory is above 200,000 for the year 1920, and with the establishment of agencies throughout the United States and Canada it is estimated that business for 1921 will reach the 250,000 mark.

The Dyer Co. was also a pioneer in the manufacture of oxy-acetylene apparatus, the equipment turned out being one of the most practical ever placed in a garage or repair shop, or industrial or manufacturing plant, for welding and cutting.

This is the third addition to the plant since the company began business in 1911. Between 1915 and 1919 the business was doubled and the present rate of increase over 1919 indicates that this year's output will be at least 33 per cent. greater.

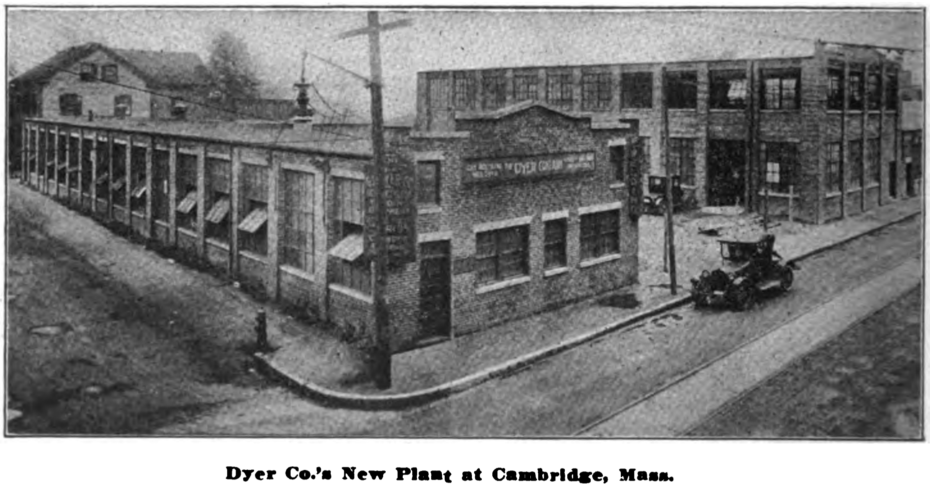
GARRISON CENTER-THREAD GREASE CUP.

The placing on the market, some two years ago, by the Garrison Co., Bridgeport, Conn., of the Garrison Center-Thread Grease Cup, has been followed by its general approval by the user and acceptance as a standard article of equipment by the jobbing trade. The ideal of a cup that is absolutely tight, does not leak grease, cannot be cross-threaded and the head of which does not rattle loose and become lost, is said to be realized in the Garrison Center-Thread.

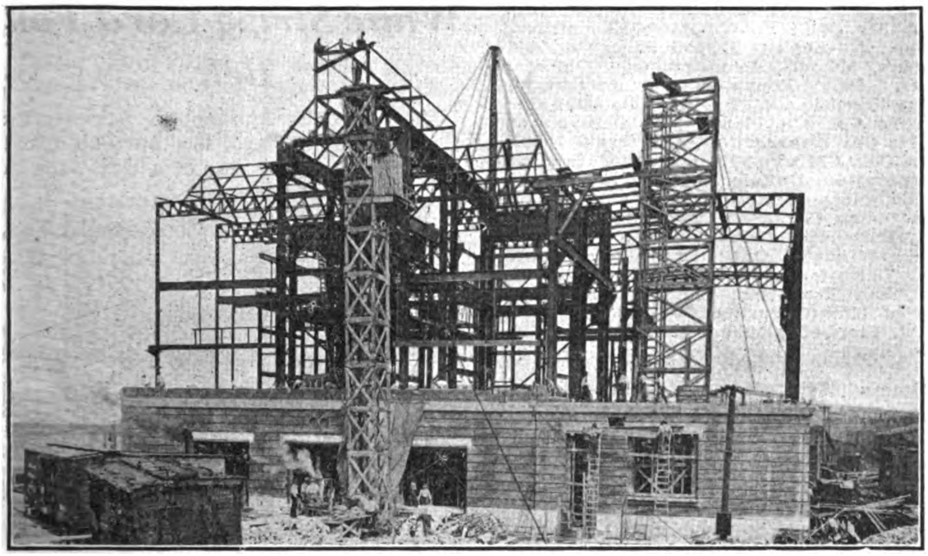
It will be noted, from the construction of the cup, that to the flanged base there is welded a screw plate with a center thread for acceptance of the standard in the cap itself. Outside of this center thread are four small holes, through which the grease is forced into the base of the cup and thence into the bearing.

A leather washer, cut hexagonally, is next applied on the base and then a steel follower, which is cramped against the leather washer and held in place by the scarfing of the hexagonal base. The standard in the cap is spot welded. The cup is now ready for use. When the cap is filled and applied to the base the first grease squeezing out over the leather washer plumps or swells this washer, giving it a continuous touch on the entire inside circumference of the cap. So it will be noted that if the washer is hugging the inside of the cap the cap is not moved by vibration nor can the grease squeeze through. As a matter of fact, in some instances these cups have been seen actually holding the water on the water pump of the car.

The H & H Motor Specialties, Inc., 755 Boylston street, Boston, Mass., is the sole distributing sales agent to the wholesale trade east of the Mississippi river on the Garrison cup, and reports that the device is now catalogued and stocked by a large percentage of jobbers in its territory.



Dyer Co.'s New Plant at Cambridge, Mass.



Big Power House Now Being Erected by the Continental Motors Corporation at Its Plant at Muskegon, Mich.

CONTINENTAL TRUCK FACTORY AT MUSKEGON.

The immense scale on which the manufacturing operations of the Continental Motors Corporation are conducted cannot be fully realized until a visit is made to the mammoth factories at Detroit and Muskegon, Mich. As large as is the Detroit plant, that at Muskegon is even bigger, where the entire output of four-cylinder truck motors is produced as well as all the foundry and drop forge work for both plants is done.

In order to take care of the greatly increased manufacturing facilities at the Muskegon works, the Continental Motors Corporation is erecting a power plant which will greatly augment its capacity and will make it independent of the local power supply, thus insuring the continuous operation of the complete equipment regardless of local conditions. This unit is being erected on land recently reclaimed from Lake Michigan and will, it is expected, be in operation by Jan. 1 1921. Reclamation will be continued to make room for future expansion.

GASOLINE SUBSTITUTE PRODUCED IN HAWAII.

In view of the increasing demand for and rising price of gasoline, the progress reported as being made in Hawaii in the development of the manufacture of a substitute motor fuel alcohol is of special interest. The raw material is waste molasses and the refuse from pineapple canneries. It is stated that approximately 135,000 tons of waste molasses is produced yearly in Hawaii, which could be converted into about 9,000,000 gallons of motor fuel by the Foster process recently patented.

WAYNE ENGINEERING CO.'S NEW OFFICE.

The Wayne Engineering Co., Honesdale, Pa., announces the opening of a New York sales office at 1400 Broadway in that city.

Edmund Hoffman, Jr., has been appointed sales manager in charge of the New York office.

Trailmobile Co's New Plant Largest

The Trailmobile Co., 2901 Robertson avenue, Oakley, Cincinnati, is now occupying its new factory, which has an area of about 130,000 square feet and is the largest plant in the world given over entirely to the manufacture of trailers for use with motor trucks and passenger cars.

The factory is modern to the last degree. It is laid out and equipped according to the most advanced practises of industrial engineering to produce a quality product in quantity. All material is routed through the plant from the receiving platform and stock room in a direct line to the shipping platform.

There is a completely equipped machine shop where parts are machined. Every part is made with jigs and templates and produced in quantity. All are interchangeable and a replacement stock is always carried at the factory.

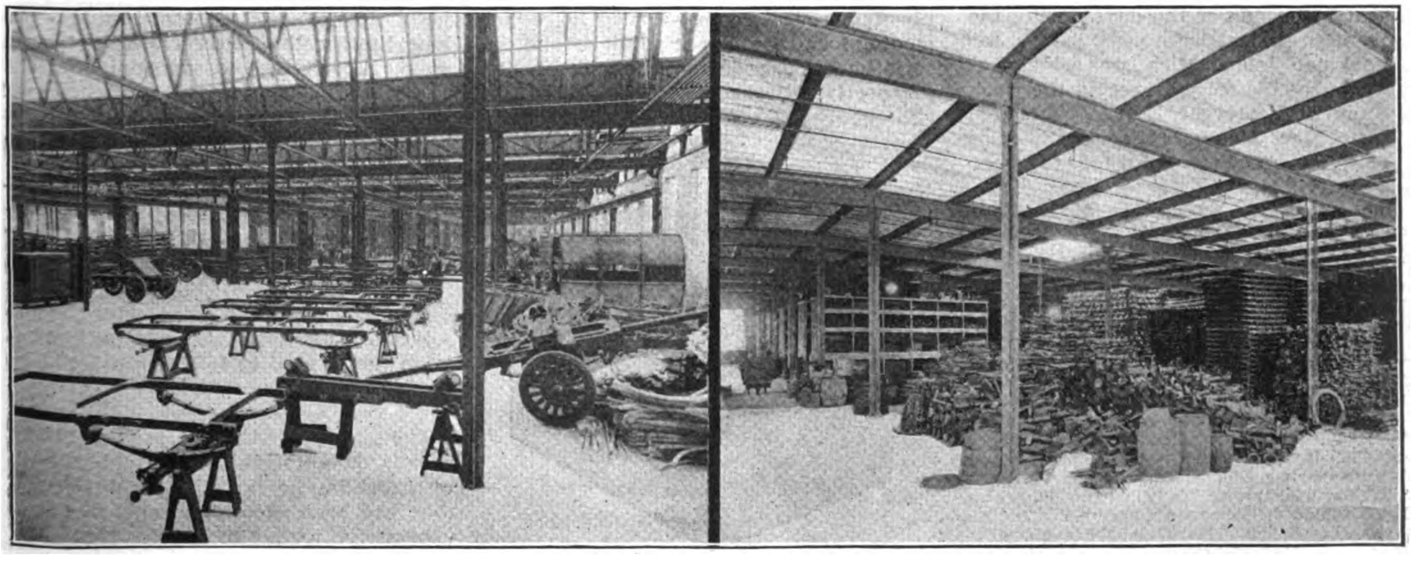
The equipment includes pneumatic riveters, power shears and planers, radial drills, drill presses, milling machines, shapers, lathes, etc., of the most modern manufacture. There is a complete woodworking equipment, air brush painting installations, etc.

Different shops are operated by individual motors distributed about the plant.

The factory buildings are of saw-tooth construction, beautifully lighted with north light and perfectly ventilated. Everything is brick and steel and concrete—as nearly fireproof as it is possible to make a building.

The plant is located on the main line of the B. & O. railroad and is provided with a long double-tracked switch for incoming and outgoing cars. The inside loading platform has a capacity for four cars, which can be loaded at one time.

The H. & D. Co., Crawfordsville, Ind., manufacturer of the H. & D. Shock Absorber, recently completed a factory building in that city, 60 by 200 feet.



Interior of the New Factory of the Trailmobile Co. at Cincinnati, O.: At Left, a Part of the Main Assembling Floor; at Right, Section of the Parts Stock Room.

Mid-Convention Meeting A. E. A.

A considerable amount of important business was transacted at the regular mid-convention meeting of the board of directors and the membership and standardization committees, including the various groups of chairmen of the Automotive Equipment association at the Congress hotel, Chicago, Sept. 10 and 11.

Various amendments to the constitution, presented at the Del Monte convention and informally concurred in, were unanimously approved by the board of directors to be referred to the annual meeting of the association in November for final action.

Resolutions were recommended to the effect that "no manufacturing member of this association will display or show goods or contribute to any local or sectional show or display not sanctioned by this association; any departure or violation of this rule will operate as a forfeiture of the right of said member to show or display in the regular Automotive Equipment shows for a period of 18 months from or after said violation.

"Resolved: No jobbing member will show, participate or contribute to any local or sectional shows that are not sanctioned by this association for the jobbing members or by the majority of the jobbers in the locality where said show or exhibit is to be held."

The standardization committee reported as their first official bulletin, in answer to the request of the Canadian auxiliary for a designation as to which is the right-hand side of a car, that the standard nomenclature has been established by the Society of Automotive Engineers that "the right-hand side of a car is that side to the right as viewed by a person sitting in one of the seats."

C. L. Coerper and Jesse Prescott were elected to the board of directors to succeed E. A. Pegau and E. R. Waterman, respectively, resigned.

It was decided to have a meeting of the state vice presidents held for a general conference and exchange of new information on one of the days during the convention or just before.

Mackinac Island, Mich., was selected as the place of the spring meeting the week of June 20, next year.

New Members Elected.

The following were elected to membership:

Jobbers—R. G. Edgecombe & Co., Ltd., London, Ont.; Fort Smith Auto Supply Co., Fort Smith, Ark.; Inland Iron Co., Fresno, Cal; J. L. Lindsay, Inc., Richmond, Va.; McLendon Hardware Co., Waco, Tex; Motor Supply Co., Phoenix, Ariz.; Nelson-Bell Co., Waco, Tex.; Reed Supply Co., Oklahoma City, Okla.; Universal Automotive Supply Co., Chicago, Ill.; Waterhouse & Lester Co., San Francisco, Cal.

Manufacturers—Acheson Graphite Co., Niagara Falls, N. Y.; Barcalo Manufacturing Co., Buffalo, N. Y.; Arthur S. Brown Manufacturing Co., Tilton, N. H.; Canedy-Otto Manufacturing Co, Chicago Heights, Ill.; Thomas J. Corcoran Lamp Co., Cincinnati, O.; J. W. Duntley, Chicago, Ill.; Hastings Manufacturing Co, Hastings, Mich.; William R. Johnson Manufacturing Co., Chicago, Ill.; LeCompte Co., Newark, N. J.; Lockwood Manufacturing Co, Kansas City, Mo.; F. W. Mann Co., Milford, Mass.; No-Leak-O Piston Ring Co., Baltimore, Md.; N. A. Petry, Inc., Philadelphia, Pa.; Pouvailsmith Corporation, Poughkeepsie, N. Y.; Reliable Manufacturing Co., Cleveland, O.; Replacement Parts Co., Kansas City, Mo.; Stahl Rectofier Co., Chicago, Ill.; Tri Co. Products Corporation, Buffalo, N. Y.

Resignations Accepted—Adamson Manufacturing Co., East Palestine, O.; Gibson Co., Indianapolis, Ind.; Kelsey Wheel Co., Ltd., Windsor, Ont.; Luthy Hydrometer Co., Detroit, Mich.; Lathan Auto Supply Co., San Francisco, Cal.; Marvel Accessories Manufacturing Co., Cleveland, O.; A. J. Stephens Rubber Co., Kansas City, Mo.

Immediately after the adjournment of the general meetings, the show committee held its meeting and allotted space for exhibits and otherwise arranged the minor details of the big November show.

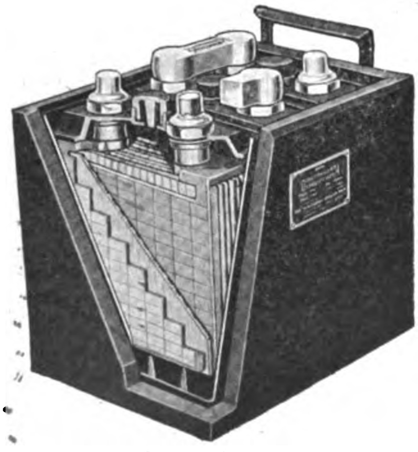
CINCINNATI CO. MAKES "DRY" BATTERIES.

The Cincinnati Storage Battery Co., Moorman avenue, Cincinnati, O., claims to have perfected a process for the manufacture and shipment of absolutely "dry" batteries. Units of this construction eliminate all danger of deterioration on the dealers' shelves and, to back up its claims, the Cincinnati Co. will exchange batteries of the dry type, which the dealer may have in stock, for sizes that he believes will have a quicker turnover.

An additional advantage of this new process and one which will be appreciated by the experienced battery man, is said to be the elimination of freezing in the separators during shipment in the winter months. In extremely cold weather, wet wooden separators will often freeze in transit and damage the battery to such an extent that it will give only a few months of service.

An extensive advertising campaign has just been started which includes space in some of the leading automotive publications.

To live-wire service men the Cincinnati company will allot generous territory, allow a generous discount, back up a 15 months' adjustment guarantee and supply numerous effective dealer helps, including local newspaper publicity and description material for distribution to prospective purchasers.



New Cincinnati "Dry" Type Battery Cut Away to Show Use of Wooden Separators.

White Stripe Cord Fan Belt

The Advance Automobile Accessories Corporation, Chicago, has perfected and demonstrated the value of a new idea in fan belt construction, after two years of experimental work. This was recently put on the market under the name of White Stripe Cord Fan Belt, and the belt itself is marked with a white stripe, the same trade mark that is used on the White Stripe transmission lining made by the same company.

White Stripe
CORD
FAN BELT
White Stripe CORD

The White Stripe Cord is in reality a belt of two distinct parts. This principle of construction is stated to make the belt distinctive from any other and, according to the manufacturer, permits it to wear at least a year on any car under any condition. The core or load carrying center of the belt is made of a very strong rim tire fabric and live rubber and is then strengthened by an endless cord that encircles the belt five times. This load carrying center will not break under 500 pounds weight. The whole center is protected by a cover, made of rim tire fabric, built slack around the core so that it will not carry any of the load. It is so processed that it has remarkable gripping power and will not slip on the pulley. The treatment is claimed not to be affected by the heat, oil, water, grit and grime to which fan belts are exposed. This means extra long life for the belt. The combination makes a belt that is extremely flexible, one that always hugs the pulley and never needs adjustment.

White Stripe Cord Fan Belts come packed one dozen in a box in a very attractive red, black and white counter display carton. In several tests run by the manufacturer the White Stripe Cord Fan Belt is reported to have given perfect service for more than 9000 miles.

The executive and sales offices of the Advance Automobile Accessories Corporation are located at 1603 South Michigan boulevard, Chicago, Ill.

The increase in the use of Disteel wheels on automobiles is graphically illustrated in the fact that in July, 1919, they had been adopted by only two manufacturers, while in March, 1920, they were specified on the product of 55 car makers.

RED BRAND STERLING SPARK PLUGS.

The "Red Brand" Sterling Spark Plugs are manufactured in various sizes and threads to meet the ever increasing demand for such products in passenger cars, trucks and tractors, and embody many features that place them in the high grade class. The porcelain core is made unusually heavy and is of large diameter, giving great strength where it is needed to withstand mechanical shock and nut compression. The center electrode is of Monel metal, a nickel alloy that is claimed to be rustless, non-corrosive and heat resisting. The core nut, which fits over the upper end of the electrode, has a concealed spring washer, which holds the shoulder of the electrode firmly inside the core, preventing, it is stated, leakage in the combustion chamber and also taking up heat expansion.

A combination terminal nut is used which is of ample size and is knurled deeply enough so that it can be turned with the fingers, thus avoiding the use of pliers and consequent possible damage to the nut. The terminal nut, it is stated, will fit the terminal wires of all wiring systems by simply reversing the nut.

Red Brand Sterling Plugs are made in the following sizes: ½ inch long for Reo, Overland, Metz, etc.; 18 m. m. metric for Packard and White trucks; ⅞-18 long for Winton, Buick, Chevrolet, etc.; ½ inch for Overland, Reo, Studebaker, Ford, etc.; ⅞-18 special for Scripps-Booth, Buick, Chevrolet, Chalmers, etc.; ⅞-18 for Dodge, Jeffery, Hudson, Maxwell, Packard, etc., and tractor sizes in ½ inch, ⅞ inch special, and ⅞-18 inch.

The Red Brand Sterling Spark Plugs are manufactured by the Lockwood-Ash Motor Co., Jackson, Mich. Prices and literature will be supplied on application and the jobber and dealer trade is solicited.

McFARLAN AUTO CO. SUCCEEDS SIX SALES CO.

The McFarlan Automobile Co., New York city, has succeeded the McFarlan Six Sales Co. in the distribution of McFarlan cars, and is now under the management of Winfield Graham, who is secretary and treasurer of the new company. He was formerly sales manager of the McFarlan Motor Co., Connersville, Ind. The New York McFarlan Co. has moved its headquarters in that city from 1655 Broadway to 69th street and Broadway.

Startit Manifold Electric Heater

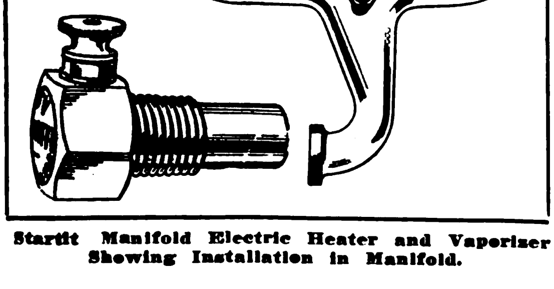
The Startit Manufacturing Co., 1523-1529 Washington street, Indianapolis, Ind., has brought out the "Startit" Manifold Electric Heater and Vaporizer, which is a particularly timely cold weather proposition for the car owner in that it is claimed that it insures quick starting of the motor no matter how cold the weather, and saves the heavy drain on the battery by reducing the use of the starter. It is stated to be designed and constructed by experts, both mechanical and electrical, follows a scientific principle, and is right not only theoretically, but gives practical proof of its utility in every day use. It is installed near the distributing point of the manifold by simply taking off the manifold and drilling a 15/16-inch hole and tapping out with a quarter-inch standard pipe tap.

A switch is placed on the cowl board or any other convenient place and a wire is run from the live side of the ammeter or battery to the switch and then from the switch to the "Startit." When the current is switched on, in from 12 seconds to a minute in extreme cold weather, the "Startit" becomes hot enough to vaporize gasoline. When the cold spray of gasoline from the carburetor strikes the hot "Startit" and mixes with the hot air directly above, it is changed into a pure, dry gas and ignition is instantaneous.

It is claimed that the device uses only from four to five amperes of energy, that the first cost is the only expense, as there is no upkeep, repair or replacement charges and that it needs no adjustment or alteration for immediate use on any car. It is made of brass and will not corrode or rust and if, at any time, it becomes necessary to remove it, it can be easily done. The very best grade of heating wire is used, absolutely guaranteed to give satisfaction for one year.

The "Startit" was invented and designed for the single purpose of aiding the automobile owner to start his car easily at all times, but it is not intended to be kept in operation after the car is running satisfactorily.

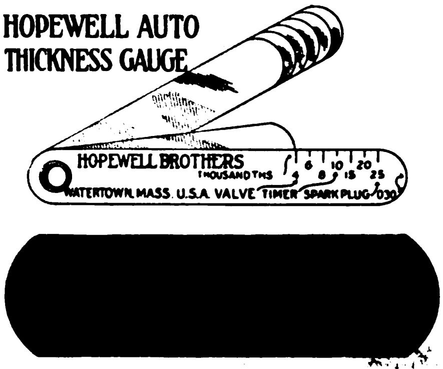
In installing the "Startit," the manufacturer states that it should not be attempted to drill and tap the manifold without removing it from the car as the chips might fall down into the carburetor and cause trouble. The caution is also made that on a car using a 12-volt lighting system the wiring should be cut across only to one of the battery connections, using only three cells, which will give six volts. If connected direct to a 12-volt battery the "Startit" will be burned out. If there is no battery on the car four dry cells will answer the purpose. In making the connection one wire is all that is needed, as the other is a ground wire.



Startit Manifold Electric Heater and Vaporizer Showing Installation in Manifold.

HOPEWELL AUTO THICKNESS GAUGE.

Hopewell Brothers, manufacturer of autombile specialties, Watertown, Mass., is bringing out the Hopewell Auto Thickness Gauge, which is designed for the accurate determination of small distances in automobile repair and general machine work, etc., such as the clearance between a valve and its tappet, or the distance between the points of a timer in a motor.



The gauge consists of a handle .030 of an inch in thickness and seven leaves of thicknesses, respectively, .004, .006, .008, .010, .015, 020 and .025 of an inch. These leaves are of variable lengths so that when drawn out of the handle they will lie against a graduated scale on the handle, thus indicating the thickness of the different leaves. By the use of several leaves in combination many additional measurements may be taken.

The gauge is made with a soft steel handle properly lettered and numbered. The leaves are imported Swedish steel, accurately tempered and polished. The gauge comes in a neat imitation lather case and the price, complete, is 75 cents each.

Auto Clearances.

The company supplies the following list of auto clearances:

Spark plugs, auto and marine motors	.025 to .018
Liberty aviation motors	.015 to .018
Valve tappets, auto and marine motors	.004 to .006
Ford motors	.022 to .028
Liberty aviation motors, inlet	.013 to .018
Liberty aviation motors, exhaust	.019 to .021
Timers, Atwater Kent, closed-circuit type	.008
Open-circuit type	.010
Delco, fiber cams	.010 to .012
Steel cams, 4 and 6-cylinder motors	.020 to .027
Eight and 12-cylinder motors	.015 to .022
Remy, old type	.020 to .025
new type	.009 to .012

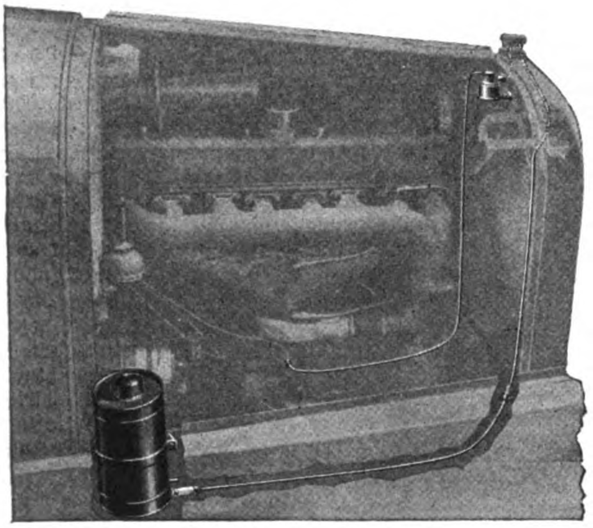
NEW FACTORY FOR STAR BATTERY.

The Star Storage Battery Co., Muncie, Ind., recently moved into its new factory, which is equipped with the latest machinery and supplied with every modern appointment and convenience for economical production. The new unit will afford considerably more floor space, increased production facilities being necessitated by the augmented demand for the Star storage battery.

Weeks "Camel" Prevents Overheating

The Weeks Manufacturing Co., 421-437 National avenue, Milwaukee, Wis., is manufacturing the Weeks "Camel,'" a somewhat unique device which, it is claimed, protects the automobile motor from the effects of overheating and causes it to function with maximum efficiency.

The Weeks "Camel" is the invention of Elling C. Weeks, a professional aviator, who was animated to start experimentation, along these lines, following several accidents due to his motor overheating through loss of water from the cooling system, culminating in a serious smash-up at Eagle Grove, Ia., Sept. 5, 1915. The "Camel" consists of a tank attached to the radiator overflow pipe, which catches, condenses and prevents the steam and water from escaping from the radiator. A float controlled valve is fitted into the top of the radiator and connects, through tubing, to the intake manifold of the motor. As the water lowers in the radiator the "Camel" valve opens, permitting the motor to suck a partial vacuum in the top of the radiator and to draw back sufficient water from the "Camel" tank to refill the radiator. As soon as the radiator is again filled the float in the "Camel" valve rises and shuts off the suction of the motor until the water again lowers in the radiator.



Marmon Motor Equipped with Weeks "Camel" Device, Made by the Weeks Manufacturing Co., Milwaukee, Wis.

The "Camel" tank carries a reserve supply of water and is fitted with a whistle which warns the driver, by sounding, when this reserve supply is exhausted, and before the motor can be damaged by overheating. The "Camel" valve is so constructed that it also feeds into the motor a very slight flow of moisture. The high temperature in the motor instantly converts this moisture into highly explosive hydrogen-oxygen gases.

The Weeks "Camel" device is stated to be now under test by several of the larger automobile manufacturers, and is also being distributed through state distributors and dealers.

HARVEY SPRING CO. OPENS CHICAGO BRANCH.

The Harvey Spring and Forging Co., Racine, Wis., maker of the Harvey Boltless automobile spring, has opened a Chicago branch at 3020 South Michigan boulevard, in charge of Edward Murphy. This branch is located in the very heart of Chicago's automobile row, and a complete assortment of Harvey springs of all sizes will be kept in stock in order to facilitate deliveries in that section.

T. H. Van Horn, sales manager of the Harvey Spring & Forging Co., says that this new Chicago office is in no sense a service station and will not compete with dealers. It is a factory branch made necessary by the greatly expanded demand for Harvey Boltless Springs, and will eliminate the necessity of shipping all individual dealer orders direct from the factory in Racine. A corps of representatives, sufficient to give adequate service to the trade, has been transferred to Chicago from the home office.

ENTERPRISE OF THE RAYBESTOS COMPANY.

The Raybestos Co., Bridgeport, Conn., has compiled for distribution among its list of 37,000 jobbers, dealers and garage owners, a pamphlet containing a selection of letters regarding the status of the industry from the heads of the largest automobile manufacturing concerns in the country, upon whom, to a large extent, depends the distribution of motor cars, trucks, tractors and accessories. These letters are conservative in tone, but not pessimistic. The introductory section of the pamphlet closes with the following pertinent advice:

"Keep your sales force on their toes. Do not let your stocks run down to where you lose orders. Keep your credits in a healthy condition. Consult your banker from time to time. Keep your collections up to the minute. Do not try to overstock your customers, but see that they have enough stock to meet their requirements. Insist that the men of your organization believe in it. Do not permit them to talk poor business."

ANTI-SKID UNIT CO. SOLD.

The Parker-Morse Co., Cincinnati, O., has succeeded the Anti-Skid Unit Co. of the same city and will take over the manufacture of anti-skid devices for motor trucks; also of automobile wrenches. Plans for an increased production are being made. The officers of the Parker-Morse Co. are as follows:

President L. Morse; secretary R. Elsinger; sales manager, L. T. Parker.

The police force of the Goodyear Co., Akron, O., numbers 200 men.

Organization of C. G. Spring Co.

The C. G. Spring Co., which was recently organized under the laws of Delaware to do business in Kalamazoo, Mich., with an authorized capital of $1,000,000 preferred stock and 10,000 shares of no par common stock, has acquired the entire stock and assets of the Kalamazoo Spring & Axle Co., and commenced to do business under the new style Sept. 1. The concern will engage in the manufacture and sale of high grade springs for motor and horse-drawn vehicles.

The officers of the C. G. Spring Co. are as follows: President, Christian Girl; vice president and treasurer, Charles Getler; secretary, Jud S. Clary. These officers, together with J. G. Utz, spring expert and consulting engineer of Detroit, constitute the board of directors.

Many improvements have been made on the plant and modern machinery installed so that the production capacity has been increased to provide a good volume of well designed, high grade springs.

ECO CO. ISSUES PICTORIAL PISTON RING HISTORY.

The Eco Manufacturing Co., 53 State street, Boston, Mass., has issued a booklet of unusual interest to the trade under the caption of "Pictorial Historial Showing Development of High Grade Piston Rings," which in text and illustrations well fulfills its design, which is to show the great advance that has been made in the production and use of this highly necessary component.

The various steps in the manufacture of the Eco Numethod rings, by the Eco Manufacturing Co., which may well be considered one of the representative makers of this class of equipment, is fully described and well illustrated. Special emphasis is laid on the selection of material, accuracy in the details of sizes, perfect coutour, etc., and economy in production made possible by specially designed machinery and skilled workmanship.

CHANGES IN PRICES OF HANSON CARS.

The Hanson Motor Co., Inc., Atlanta, Ga., maker of Hanson cars, has announced the following price changes to take effect Sept. 1:

Touring car and roadsters, $2365; sport model, $2465; sedan, $2885.

It is stated that the increases are made necessary by the adoption of the new style body and the many refinements which have been added to the Hanson Six car, the body, hood, fenders and all sheet metal parts now being constructed of heavy gauge aluminum.

MARION-HANDLEY MAKER MOVES.

The Mutual Motors Co., maker of Marion-Handley automobiles, has moved from Jackson, Mich., to North Tonawanda, N. Y.

Personal News of the Industry and Trade

Page Accepts Position with Saxon Corp.

Carl H. Page has been selected by C. A. Pfeffer, president of the Saxon Motor Car Corporation, to fill the newly created position of director of sales and advertising in the Saxon organization. Mr. Page's experience in the automobile distribution field dates back to the days of the White steamer, when he was manager of the White Co. in New York, subsequent to which, as president of the Carl H. Page & Co., he became one of the prominent distributors of the country. During his career as dealer and distributor Mr. Page has also merchandised such cars as the Jordan and Chalmers. To assist him in his new position the Saxon corporation announces the appointment of Charles P. Hennessy as sales manager and M. A. Hollinshead will continue as advertising manager.

Fred P. Scribner, who was for many years superintendent of the Raybestos plant in Bridgeport, Conn., and who, for the last 11 years has been superintendent of the F. L. Horton Manufacturing Co., Boston, Mass., has recently obtained an interest in the Staybestos Manufacturing Co., Philadelphia, and is now superintendent of the plant of that company. Mr. Scribner has been favorably known in the automotive trade for many years and is recognized as a leading manufacturing expert on the use of asbestos rings for multiple-disc clutches and specially moulded asbestos fabric unusual uses on the automobile.

Arthur E. Dixon, well known in the automotive field, has been appointed sales manager of the Torbensen Axle Co., Cleveland, O. He was associated with the late E. Ralph Estep of the Packard Motor Car Co. for five years and later was in the sales and advertising departments of the Hupp Motor Car Co. He entered the first officers' training camp at Fort Sheridan and served as a captain of infantry during the war and after being mustered out became advertising manager of the Torbensen Axle Co.

J. J. Martin has been appointed by the United States Truck Co., Cincinnati, O., as assistant to the vice president and will have charge of the special sales of that company. He has previously been with the Stewart, Federal and other truck companies, and was only recently discharged from service in the Motor Transport division of the United States army.

J. W. Beckman has been appointed advertising manager and assistant sales manager of the Armleder Co., Cincinnati, O. He was formerly with the International Motor Co., New York city, in charge of publicity.

F. L. Valiant, who was formerly with the Jones Motor Car Co., Wichita, Kan., was recently appointed eastern representative of the Arvac Manufacturing Co., Anderson, Ind.

T. P. Nickell, Special Representative with Jenkins Vulcan Spring Co., Richmond, Ind.

T. P. Nickell, for several years service and sales engineer and equipment sales representative of the Splitdorf Electric Co., recently joined the sales force of the Jenkins Vulcan Spring Co., Richmond, Ind., as special representative. Prior to his present connection with the Vulcan Co. he was New England branch manager for the Splitdorf Co., and has a particularly wide acquaintance in New England and Middle West trade circles.

E. R. Creamer has been appointed superintendent and **C. S. Ober** office manager of the George R. Carter Co., Connersville, Ind.

Herbert R. Small has been appointed manager of the export division of the Traffic Motor Truck Corporation of St Louis, Mo.

Miss Olive Beaulieu, Utilitor Tractor Demonstrator, Who Will Be Seen at Many State Fairs.

Deuster Becomes Manager Traffic Dept.

H. Deuster, who has had extensive experience in the traffic departments of prominent railroads of the country, has just been appointed manager of the new traffic department of the Motor & Accessory Manufacturers' association by M. L. Heminway, general manager. The association's traffic matters have heretofore been handled on a joint basis with the traffic department of the National Automobile Chamber of Commerce under the direction of James S. Marvin. Mr. Deuster was for 12 years with the Erie railroad and for six with the Ontario & Western. For four years he was chief clerk of the general freight department of the latter and since 1918 chief of the tariff bureau, with headquarters in New York.

John J. Bergen, formerly general sales manager of the Packard-Nashville Co., has been chosen as special representative of Hare's Motors, Inc., for Texas, Oklahoma and a part of Louisiana, while the Central West will be handled by **R. F. Riffee**, who resigned as general sales manager of the Marmon New England organization to accept that position.

Clell C. Cannon, finance officer of Akron Post 209 of the American Legion, which is one of the largest in the State of Ohio and is composed almost entirely of the employees of the Goodyear Tire & Rubber Co. who served in the World War, was elected state treasurer of the American Legion posts of Ohio at the state convention held at Youngstown.

Ernst H. Brandt, formerly western sales manager of the Ajax Tire & Rubber Co., has been made district manager for the Oldfield Tire Co., Cleveland, O., with headquarters at Chicago. His sales district includes Eastern Montana, North and South Dakota, Minnesota, Wisconsin, Northern Michigan, Iowa, Illinois and Indiana.

John L. Baci, who had been in charge of the automobile department of the Indianapolis News for six years, recently died in that city as the result of injuries received by falling down a stairway in the press stand at the Speedway during the 500-mile race May 31 of this year. He was a native of St. Louis and was 34 years old.

Hallock D. Day, district representative at Boston for Dodge Brothers since 1914, was the guest of honor at a recent dinner given at the Copley Square hotel, that city, by some 75 distributors, dealers, executives, salesmen and a few former members of the Dodge Brothers' organization in his territory.

T. S. Coleman, formerly general sales manager of the Packard Motor Car Co., Pittsburgh, Pa., has been appointed southern representative of Hare's Motors, Inc., succeeding Fred H. Miller, who recently became general sales manager for Hares' Motors of New England.

Way Joins Chain Products Company

A. B. Way, until recently secretary and general manager of the Bridgeport Chain Co., has become affiliated with the Chain Products Co., Cleveland, O., in the capacity of district sales manager for New England, with headquarters at the company's New York office, 150-152 Chambers street. For many years prior to his identification with the chain industry Mr. Way had been affiliated with various New England manufacturing enterprises, but from the advent of weldless wire chains he has been connected with this industry. During the war he was chosen chairman of the board of weldless wire chain manufacturers.

C. S. Jordan has been made advertising manager of the branch of Hare's Motors of New England at Worcester, Mass., succeeding F. D. Trapp, who has assumed the management of the Bridgeport branch for Hare's Motors of Connecticut. **A. T. Schmidt** has been appointed service manager of the Worcester branch.

C. S. Pelton, General Manager, Perfection Heater & Manufacturing Co.

N. T. Albright has been appointed general manager of the Automotive Accessories Co., Kokomo, Ind., and he will also have charge of advertising. Mr. Albright has been with the Pittsburgh Plate Glass Co., Kokomo, in the commercial department for 17 years.

Julius Janes, formerly president of the Standard Steel Castings Co., Cleveland O., recently concluded an arrangement with the Farrell-Cheek Steel Foundry Co., Sandusky, O., by which he has become the sales representative of the latter concern in Cleveland and Cuyahoga county.

Chauncey H. Murphy, vice president of the United States Mortgage & Trust Co., has been elected a director of the Locomobile, Mercer Motors and Hare's Motors companies.

D. A. Goodkind has resigned as sales manager of Lucia Mfg. Co., Hartford.

A. B. Way, New England Sales Manager for Chain Products Co.

A. A. Loeffler was recently appointed by the Doehler Die Casting Co., Court, Ninth and Huntington streets, Brooklyn, N. Y., as its Detroit representative, succeeding **F. C. Seeger,** who will now represent the company on the Pacific coast, with headquarters in San Francisco.

H. C. Comey has been made factory manager of the Texas Motor Car association, Fort Worth, Tex.

Charles E. Patterson, controller of the General Electric Co., has been elected a vice president of that company.

John H. Moore has been appointed Southern Indiana representative of the Eastern Rock Island Plow Co., Rock Island, Ill., with headquarters at Indianapolis.

W. E. Hutchison, manager of purchases for the Southern Motor Manufacturing Association, Ltd., Houston, Tex., has opened a permanent office for that concern in Detroit, Mich., at 521 Book building.

F. R. Fageol, President of the Fageol Motors Co. of Ohio, at Cleveland, O.

Hebner Purchases Los Angeles FWD Co.

H. E. Hebner, who has been identified with the automobile industry for a number of years as sales manager for Harry E. Herndon, Inc., Los Angeles, Cal., has purchased an interest in the FWD Truck Co. of that city, distributor of FWD trucks in Southern California.

Norman Cole, formerly general manager of the Akron Advertising Agency, Akron, O., is now connected with the Massengale Advertising Agency, Atlanta, Ga., and will have complete charge of automobile and automotive accounts, as well as of the merchandising and service departments. Mr. Cole's experience has been extensive in this field as, in the past, he has been connected with several of the large tire manufacturers of the country, as well as having been in charge of the publicity campaigns of many automobile tire and accessory companies.

Lon R. Smith, General Sales and Advertising Manager, Midwest Engine Co., Indianapolis, Ind.

P. B. Brown has been appointed general sales and advertising manager of the Thomart Motor Co., Kent, O., which was recently organized for the purpose of manufacturing a high quality, moderately priced commercial car. The principal members of the Thomart Co. are G. W. Thompson, president, and James L. Stewart, vice president and general manager, both men of broad experience in the commercial wagon industry, having been prominently connected for a number of years with the truck division of the International Harvester Corporation. Mr. Brown was formerly connected with the Liberty Motor Car Co., Detroit, where he was engaged on special sales work. Much of his earlier experience was gained in Europe, where he was engaged with firms of prominence in the motor car manufacturing industry.

C. L. Tolley is now a truck and tractor salesman at the Ford Garage, Pawhuska, Okla.

Authoritative Knowledge Builds Business

As in every other business, expert service makes the brush business grow.

Expert recommendations of correct brushes will increase the good will as well as the profits of your business.

Columbia Brush Dealers can always recommend the correct

Columbia
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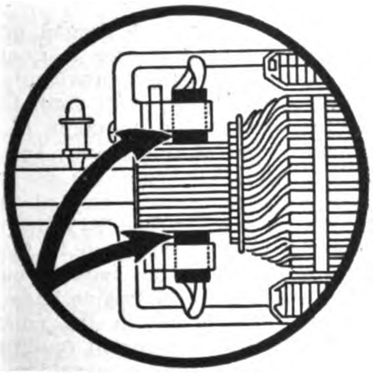
for any make and type of automobile electric system. The correct brushes for every set are specified in the Columbia Brush Blue Book. Every Columbia Dealer has one. He can make authoritative recommendations that build business and increase profits.

Columbia Pyramid Brushes for starting and lighting are designed, made, and recommended with the same care as the brushes we supply for the largest electric motors, generators, and converters.

Write your distributor today



Reliable Starting and Lighting depend on correct Brushes

Look for this Mark

N C C

on Your Brushes

NATIONAL CARBON COMPANY
Incorporated
Cleveland, Ohio San Francisco, Calif.
Canadian National Carbon Co., Limited, Toronto

7920

Mechanical Hints for Repair Shop and Garage

AUXILIARY AIR VALVE.

An auxiliary air valve for increasing the power of the engine and dcereasing the fuel consumption can be made from an ordinary grease cup, as shown in the illustration, while it is claimed that the result will equal that of a more expensive valve.

Procure a 1¼-inch compression grease cup and cut the slots "A A," allowing about 1½ threads at the bottom. The slots "B B" in the cap can be cut deeper, but in either case each pair of slots should be exactly the same depth. The connecting bar "C" is riveted to the back of cap "D" and is used for turning the cap. A hole is drilled in the intake manifold at the "Y" and threaded to take the threads of the cup. Air can be admitted or shut off to any desired point to make the engine accelerate by turning the cap with the handle.

SPARK INTENSIFIER DOES DOUBLE DUTY.

By placing a spark intensifier on the high-tension wire leading from a high-tension magneto to the distributor, it can be made to intensify the spark of all four plugs, thus saving the expense of purchasing three extra intensifiers. The same method may also be followed where the car is equipped with a starting and lighting system, by connecting the intensifier between the coil and the distributor on the high-tension wire, in this manner taking the place of three, five or seven extra intensifiers on four, six or eight cylinder engines.

DEVICE FOR REMOVING PISTON RINGS.

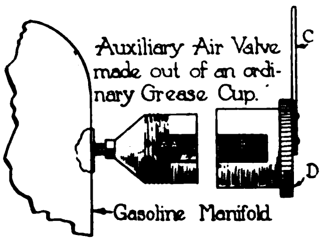
A piston ring remover is easily made from two pieces of flat stock shaped as shown in the illustration. Holes are drilled at the centers and a pin inserted and riveted. With this tool it is a simple matter to remove stubborn or stiff piston rings after the piston and rings have been taken out from the cylinder.

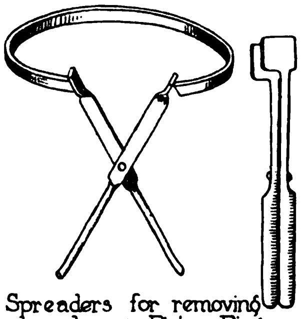
CLEANING VALVES BEFORE GRINDING.

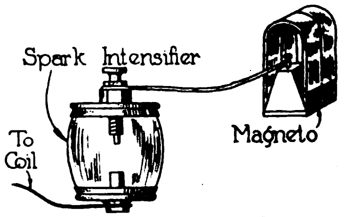
It is often found necessary to clean the face of a valve before grinding and, as the small shop is not usually equipped with the necessary tools for this work, the electric drill can be made to turn the valve at sufficient speed if the drill is held rigidly in the vise, while an upright, made of flat iron stock, is placed at the proper distance from it, and clamped to the work bench. A hole should be drilled and threaded in the upright and a set screw of sufficient length screwed into the opening. Placing the valve between the chuck of the drill and the point of the set screw allows the turning of the valve in the same manner as if it were held in a lathe chuck. The face of the valve can be smoothed off with a flat file while it is being turned by the electric drill.

TO PREVENT OIL PASSING PISTON.

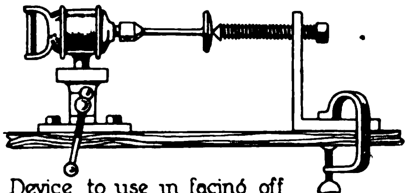
A method of preventing oil from passing by the piston is herewith presented which is stated to offer a solution of this disagreeable trouble. It consists of turning a groove under the third ring groove, leaving a narrow skirt or flange, about 1/32 inch, between the ring groove and the oil grove. A second groove is also turned in the same manner below the fourth ring groove provided that the piston is equipped with four rings; if not, advantage can be taken of the oil groove found at this point. Drill seven ⅛-inch holes through the oil grooves, slanting them slightly toward the skirt of the piston. In use it will be found that the oil will come up to this point and will then drain back through the small holes into the engine base, obviating the film of oil in the combustion chamber and also prevent fouling of the plugs. This method is considered much better than bevelling the edge of the ring groove, as in that case no chance is given for the ring to shoulder off at the beveled cage, causing the compression to be weakened.

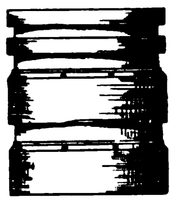

Auxiliary Air Valve made out of an ordinary Grease Cup.

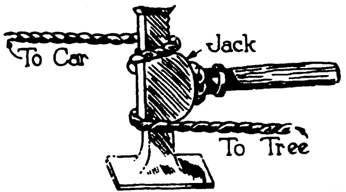

Spreaders for removing and replacing Piston Rings



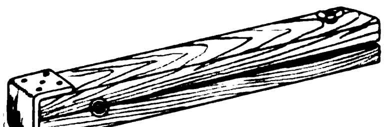
Method of making Spark more intense.

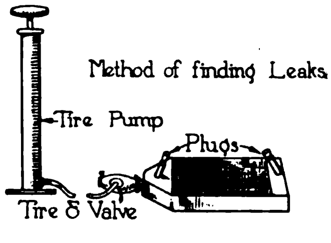

Device to use in facing off Valve Heads.

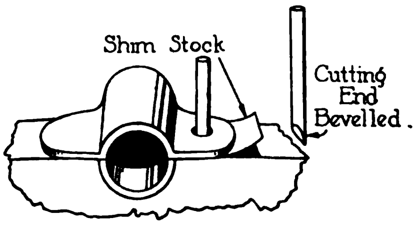

Bevel on Piston Ring Groove prevents excessive oiling.



A Jack can be used effectively in this manner.


Tool to lap Crankshaft


Method of finding Leaks



TO REMOVE CAR FROM MUD OR SAND.

A novel idea that the motorist can make use of when his car becomes stuck in mud or sand is to get a length of three-quarter or one-inch rope—usually the tow rope will answer the purpose if one is carried in the car—and the jack is used to raise the car axles. Tie one end of the rope to a convenient tree and fasten the other to the axle of the car, leaving the rope slack so that the jack can be twisted into the rope as shown in the cut. Turn the jack as depicted and the car can be easily drawn out of the mud.

LAPPING CRANKSHAFT PINS.

A method of lapping crankshaft pins that is said to give good results where the pins are worn out of round, is as follows: Take two pieces of hard wood corresponding in width to the length of the crankshaft bearings and 14 inches in length. Clamp them in a vise and bore a hole one-quarter of an inch larger than the pins through the pieces of wood so that half of the hole will be in each piece. Line each half of the hole with leather one-eighth of an inch thick. Fasten a piece of leather over the end to act as a hinge and fit a piece of emery cloth inside the opening. Apply plenty of light oil and clamp around the pin. Place the crankshaft in a lathe and turn at a moderate speed. A gentle pressure on the clamp will soon cut down the high places on the pin.

TESTING RADIATOR FOR LEAKS.

A simple way to test a radiator for leaks after removing it from the car is to fit stoppers to the upper inlet, the lower outlet and the overflow pipe. To the filling spout wire a section of inner tube having a valve attached. Wire the open end of the tube and attach an air pump to the tire valve. Place the radiator in a pan of water deep enough to cover it and pump air in. Escaping air will be shown by bubbles rising to the surface of the water. With a scraper mark the spots from which the air escapes and this will be a guide when soldering.

PUNCHING SHIM STOCK.

A convenient tool for punching holes in shim stock, as the stock is held between the two halves of the bearing, consists of a punch made of cold rolled steel and beveled as shown to give a good clean cut.

WORTHLESS GREASE CUPS.

Cheap grease cups are more than likely to become worthless in a short time. It is almost impossible for the motorist to turn one of these cups down and, if he is able to do so, the operation may not send the grease where it is needed most. The only remedy for this condition is to use efficient grease cups, oil cups, etc., or install a lubrication system that puts grease into the bearings under high pressure.

Finding Flash Point of Kerosene

A very large number of fires are laid to kerosene and the danger is by no means small. The greater number of these fires are due to the overturning of lamps and oil stoves. In many of these cases the oil continues to burn fiercely after the stove or lamp has been upset. This should, however, be obviated by the use of a grade of kerosene oil which is procurable in the market, which is carefully fractionized and freed from the more volatile products. Furthermore, this oil does not cost any more than the more volatile, and is fully as economical to use.

The problem of determining whether an oil is safe for use or not is one which is eminently fitted for the amateur chemist to solve. The process is known as finding the flash point or the fire test.

The flashing point of kerosene may be approximately determined as follows: Pour a small quantity of the kerosene to be tested in a small crucible or evaporating dish. Then place the crucible upon a water bath and suspend a thermometer in the oil.

Heat the water carefully until the thermometer registers 30 degrees C (86 degrees F). At this temperature cautiously draw a lighted match across the surface of the liquid.

If the oil does not ignite repeat the match test at each rise of five degrees until it does flash. Do not permit the oil to burn, but allow it to cool to the five-degree point at which it was before it ignited. For example, at 45 degrees C a certain sample did not flash; at 50 degrees it did. The analyst allows it to cool to 45 degrees again and then very cautiously repeats his test till at say 47 degrees it flashes once more. The flashing point in this case is 47 degrees centrifugal and not 50 degrees.

Experience has shown that there is no danger with an oil possessing a flashing point of 40 degrees C. (104 degrees F.) The best grade of oil sold in the United States is known as water white and flashes at 65.5 degrees C. (150 degrees F.) However, it is understood that there are oils on the market having a flashing point of from 24 degrees to 40 degrees C., and these constitute a very great source of fire danger. No difficulty has been found in procuring an oil with a fire test of from 60 degrees to 62 degrees C. The safe limit is 40 degrees C., or 104 degrees F. In some countries this point has been fixed by law as the minimum.

TO PREVENT RUST.

The rusting of shock absorbers and springs may be easily prevented if the car owner will keep on hand a small can of fender enamel with which to touch up bare spots as soon as they make their appearance. Of course it looks better to apply a coat to the whole spring or absorber, but so far as preventing rust is concerned, covering the bare spots as they develop will answer all practical purposes.

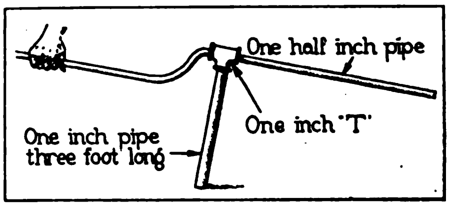
STRAIGHTENING WIRE.

Stray pieces of copper wire have many uses, but it is often necessary to straighten out wire that has already been used before it can be employed again. See that there are no sharp bends or kinks in the wire and straighten out by hand any of these which are found. Fasten one end of the wire to some firm anchorage, grip it in the vise if necessary. Loop the other end of the wire around a hammer handle or similar instrument and then pull out the length of wire. Repeat this operation as often as necessary. If the wire is of soft copper it will stretch a little, which improves it.

BENDING GAS PIPE.

A novel method of bending gas, water or conduit pipe was recently noted that is perhaps used by electricians and others, but may be of interest to the general repair man.

The device consists of a three-foot length of pipe, one inch in diameter, having a one-inch "T" screwed on at one end, as shown in the cut. The pipe to be bent is inserted in the "T," while the bending device rests on the floor as shown. A powerful leverage is obtained through the angle at which the three-foot length of pipe is placed on the floor, causing the half-inch pipe to bend easily. For the smaller sizes of pipe this method of bending should be found satisfactory.



OIL FOR OLD ENGINES.

After an engine has seen reasonably long service, so that the pistons do not fit as closely in the cylinders as they did at first, it is advisable to use a heavier grade of oil in order to take up a little of the clearance. In racing engines, where the piston to cylinder clearance is often more than twice that used in ordinary practise, the drivers use heavy oil. High viscosity lubricants such as castor oil or mixtures of castor oil and mineral oil, are favorites for racing engines.

HOLDING EMERY CLOTH.

When polishing flat surfaces with emery cloth instead of using a file it will be found more convenient to wrap the cloth around the file and to bend a piece of wire into a clip to hold the cloth to the file at the lower end. The cloth at the outer end of the file is held with the fingers so that a clip at this point is not needed.

FILLING BLOW HOLES IN CAST IRON.

One part red lead and 1½ parts red litharge. Mix with glycerine to the consistency desired.

WIZARD
GASOLINE TONIC

THE BUSINESS POSSIBILITIES

Of a Wizard Gasoline Tonic Agency are limited only by the energy and resourcefulness of the Agent.

EVERY VEHICLE OWNER MUST USE FUEL

Poor quality of average grades of gasoline and the high prices, make WIZARD TONIC a necessity, and the demand is not only constant, but is increasing.

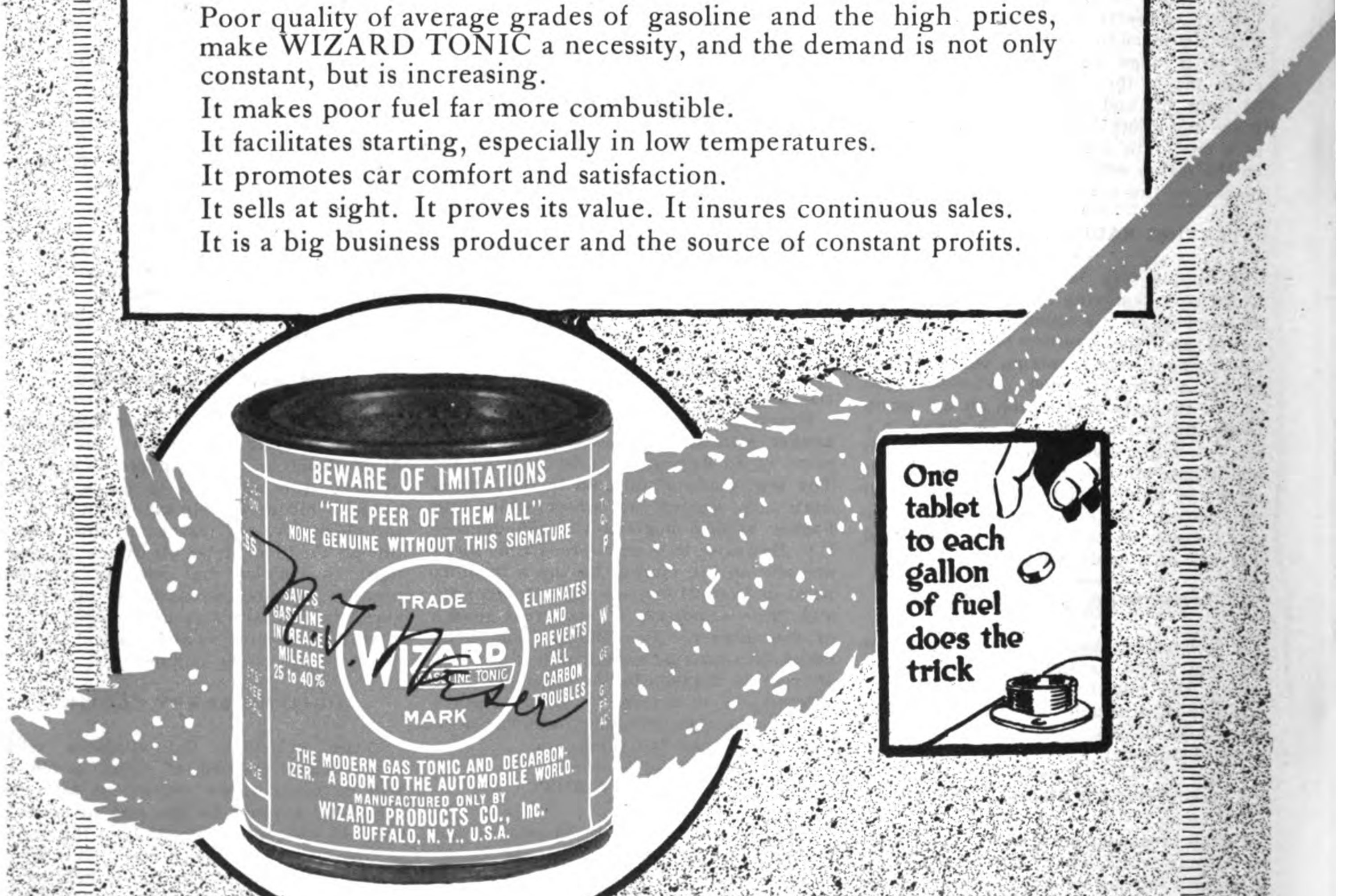
It makes poor fuel far more combustible.

It facilitates starting, especially in low temperatures.

It promotes car comfort and satisfaction.

It sells at sight. It proves its value. It insures continuous sales.

It is a big business producer and the source of constant profits.


BEWARE OF IMITATIONS
"THE PEER OF THEM ALL"
NONE GENUINE WITHOUT THIS SIGNATURE
SAVES GASOLINE INCREASE MILEAGE 25 to 40%
TRADE
WIZARD
GASOLINE TONIC
MARK
ELIMINATES AND PREVENTS ALL CARBON TROUBLES
THE MODERN GAS TONIC AND DECARBONIZER. A BOON TO THE AUTOMOBILE WORLD.
MANUFACTURED ONLY BY
WIZARD PRODUCTS CO., Inc.
BUFFALO, N. Y., U.S.A.

One tablet to each gallon of fuel does the trick

WIZARD
GASOLINE TONIC

OUR GUARANTEE

We hereby guarantee "WIZARD GAS TONIC AND DECARBONIZER TO BE FREE FROM ANY ACIDS OR OTHER INGREDIENTS which are in ANY WAY INJURIOUS TO THE MOTOR. That it will remove and prevent carbon from forming inside a motor in which it is used according to our directions, and that it will increase power and mileage and decrease fuel consumption in any motor. If, after you have thoroughly tested "WIZARD" by using up to 25 tablets, you are not perfectly satisfied, return the original package with the unused remaining tablets to us, and the purchase price will be promptly refunded to you.

MANUFACTURED BY
WIZARD PRODUCTS CO.
Inc.
BUFFALO, N. Y.
U. S. A.

BUYERS KNOW
OR
DON'T KNOW

The WIZARD GUARANTEE is to satisfy buyers that WIZARD GASOLINE TONIC will

Decrease Fuel Cost
Increase Engine Power
Increase Vehicle Mileage
Minimize Carbon Deposits
Lessen Repair Expense
Afford Maximum Flexibility

Measured by Miles a Gallon the economy is from 25 to 40%.

Equally efficient with Gasoline, Kerosene or Distillate, in Car, Truck, Tractor, Power Boat or Stationary Engine.

MONEY BACK unless every quality is proven by actual service test, and the buyer is judge of results.

The buyer does not gamble—we either prove our guarantee or fail. And Wizard Gasoline Tonic contains nothing that can damage metals. One tablet to a gallon of fuel. That's all.

JOBBERS AND DEALERS.

SERVICE and GASOLINE STATION MANAGERS, agency for Wizard Gasoline Tonic can be made wonderfully productive. The demand is world wide and the business is only limited by the scope of operations.

Exclusive territorial rights are open in some sections of the country, and a request will bring details.

Write Us Today. Address Dept. "A."

WIZARD PRODUCTS CO., Inc.
Buffalo, New York, U. S. A.

A Trial box will be mailed to any address on receipt of One Dollar

PLATE XXXV.

SALES, SERVICE AND STORAGE STRUCTURE

Unusual Features Are Incorporated in This European Type of Service Station, Which Has Sixteen Individual Compartments.

The accompanying type of service station is different from the ordinary; it is a type that is, perhaps, already known to many, yet seldom applied as in the plan shown.

The design is commonly called the community or neighborhood garage, having as a general rule nothing but individual compartments for storage, where no repairs or accessories may be obtained as in many garages or stations.

Having provision for both repairs and sales of accessories and supplies, as well as individual storage, this garage proposition is a worth while investment. This combination of service has been found very productive by the owners of a large automobile concern in a European country, and attractive to owners and drivers.

The company claims that in addition to selling cars it can repair and rebuild machines, as well as affording storage to a client of the private or individual garage scheme.

Many owners feel much more content when they know that their cars will be under lock and key, eliminating worry of garage hands "joy riding" with their cars when they put them up for the night.

The entire structure covers an area of 120 by 150 feet, having a large court yard flanked by the different members or units of which the building is composed. First there are 16 individual compartments, each in itself a complete garage. In size they are 12 by 25 feet, ample to house any type of passenger car and have plenty of working room as well. A truck of garage size could be accommodated in one of these compartments.

Individual Compartments.

A work bench has been shown, very handy to the man who desires to do a little repair work. Heat and electric lights are provided from a central plant. The floor is of concrete with drain, insuring at all times a dry floor. There is a large window area, providing ample light for ordinary purposes, and double doors.

In the forward end is located a large show room with a door for cars leading from the court —also two small doors for general purposes. Three large windows afford an abundance of light and these are flanked by an entrance door from the main street.

A drive separates the show room from the office, and this leads to the court yard. At the front end is located an ornamental iron gate, which enriches the design. It also affords protection from stragglers after certain hours who might endeavor to utilize the court for parking purposes.

Next are the offices, large and spacious, with a waiting area railed off, as shown. Off the office are two toilets, one for men and the other for women. These are lighted and ventilated from overhead.

Large Repair Shop.

In the rear, at the end of the court yard, is situated a large repair shop, adequate for working on six cars at one time. This is lighted by the large doors opening to the court and a huge skylight covering nearly the entire roof. To the right is located a machine shop, as shown, and this should be so equipped that it can handle any nature of work, from small repairs to the making of new parts.

On the other side of the repair shop is the tool and stock room. In this room tools may be kept without loss and parts may be stored there, these being necessary if cars are sold by the garage operator. Adjoining the stock room will be found a toilet and wash room, and from this a stairway leads to the basement, where the boiler room is located. In connection with the boiler room provision should be made for coal storage.

Construction Details.

The general form of construction is brick, with concrete foundations and floors. Plank roofs are covered with tar and gravel. The doors are of wood, with wired glass, and the skylights are of galvanized metal.

The brick for the street front of the building should be first class and of a rough texture, used in connection with a ¾-inch white mortar joint, rough struck to harmonize with the brick. All trimmings are of terra cotta or concrete stone. A geometric design in wrought iron placed in a circular opening over the main entrance to the court has been introduced.

The heating is by steam, each compartment having a separate radiator or coil, while the shops may get the best results from wall radiation of the pipe system, or radiators, if owner cares to purchase them.

There are electric lights throughout the special lighting arrangements for show room and office, and wrought iron lamps on the sides of the entrance to the court.

Regarding the cost, $15,000 would about cover what is shown.

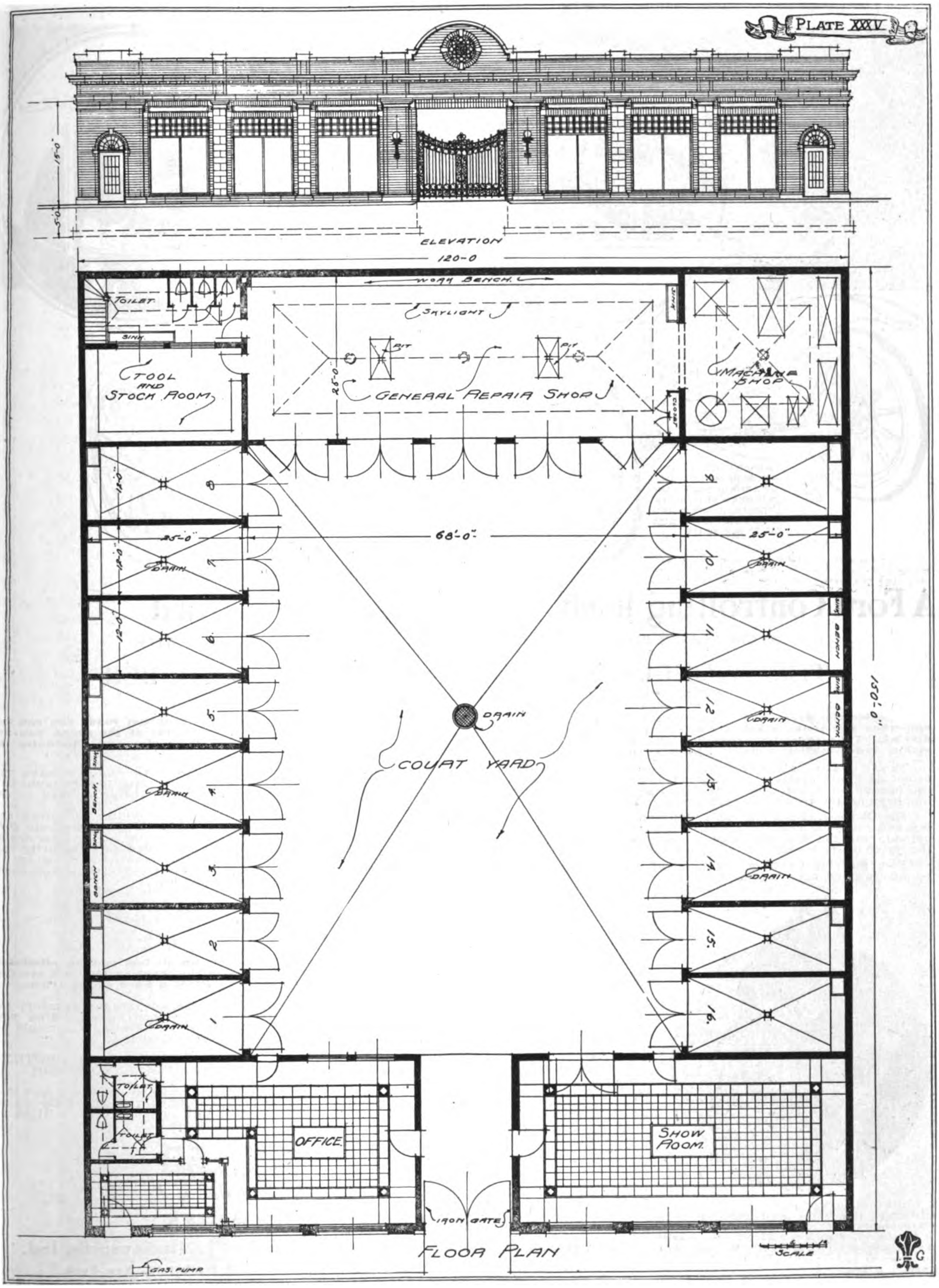


PLATE XXV
15-0
5-0
ELEVATION
120-0
TOILET
SINK
TOOL AND STOCK ROOM
WORK BENCH
SKYLIGHT
PIT
PIT
25-0
GENERAL REPAIR SHOP
SINK
CLOSET
MACHINE SHOP
12-0
12-0
12-0
25-0
25-0
68'-0"
1
2
3
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BENCH
SINK
BENCH
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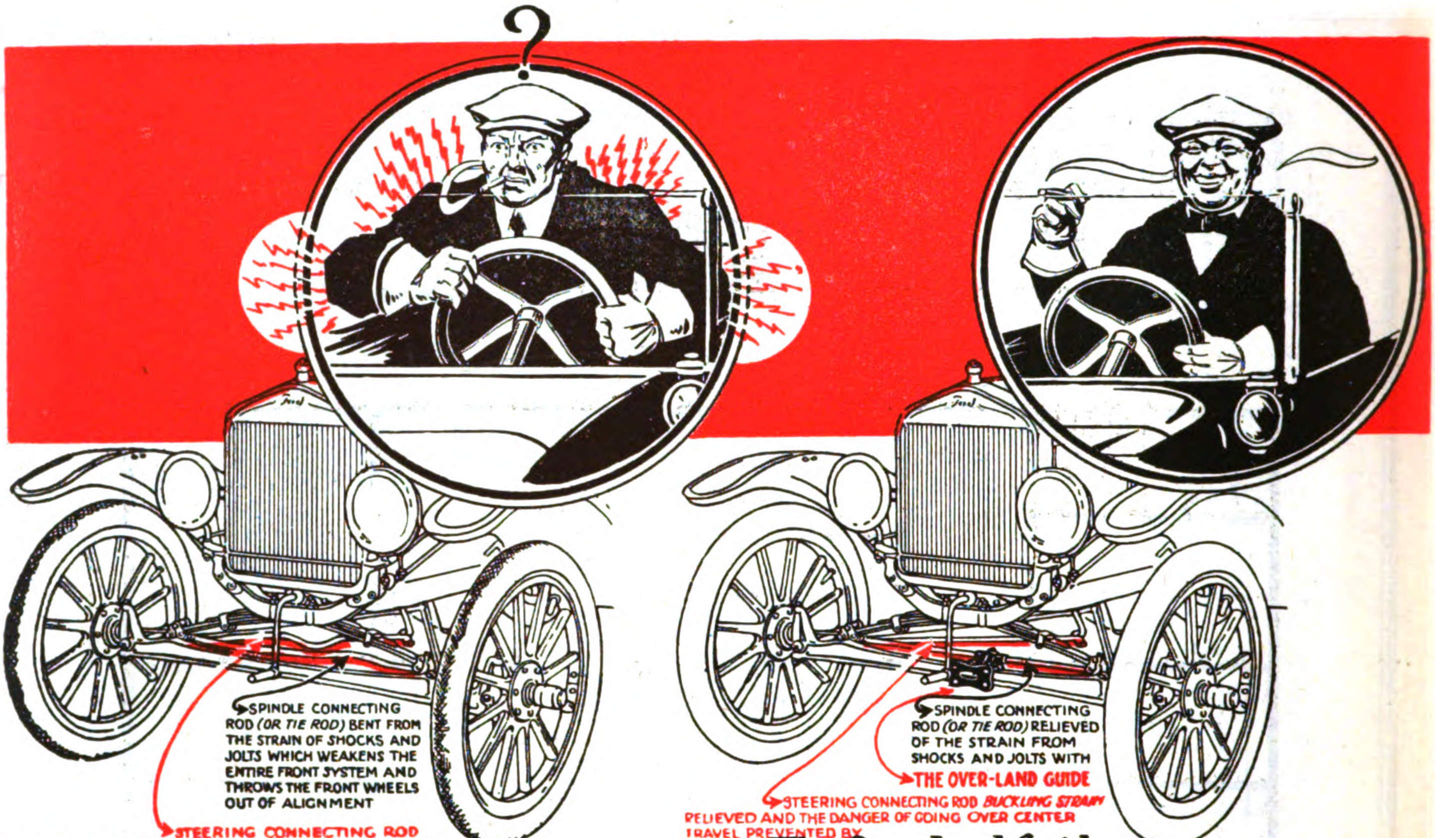
BENCH
SINK
BENCH
COURT YARD
150'-0"
TOILET
TOILET
OFFICE
SHOW ROOM
IRON GATE
FLOOR PLAN
SCALE
GAS. PUMP


?
SPINDLE CONNECTING ROD (OR TIE ROD) BENT FROM THE STRAIN OF SHOCKS AND JOLTS WHICH WEAKENS THE ENTIRE FRONT SYSTEM AND THROWS THE FRONT WHEELS OUT OF ALIGNMENT
STEERING CONNECTING ROD BUCKLED FROM STRAIN OF SHOCKS AND JOLTS AND THE DANGER OF GOING OVER CENTER TRAVEL WHICH MEANS THE LOSS OF CONTROL IN —
SPINDLE CONNECTING ROD (OR TIE ROD) RELIEVED OF THE STRAIN FROM SHOCKS AND JOLTS WITH
THE OVER-LAND GUIDE
STEERING CONNECTING ROD BUCKLING STRAIN RELIEVED AND THE DANGER OF GOING OVER CENTER TRAVEL PREVENTED BY

A Ford Controlling Itself

The Over-land-Guide
PATENTED
***Controlling* the Ford**

AVOID REPAIR BILLS—PREVENT ACCIDENTS—SAVE TIME AND MONEY WITH

THIS WONDERFUL STEERING SHOCK ABSORBER

WHICH ENABLES YOU TO CONTROL YOUR FORD AT ALL TIMES.

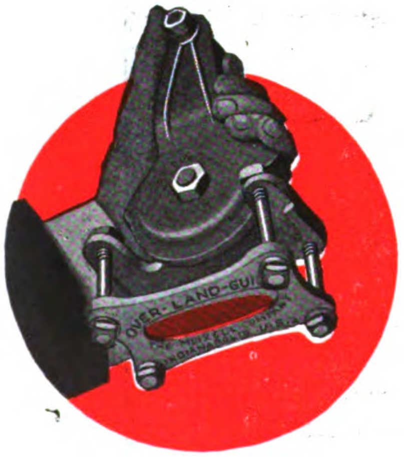
After the Over-Land Guide is installed give it a severe test and try-out. Drive the car over the roughest roads you can find and when you strike a hole six or seven inches deep, remove your hands from the steering wheel, regardless of the speed you are driving. Then you will realise how the Over-Land Guide controls the running of the car, absorbs all shocks, and eliminates the strain and vibration from the front system and steering mechanism.

The Over-Land Guide gives you the best insurance against danger of accident and destruction of your Ford car or truck through the loss of control caused by the steering connecting rod passing over center travel in short turns.

The OVER-LAND Guide will eliminate the danger of ditching and collision with the possibility of fatal results to the occupants and the destruction of the car even though the steering mechanism be broken or failed to work.

Your steering gears may get out of service, or the steering connecting rod may become locked over center travel, but the OVER-LAND Guide, with its grip on tie rod and axle, will hold your car in the middle of the road until it is brought to a safe stop, avoiding the possibility of being ditched or destroyed.

The Over-Land Guide stops the wobbling, scooting and creeping of the front wheels. It also removes the strain from the arms and shoulders of the driver. It is life-and-car-insurance of the highest order and affords a degree of security that makes it worth a hundred times the cost to any owner. It greatly reduces wear and tear on the front system and steering mechanism by eliminating vibration.



Unlike all other steering devices the spring in the Over-Land Guide acts as a steering shock absorber and is packed in hard grease and completely enclosed, which keeps it from dust and moisture and means indefinite service and no upkeep.

Pays for Itself Every Two Weeks in Reduced Wear and Tear

The Over-Land Guide is a steering shock absorber, takes up all lost motion, eliminates the shocks and vibration from all ball joints and bushings in the front system and steering mechanism, and in fact all ball joints and bushings that constitute a Ford car or truck.

The Over-Land Guide also reduces breakage and repairs of all the following parts—such as spindle connecting rod (or tie rod). Spindle body arms and bushings. Spindle body and bushings. Ball and roller bearings and hub. Steering connecting rod and ball joints. Steering gear drive pinion and steering gear pinions. Steering gear internal gear case and bushings. Also prevents the axle from bending—and may save your entire car from destruction with loss of life of occupants.

If you knew the advantages, comfort and protection to be gained by equipping your car with an Over-Land Guide, you would not drive another day without it.

THIS BROAD GUARANTEE PROTECTS USERS OF THE OVER-LAND GUIDE.

Use it 20 days, properly installed, and if at the end of that time it does not do all we claim for it, full purchase price will be refunded.

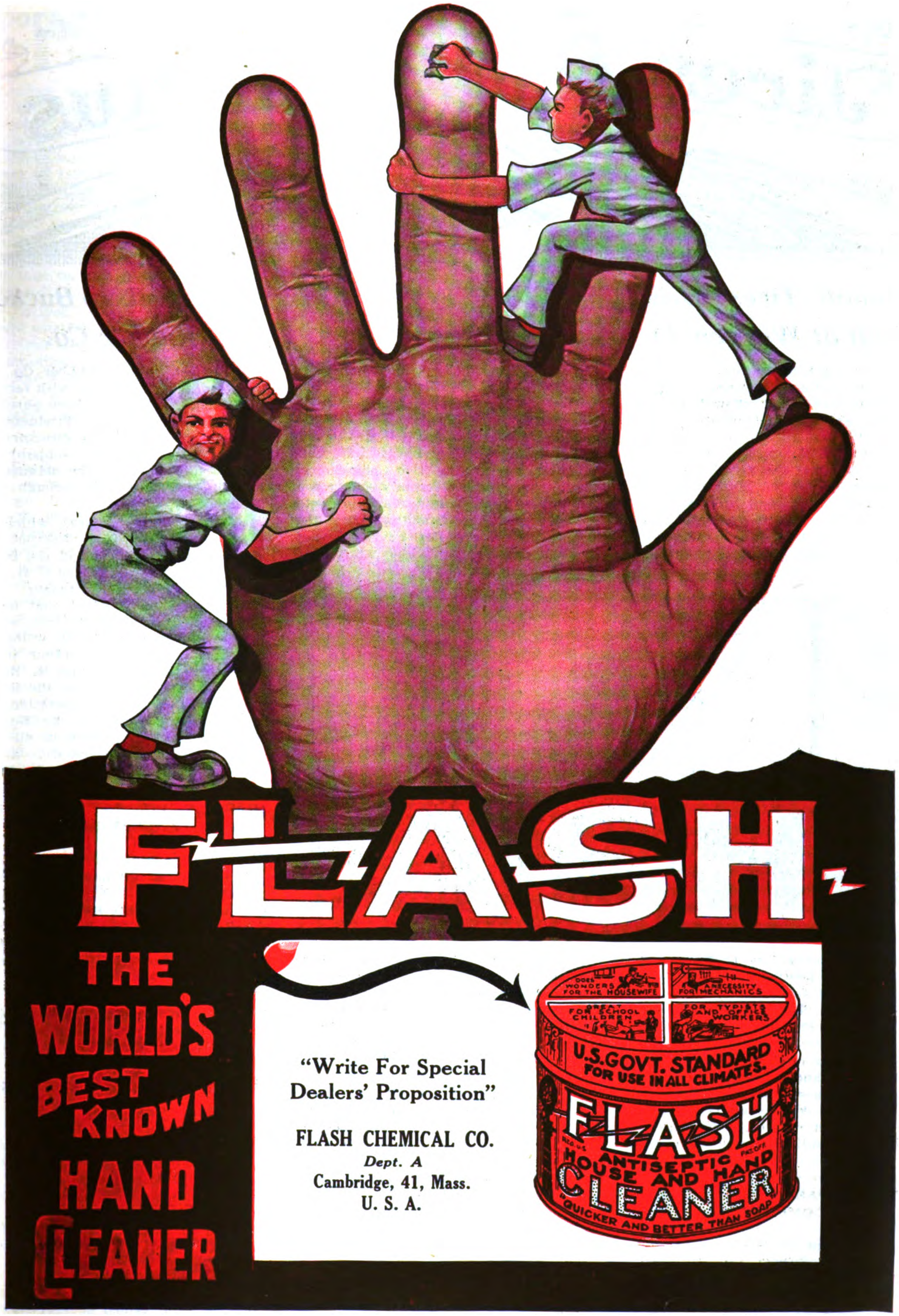
We will ship you one Parcel Post for . . . $8.50

IN ORDERING STATE YEAR CAR WAS MADE.

THE MEIXELL COMPANY

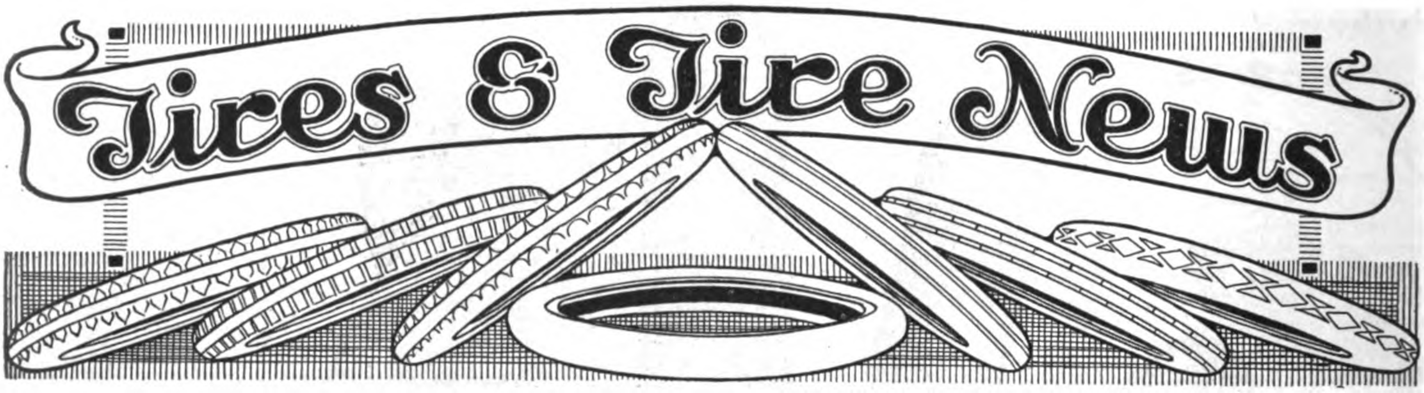
216 Board of Trade **Indianapolis, Ind.**

Foreign Distributors—Automobile Sundries Co., 79 Walker St., New York.


FLASH
THE WORLD'S BEST KNOWN HAND CLEANER
DOES WONDERS FOR THE HOUSEWIFE
A NECESSITY FOR MECHANICS
GREAT FOR SCHOOL CHILDREN
FOR TYPISTS AND OFFICE WORKERS
U.S.GOVT. STANDARD FOR USE IN ALL CLIMATES.
FLASH
REG. U.S. PAT. OFF.
ANTISEPTIC HOUSE AND HAND CLEANER
"QUICKER AND BETTER THAN SOAP"

"Write For Special Dealers' Proposition"

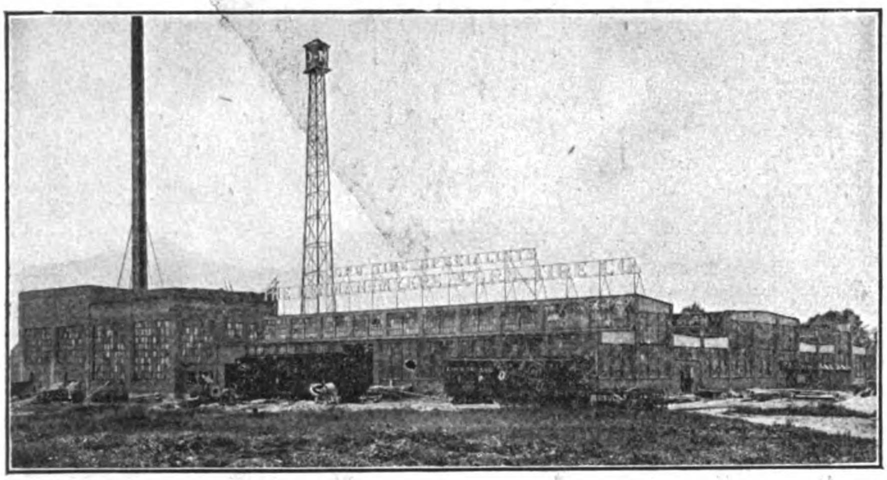
FLASH CHEMICAL CO.
Dept. A
Cambridge, 41, Mass.
U. S. A.



Denman Tires Being Built at Warren, O.

Sept. 15 marked the beginning of increased production of Denman cord tires, as on that date the Denman-Myers Cord Tire Co. put into production its new plant at Warren, O., which is considered one of the most modern, scientifically equipped and best planned tire manufacturing factories in the country.

The company was one of the very first to be organized for the exclusive manufacture of cord tires, and Walter R. Denman, secretary and general manager of the company, is probably one of the earliest tire authorities to foresee the increasing popularity of the cord tire as compared with fabrics. Cord tire specialists are in charge of every department of the factory and a well balanced and practical product is the result.


New Factory of Denman-Myers Cord Tire Co. at Warren, O.

The president of the company is Walter E. Myers and he states that sales connections are being established throughout the country and that indications point to a very rapid development in the distribution of Denman cord tires.

HOUSTON BRANCH FOR SEA GATE COMPANY.

A. S. Galitzka, president of the Sea Gate Tire & Rubber Co., 220 North Broadway, Oklahoma City, Okla., has opened a branch at 1205 West Main street, Houston, Tex.

EFFICIENCY OF CLIMAX COMPRESSION TUBE.

A remarkable instance of the efficiency of the Climax compression inner tube, made by the Climax Rubber Co., Columbus, O., is afforded in a recent experience by E. M. Pavey, assistant sales manager of that company. Mr. Pavey, accompanied by Mrs. Pavey and their daughter, was driving from Columbus to Canton one evening recently and, when a few miles from Canton, they were held up by automobile bandits. After the thieves had relieved Mr. Pavey of what cash he had with him, they started to let air out of one of his tires by removing the valve stem but, becoming alarmed by the lights of an approaching car they decided they would not have time to remove the valve stem and shot a hole through the tire and tube, thinking thus to put the car out of commission, so that Mr. Pavey could not follow them.

The tire did not leak air as it contained a Climax compression inner tube, and Mr. Pavey followed the robbers, but was unable to overhaul them on reaching Canton as their car was higher powered than his. The tire is on display at the Columbus office of the Climax Co. and plainly shows where the bullet entered, but the original air is still in the inner tube.

West Coast Cotton Co. of California has opened eastern selling offices at 242 Chestnut street, Philadelphia.

Polack Sells to Buckeye Rubber Co.

The Polack Tyre & Rubber Co., 1876 Broadway, New York City, with factories at Bridgeport, Conn., has been purchased by the Buckeye Rubber Products Co., Cleveland, O., and the directors and management of the latter company have assumed full charge of the manufacture and sale of Polack tires through established outlets.

The Polack tire business, which last year amounted to about $960,000, will occupy about 20 per cent. of the factory space of the Buckeye Co., and C. H. Roth, president and general manager, states that the same high quality that has always distinguished Polack tires, will be scrupulously maintained. In order that there may be no interruption in the business of the Polack Tyre & Rubber Co., it has been arranged for the Bridgeport plant to continue in operation until the Willoughby plant, of the Buckeye Co., in which Polack tires in all sizes will be made in the future, is in a position to start production.

MICHELIN CO. TO BUILD NEW STOREHOUSE.

A contract calling for the erection of a storehouse of reinforced concrete, 60 by 125 feet, and having a total floor space of 15,000 square feet, with a cubic capacity of 240,000 feet, has been let by the Michelin Tire Co., Milltown, N. J., to the John W. Ferguson Co. of Paterson, N. J.

Work is under way also on a new machine shop and turbine house, each of which will have steel frame work and brick body.

TIRES IMPORTED INTO SWITZERLAND.

The imports into Switzerland, under the classification of "tubes and pipes of caoutchouc and gutta-percha, pure or mixed, with internal layers of metals or tissues," in which automobile tires are included, for 1919, totalled 1,773,640 pounds valued at $1,986,312.77, as compared with 456,720 pounds, valued at $358,956.26, in 1918.

The United States supplied 96,140 pounds in 1919, valued at $121,919.07.

Importations of Crude Rubber

According to a bulletin of the Mid-West Manufacturers' Association, the statistics of crude rubber imports for June, 1920, show a total of 14,881 tons as against 16,319 tons for June, 1919, a decrease of 1438 to use, and a decrease of 12,338 tons from the importations for May. This record was by far the smallest for any month of 1920 so far.

The total record for the first six months of 1920 was 151,889 tons against 113,729 tons for the first half of 1919, an increase of 38,160 tons.

The outlook is that importations for 1920 will total 300,000 tons as against the 231,510 tons imported in 1919, unless the price situation should induce producers in the Far East to hold their stock.

GIGANTIC BELTS MADE BY GOODYEAR.

The Goodyear Tire & Rubber Co., Akron, O., is manufacturing two belts for conveyors, 12,000 inches in length, and each will weigh seven tons when finished. They will be 48 inches wide and will consist of seven plies each. If spliced they would stretch more than 2000 feet, or nearly half a mile. The fabric used in making these belts, if laid in a straight line, of single ply, 48 inches wide, would reach 14,700 feet, or more than 2¾ miles.

If used as a floor covering this fabric would spread over 58,800 square feet of space, or approximately five times the floor space in the largest gymnasium in the country. If used as a tent covering it would house 14,600 people standing side by side. The weight of the cover stock is about 5½ tons.

MANCHESTER PROMOTED BY UNITED STATES CO.

H. H. Hubbard, southwestern sales manager of the United States Tire Co., announces the promotion of G. W. Manchester, formerly branch manager in Kansas City, Mo., to be district manager at Dallas, Tex. Mr. Manchester is one of the veterans of the United States Tire Co.'s selling force, being located for a number of years at St. Louis, specializing on truck tires, and later he became branch manager at Oklahoma City, going from there to Kansas City.

COAST TIRE CO. INCREASES CAPITAL.

N. J. Whelan, a director of the Coast Tire & Rubber Co., recently announced that its capital would be increased to $5.000,000; also that the sale of $1,000,000 of the common stock has been completed.

Work on the new factory is nearly finished, which will have a floor space of 60,000 square feet, and have a capacity of 750 tires and 1000 tubes per day of eight hours.

GOODYEAR INDUSTRIAL ASSEMBLY TO BE CONTINUED.

After a year of successful operation the Industrial Assembly, composed of employees of the Goodyear Tire & Rubber Co., Akron, O., under whose direction industrial relations are maintained and promoted between the management and workers, is ready to choose its senators and representatives for the coming 12 months.

This body, which is modeled along the lines of the Senate and House of the United States, is composed of 20 senators and 40 representatives. It recommended adoption of permanent instead of rotating shifts, suggested the Saturday half holiday for all employees, a merit system for inspectors, recommended and assisted in the establishment of a co-operative store, cooperative tailor shop and curb market, caused the adoption of a plan to have shop foremen take courses in factory hygiene, recommended many matters of factory sanitation and obtained a branch public library for the shops.

In addition to matters of factory operation the assembly took a wide interest in civic questions, starting the "move-up" movement to educate the trolley riding public, succeeded in obtaining better trolley transportation and cooperated to arrange sufficient motor truck transportation when Akron was tied up for 12 days by a traction strike.

Sales Representatives and Managers of Federal Rubber Co. in Convention at Cudahy, Wis.

NEW DISTRIBUTORS FOR INDIA TIRES.

The India Tire & Rubber Co., Akron, O., announced two new distribution appointments as follows: Allen & Guard Tire Co., Denver, Col., a concern recently organized, whose territory includes the whole State of Colorado.

The General Auto Supply Co. will henceforth handle India tires in Richmond, Va., and vicinity.

PRUDENTIAL CO. BUYS GREAT REPUBLIC HOLDINGS.

It is reported that the Prudential Tire & Rubber Co., Chicago, Ill., has purchased holdings in the McAlester, Okla., plant of the Great Republic Tire & Rubber Co., and that the deal involved $327,000. It is further understood that the plant will be put into operation within two months.

Convention of Federal Representatives

Sales policies for 1921 and problems confronting the automobile tire and automotive industry in general were discussed at the recent annual four days' sales convention of the salesmen and warehouse managers of the Federal Rubber Co. of Cudahy, Wis. It brought together the 150 sales representatives and managers of the company and in addition to the consideration of means for the promotion of sales policies, the new advertising programme of the Federal Co. was taken up at length. The convention was pronounced one of the most beneficial meetings, from every standpoint, ever held by the Federal organization.

FIRESTONE REPRESENTATIVE AT HOUSTON.

The Firestone Tire & Rubber Co., Akron, O., has announced the appointment of the S. O. S. Tire Service, Dallas avenue and Fannin street, Houston, Tex., as its representative and service station in that city. George H. Blohm is manager of the S. O. S. Co.

FRENCH PURCHASES BUCYRUS RUBBER CO.

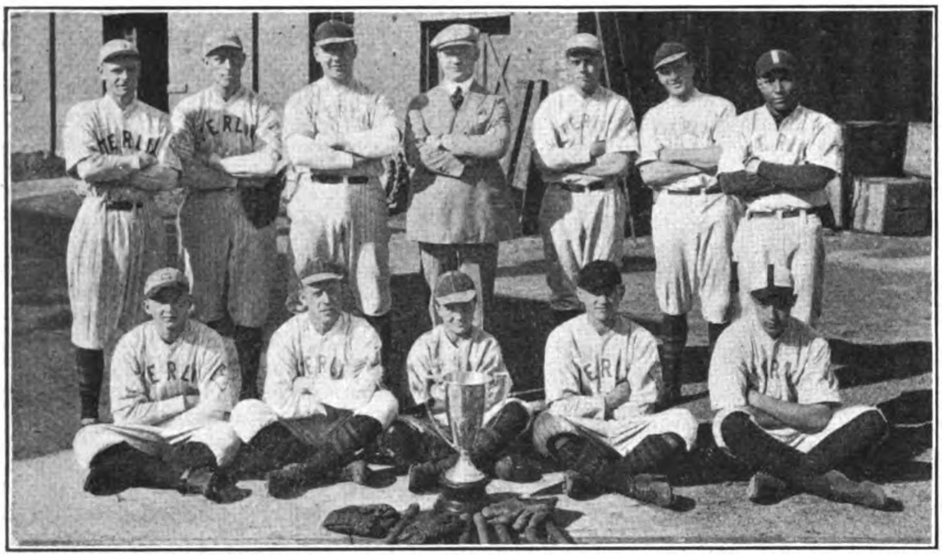
The C. M. French Rubber Co., Cleveland, O., has purchased the plant of the Bucyrus Rubber Co. in that city and will start manufacturing rubber tires. This factory has been under lease by the Henderson Tire & Rubber Co., Columbus.

TRUCK AND TIRES BURN.

An automobile truck, valued at $8000, owned by the Goodyear Tire Co. and loaded with rubber tires, was burned on the Petersham road, near Athol, Mass., while en route to Boston, Oct. 14. The loss on truck and tires was estimated at between $14,000 and $16,000.

McCLAREN'S FLORIDA DISTRIBUTOR.

The McClaren Rubber Co., Charlotte, N. C., maker of the McClaren Autocrat cord and All-road fabric tires, announces appointment of the J. D. Bowen Co., 327 Laura street, Jacksonville, also with a branch at Tampa, as Florida distributor.



Personnel of Champion Baseball Team of Sterling Tire Corporation—Standing, Left to Right: Brameld, 2b.; Davis, p.; Ronrke, 1b.; Captain and Manager, O. Basten, Vice President, Sterling Tire Corporation; Hess, 3b.; Dittrich, c.f.; Jackson, l.f. Seated, Left to Right: Marquard, o.f.; White, r.f.; Botto, Mascot; Roach, c.; Calendriello, s.s.

STERLING TEAM WINS 1920 BASEBALL PENNANT.

The Sterling Tire Baseball team has, for the second consecutive year, won the pennant in the Rubber Industries Athletic League, the standing of the clubs at the end of the season being as follows:

	Won	Lost
Sterling Tire Corporation....	14	2
United States Rubber Co......	11	4
Ajax Rubber Co..............	6	7
Goodyear Tire & Rubber Co..	2	12
Keystone Tire & Rubber Co..	2	6
Kelly-Springfield Tire Co....	1	3

This second victory is especially unusual since the Sterling Tire Corporation is probably the smallest of the organizations represented in the league. The players for the champions were all recruited from the factory at Rutherford, N. J., and none of them had played much more than the normal "open lot" games, although their pitcher, Harvey Davis, has been showing professional class in winning 34 out of the 40 games during the Rubber Industries Athletic league's two years of existence.

The cup, which is donated by the India Rubber World Publishing Co., must be won three times to become the permanent property of a club. Manager Rourke of the Sterling team announces that his aggregation will be on deck next season to clinch possession of the trophy.

The batting and fielding averages of the winning team were as follows:

Player & Position	G.	B.A.	F.A.
J. Rourke, 1b.....	14	.413	.955
T. Calandriello, ss.	14	.333	.918
A. Roache, c......	14	.311	.984
W. Jackson, l.f..	14	.310	.900
C. Hess, 3b.......	14	.283	.804
P. Dittrich, c.f....	13	.265	1.000
W. White, r.f.....	14	.237	.818
H. Davis, p.......	13	.205	.967
T. Brameld, 2b....	13	.205	.921
A. Jackson, o.f....	2	.167	1.000
G. Meany, o.f....	4	.000	1.000
W. Markowsky, i.f	1	.000	1.000

VICTOR RUBBER CO.'S ADVERTISING CAMPAIGN.

The advertising account of the Victor Rubber Co., Springfield, O., has been taken over by the Akron Advertising Agency Co., Akron, O., and it is the intention of the Victor Co. to supplement its present extensive publicity campaign by a unique plan which has never been used to any extent in the tire business, but has proved eminently successful in other lines. C. A. Swinehart, the assistant general manager and sales manager of the Victor Rubber Co., states that for business reasons the details of the new campaign cannot yet be made public, but that it will be handled in a way that will attract attention from coast to coast.

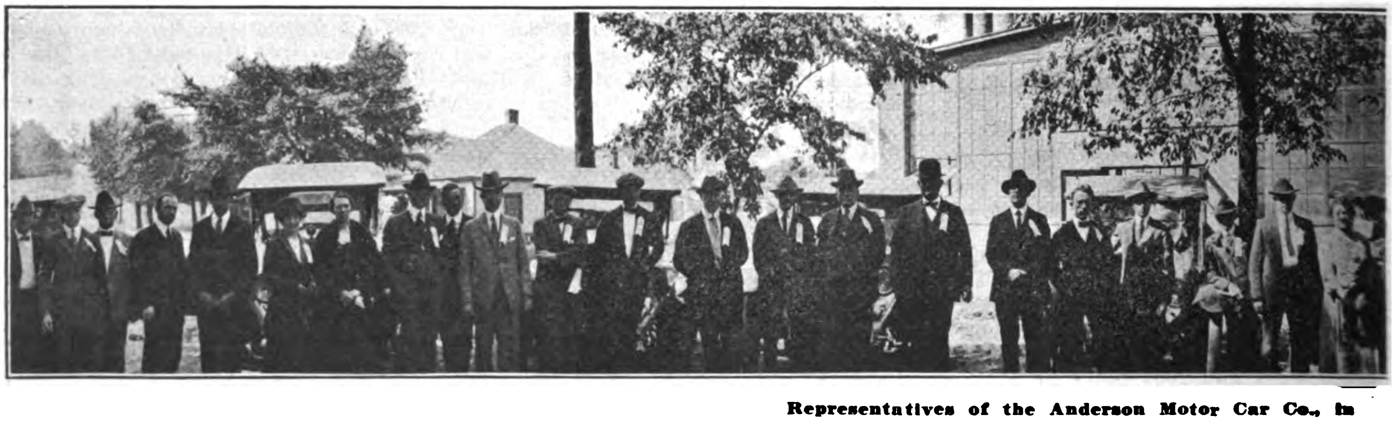
CLIMAX RUBBER CO. BUYS K. & W. PLANT IN DELAWARE, O.

The Climax Rubber Co., which has been operating a plant for some time at Huntington, W. Va., has acquired the plant, equipment, patents and established business of the K. & W. Rubber Co. at Delaware, O., and it is understood that the factory in Huntington will be dismantled and moved to Delaware, together with many of its force of employees. The Climax Co. has been specializing of late on the Climax compression inner tube and the newly acquired facilities will enable it to put into effect the desired large production schedule planned and the manufacture of the established goods of the K. & W. Co. will also be continued. Enlargements on plant will also be made as necessity demands. $5,688,082 common stock.

Guy and Ora Kirchbaum of the K. & W. Rubber Co. have acquired an interest in the Climax Co. and will continue to be actively identified with the enterprise and it is understood that the present sales, office and working force of the K. & W. Co. will be taken over by the new company.

The officers and directors of the Climax Rubber Co. are as follows: President, Irving S. Hoffman, formerly vice president and general manager of the Ohio State Life Insurance Co.; vice president, H. A. Longshore, formerly in charge of the bond department of the National City bank, New York city; secretary-treasurer, Merch E. Swanson, formerly secretary-treasurer of the Komo Cereal Co.; assistant secretary-treasurer, Clyde B. Turner; publicity director, Frank B. Wilson, Columbus, O. Directors, James W. Bannon, Jr., Portsmouth, O., secretary of the Excelsior Shoe Co. of that city; U. S. Brandt, Columbus, O., vice president and counsel of the Ohio Life Insurance Co.; James W. Armstrong, merchant, Woodsfield, O.; Roger A. Selby, a director of the Selby Shoe Co. of Portsmouth and also a director in the Security bank of that city; G. Everett Shinkle, Huntington, W. Va., state manager of insurance, and E. M. Pavey, Columbus, O.

The Kelly-Springfield Tire Co. reports for the six months ending June 30, 1920, net income, after charges, and before Federal taxes, of $2,023,104, equal after preferred dividends, to $7.43 a share.



Representatives of the Anderson Motor Car Co., in

RUBBER INDUSTRY IN GREAT BRITAIN.

The total number of rubber workers in the United Kingdom of Great Britain in January, 1920, was estimated at 71,000, 37,000 male and 34,000 female, while in April, 1919, the number of firms engaged in all branches of the manufacturing industry was 464, according to the ministry of labor.

The imports of tires and tubes for the seven months ending July 31, 1920, as compared with like periods of 1919 and 1913, were as follows: 1920, $15,061,257; 1919 (full statistics not yet published), $4,109,905; 1913, $8,444,837.

In Scotland, with the exception of bicycle and motorcycle tires, all rubber tires used in the district are received either from other districts in the United Kingdom, or are imported from other countries. The imported tires are chiefly of American origin and are estimated to comprise about one-third of the total in use at the present time. Tires are distributed through agents of the manufacturers, jobbers in accessories, garages, etc., and the usual terms of payment are five per cent. discount for payment in seven days, 2½ per cent. for monthly settlement, or 30 days net.

IMPORTS OF TIRES INTO CANADA.

The imports of solid rubber tires into Canada for the year ending March 31, 1920, were valued at $191,424, of which the United States supplied $186,225 and the United Kingdom $5199.

The value of pneumatic rubber tire casings imported for the above period totaled $1,655,118, the countries contributing being as follows: United States, $1,647,507; United Kingdom, $15,351; France, $2140; other countries, $120.

The figures for inner tubes were: Total, $168,340. United States, $163,527; United Kingdom, $2423; France, $2366; other countries, $24.

These figures may be compared with the following imports of rubber tires for vehicles of all kinds for the years ending March 31, 1919 and 1918 respectively:

1919—Total, $1,045,140. United States, $1,024,171; United Kingdom, $17,121; France, $3848.

1918—Total, $2,052,441. United States, $2,015,267; United Kingdom, $24,351; France, $12,823.

Distributors of the Andehson Motor Co., Rock Hill, S. C., at Banquet in Chamber of Commerce.

STORM CO. AT CHICAGO.

The Storm Manufacturing Co., Minneapolis, Minn., announces that as it was unable to procure exhibition space on the floor of the Coliseum during the convention and exposition of the Automotive Equipment association in Chicago, Ill., Nov. 15-20, it has secured window display and floor space directly opposite the main entrance of the Coliseum on the Wabash avenue side, with the Ex Cel Battery Co., 1502 Wabash avenue, south, where the Storm equipment may be seen in operation. The Storm vertical power boring mill will be featured.

The Firestone Tire & Rubber Co. of Oklahoma City, Okla., is moving into its new headquarters at 125 W. First street.

CONVENTION OF ANDERSON DISTRIBUTORS AND DEALERS.

The Anderson Motor Co., Rock Hill, S. C., held a three-day convention of its distributors and dealers Oct. 12, 13 and 14, which was attended by representatives of the Anderson Six car from all parts of the country, including California and Colorado on the West, Rhode Island and New York on the East, Minnesota in the North, Florida and other southern states, as well as from all the central western states. The following programme was most successfully carried out, proved interesting and helpful:

Tuesday, Oct. 12—10 a. m., inspection of plant; 2:30 p. m., conference: "The 1921 Model," J. W. Anderson, president, Anderson Motor Co.; general discussion; 5 p. m., left for Catawba river for old-fashioned southern barbecue.

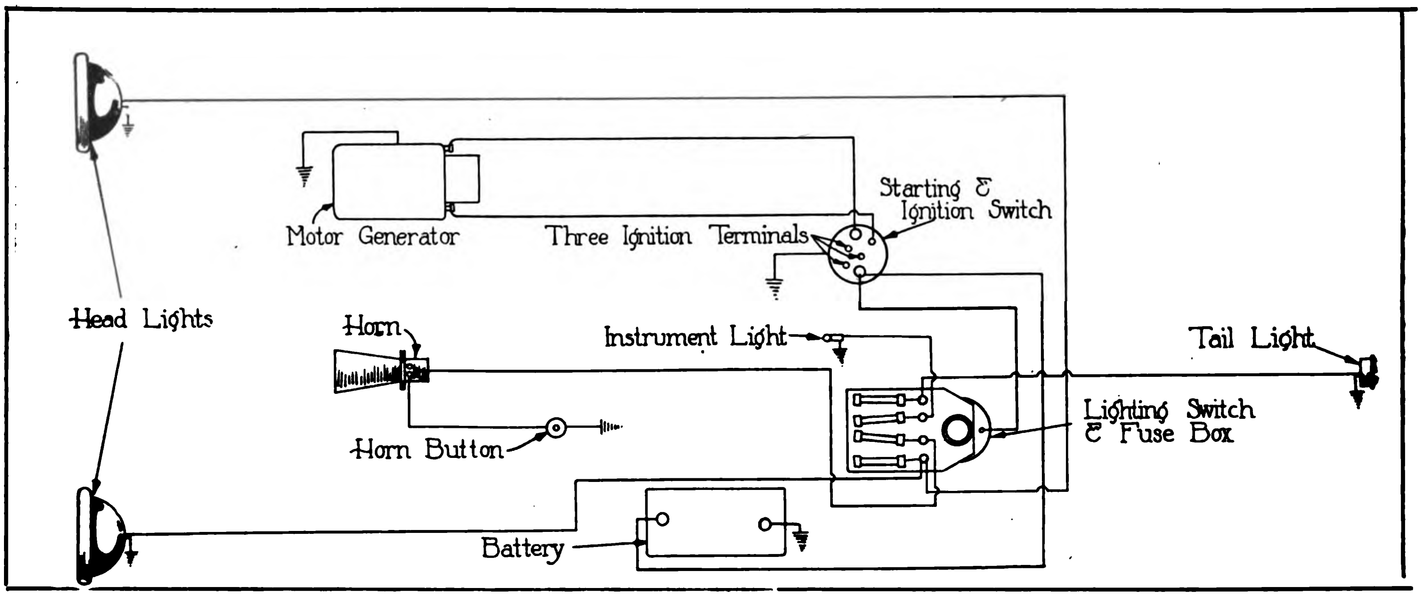
Wednesday, Oct. 13—10 a. m., conference: "The Contribution of Psychology to the Problems of Salesmanship," address by Dr. Frazer Hood of Davidson college; "Sales Promotion," H. J. McCullough, manager of sales promotion department, Anderson Motor Co.; general discussion; 2:30 p. m., conference: "Sales Organization," Sidney B. Bowman, president of the Sidney B. Bowman Automobile Co. of New York; miscellaneous; 8 p. m., banquet, Chamber of Commerce hall, with President Anderson presiding as toastmaster. Toasts: "Coming Home on One Cylinder," Dr. Frazer Hood of Davidson college; "Non-Essentials," Thomas W. McDow, York; "Fire at Random," S. E. McFadden, Chester.

Thursday, Oct. 14—10 a. m., conference: "Finance," address by George E. Roberts, vice president of the National City bank of New York; "Service," address by J. C. Tedger, president of the Tedger Motor Co., Atlanta, Ga.; 2:30 p. m., conference: "Advertising," address by Harry Tipper, president of the New York Business Publishers' association; business discussion; automobile ride, including inspection of cotton ginnery, cotton seed oil mill and cotton mill.

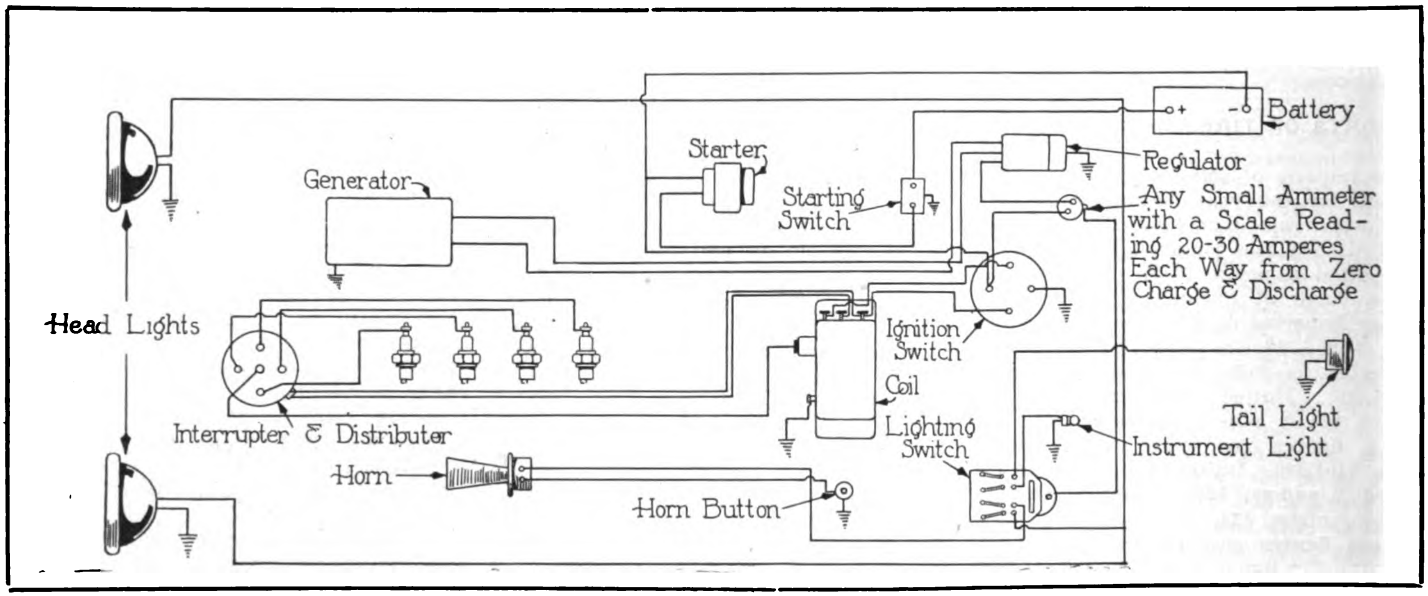
The guests left at 6 p. m. after three days brimful of business and pleasure.

Attendance at Recent Convention at Factory, Rock Hill, Ill.

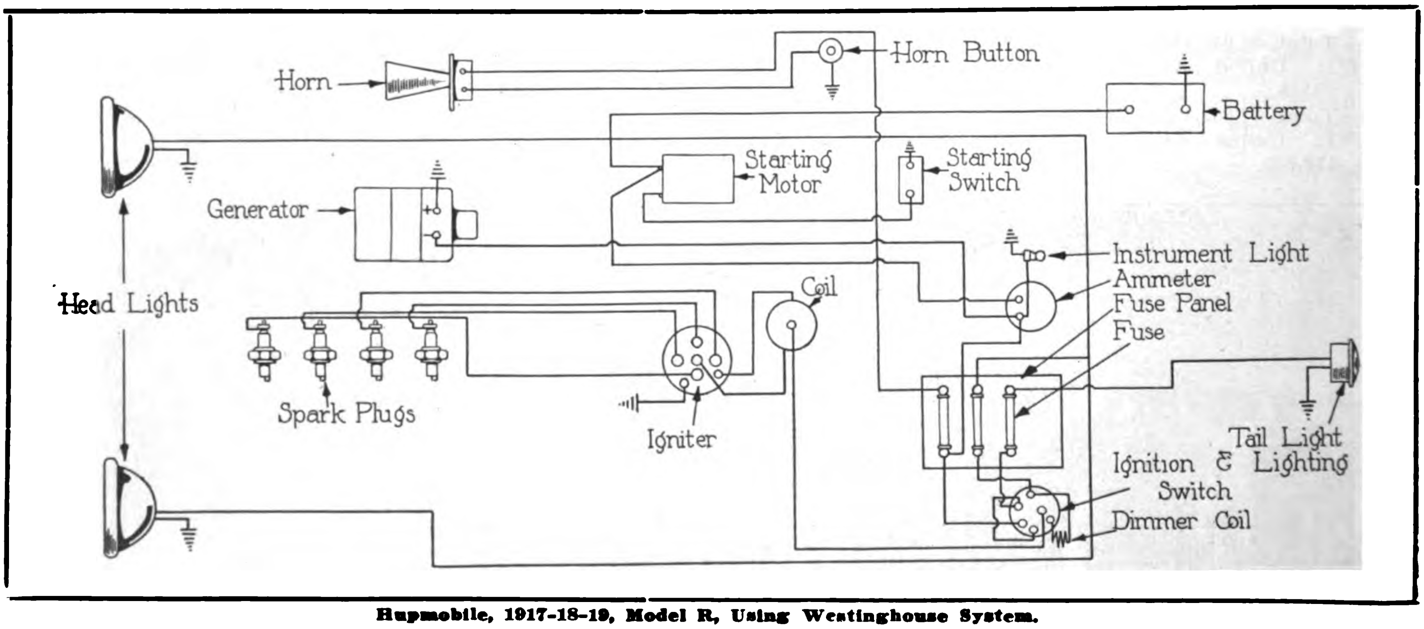
Monthly Wiring Diagram No. 9


Head Lights
Motor Generator
Three Ignition Terminals
Starting & Ignition Switch
Horn
Instrument Light
Tail Light
Lighting Switch & Fuse Box
Horn Button
Battery

Hupmobile, Model K, 1915: Diagram of Horn, Starting and Lighting System.


Battery
Starter
Regulator
Generator
Starting Switch
Any Small Ammeter with a Scale Reading 20-30 Amperes Each Way from Zero Charge & Discharge
Head Lights
Ignition Switch
Coil
Interrupter & Distributer
Lighting Switch
Tail Light
Instrument Light
Horn
Horn Button

Hupmobile, 1916, Series N Cars; Westinghouse Two-Unit, Single-Wire System.


Horn
Horn Button
Battery
Starting Motor
Starting Switch
Generator
Instrument Light
Ammeter
Fuse Panel
Fuse
Head Lights
Coil
Spark Plugs
Igniter
Tail Light
Ignition & Lighting Switch
Dimmer Coil

Hupmobile, 1917-18-19, Model R, Using Westinghouse System.

Status of Automobile Industry Reflected in Statements of Representative Manufacturers

THE accompanying statements from prominent automobile manufacturers are in reply to questionnaires sent out by the Accessory and Garage Journal to all the representative producers of passenger motor vehicles of the country, and graphically reflect all sides of the causes and effects of the present situation in the industry, as well summarize the outlook for future business.

The tabulations of changes in prices, which is also compiled from figures supplied by officials of the car-building concerns, shows that 34 other makers followed, with substantial reductions, in the prices of their products, the announcement of the cut made by the Ford Motor Co. on Sept 21, while, on the other hand, seven manufacturers have increased their prices on one or more models.

Practically all of the best known manufacturers of the United States have issued statements of some character or made guarantees as to the maintenance of present prices, etc.

The truck industry has not been affected to so great a degree and only 11 makers have announced reductions. But one or two tire manufacturers have made any cuts and the reduction in the price of accessories, material and equipment, which was expected in some quarters to follow in the wake of the break in the pleasure car market, has also not materialized as yet to any extent.

However, it seems to be the consensus of opinion that the crisis of the flurry is now passed; that the automobile industry will speedily and readily adjust itself to the new conditions; that prices will settle down to figures based on the fundamentals of actual cost of material and labor; and that it will be practically on nearly a normal footing again by spring.

While there is wisdom in the admonition of some that the situation should not be taken too seriously, there is no doubt that the general buying public will still continue to stand somewhat aloof until the feeling becomes more universal that rock bottom has been reached.

Allen Motor Car Co.—"Has not reduced the price of any of its models and does not contemplate doing so. As many others have stated, there is no fundamental reason why prices should be reduced at this time as the cost of manufacturing has not been reduced one iota. On the other hand, there have been certain advances which would make more sensible an advance instead of a reduction. We have guaranteed our price to the trade and to the consumer against a decline until March 1, 1921. We cannot help but feel that after election, and surely after the first of the year, there will be a reaction in the automobile business, but that the public will be more wary of buying and more critical as to the kind of car they will put their money in. They will want a car that will be good for more than one or two seasons on the same principle that a man buying a piece of real estate now realizes that he is paying a good price for it and that it must do him for a long time if he is to realize on the investment. We believe the cheaper type of car will not sell so readily. The well built, medium priced car will be in the greatest demand. For that reason we are very optimistic for the future of the Allen and are anticipating a return of better conditions at a nodistant date."—F. I. Lackens, assistant advertising manager.

American Motors Corporation—No further reduction before April 1. "In reference to the prospects in the automobile business at the present time, this company feels certain that the year 1921 is going to be, if not the best, at least on a par with any automobile year we have had, as the demands for cars are going to exceed the output by a large majority."—J. H. Giles, assistant sales manager.

Anderson Motor Co.—"While conditions as they exist today in the automotive industry are not the most active, yet we can see a gradual improvement, which is not confined to any one section. The outlook, both politically and financially, indicates activity and stabilization of market conditions by Feb. 1. Price levels have been reached for a sufficient time ahead to allay hesitancy on the part of those who have been withholding the placing of specifications. Emphasis of this condition is showing through our distributors' organization and their prospects, as the definite fixing of our prices to March 1, 1921, has enabled the closing of deals that have been hanging fire, and brought about a more liberal offering from our distributors."—H. J. McCullough, manager of the sales promotion department.

Apperson Brothers Automobile Co.—No reduction. Present prices guaranteed to July 1, 1921. No likelihood of any changes in price during the next calendar year.

Brewster & Co., Inc.—Unchanged. Prices guaranteed to Jan. 1, 1921. "We do not expect any decrease unless there should be an unexpected decline in labor prices. It is our opinion that the present lull in automobile sales is only temporary and that, after election, there will be a revival."—F. H. Buell, sales manager.

Briscoe Motor Corporation—Unchanged. Prices guaranteed to April 1, 1921. "Our opinion is that conditions will improve, gradually becoming stable by early spring. Buying will be slow this fall and winter."

Buick Motor Co.—Prices guaranteed for some months.

Bush Motor Co.—Reduced prices guaranteed to March 1, 1921.

Cadillac Motor Car Co.—Prices unchanged.

Chalmers and Maxwell—Walter P. Chrysler, chairman of the reorganization committee of the Maxwell and Chalmers companies, states that those companies are in excellent condition to establish new prices for the reason that under the reorganization plan inventories have already been substantially depreciated. Full confidence is expressed that the replacement of inventories can be accomplished upon a basis to justify the lower prices made.

Champion Motors Corporation—"The outlook is good for good, low priced cars. Lowered prices are stimulating the demand.

Chevrolet Motor Co.—"We are continuing our present prices for 1921."—J. H. Newmark, manager advertising division, general sales department.

Cole Will Advance If Necessary.

Cole Motor Car Co.—"In view of the agitation occasioned by the recent publication of numerous price changes, we beg to inform you there will be no reduction in Cole prices. In 1918 this company adopted a policy of constantly manufacturing a finer motor car, adding thereto from time to time such improvements and refinements as have proven to be of value to our owners. It is absolutely contrary to our basic programme to let any condition interfere with this purpose to build a car that at all times represents the highest value which it is possible for us to afford for the price it bears. Furthermore, it is not the intention of this company to let anything stand in the way of the development of our product, and we will not hesitate to advance the price of our car if by so doing we are able to add to its refinement and efficiency."—J. E. Roberts, general sales manager.

Cortland Cart & Carriage Co.—Prices guaranteed to July 1, 1921. "There is no change in the list price of the Hatfield. We might further add, in this connection, that the present list price of the Hatfield was established in December, 1919, and no advance has been made since that time. We have been reticent about making an advance in the list price with the hope that we might carry the matter along until there was a recession in the price of materials that we are consuming. Since the announcement of the cut in the Ford cars the demand for new cars has been at a standstill and we do not look for any material change along this line for a couple or three months. On the other hand, we believe that the present trying times that the automobile manufacturer is passing through will in the long run serve to stabilize the industry and to a point that from now on automobiles will be manufactured and sold upon the same sound, basic principle as that of any other standard manufactured article."—L. I. Hatfield, president.

Crow-Elkhart Motor Corporation—Prices on all models reduced to pre-war figures. The action was taken, it was stated, because of general conditions in the industry.

James Cunningham, Son & Co.—"We guarantee until July 1, 1921, that there will be no reduction in the price of our cars. At the present writing we have no idea of making a reduction at that time."—C. A. Baird.

Daniels Motor Car Co.—Prices unchanged.

COMPARISON OF PRICES OF PASSENGER CARS ON

	Old	New	Ch'ge
INCREASES.			
Champion			
Special Five-Passenger	$1550	$1595	$45
Tourist	1350	1350	..
Lexington			
Touring	$2185	$2285	$100
Thorobred	2285	2285	..
Lex-Sedan	2585	2785	200
Pierce-Arrow			
48-Horsepower Touring	$7750	$8000	$250
38-Horsepower Touring	7250	7500	250
38-Horsepower Limousine	8550	8880	250
48-Horsepower Suburban	9250	9500	250
48-Horsepower Vestibule Suburban	9450	9700	250
38-Horsepower Vestibule Brougham	8750	9000	250
Seven-Passenger Sedan	8750	9000	250
Four-Passenger Sedan	8550	8880	250
Roamer			
Seven-Passenger	$3350	$3450	$100
Saxon-Duplex			
Touring	$1785	$1895	$110
Coupe	....	2795	..
Sedan	2685	2795	110
Sayers			
Avondale Touring Car	$2095	$2195	$100
Derby Roadster	2595	2595,	..
Glendale Sedan	3295	3295	..
Stearns-Knight			
Three-Pas. Roadster	$2450	$2550	$100
DECREASES.			
American			
Five-Passenger Touring	$2485	$2395	$90
Roadster	2485	2395	90
Seven-Pas. Touring	2550	2475	75
Sedan	3650	3495	155
Coupe	3450	3295	155
Four-Passenger	2650	2595	55
American Beauty			
Touring E-6-55	$2450	$2250	$200
Roadster F-6-55	2450	2250	200
Sedan G-6-55	3600	3600	..
Artcraft E-6-55	3000	2800	200
Bell			
Five-Passenger	$1595	$1495	$100
Bour-Davis			
Five-Passenger Touring	$2825	$2535	$290
Seven-Passenger Touring	2875	2585	290
Three-Passenger Roadster	2875	2585	290
Bush			
Touring E-4	$1495	$1245	$250
Touring De Luxe 6	1995	1575	420
Chalmers			
Five-Passenger Touring	$1945	$1795	$150
Roadster	1945	1795	150
Sport Car	2145	1995	150
Four-Passenger Coupe	2645	2595	50
Seven-Passenger Touring	2095	1945	50
Chandler			
Touring	$2095	$1895	$200
Despatch Car	2175	1975	200
Coupe	3095	2895	200
Sedan	3195	2995	200
Limousine	3695	3495	200
Cleveland			
Touring	$1585	$1435	$150
Roadster	1585	1435	150
Sedan	2595	2445	150
Coupe	2495	2345	150
Columbia Six			
Five-Passenger Touring	....	$1795	...
Sport Model, Five Wire Wheels	....	1945	...
Roadster, Five Disteel Wheels	....	1945	...
Five-Passenger Sedan	....	2895	...
Four-Passenger Coupe	....	2895	...
Comet			
Touring C-53	$2350	....	...
Sedan C-53-2	3975	3650	325
Crow-Elkhart			
Four-Cylinder Touring	$1495	$1295	$200
Four-Cylinder Sport	1545	1345	200
Four-Cylinder Roadster	1495	1295	200
Six-Cylinder Sport	1795	1595	200
Six-Cylinder Sedan	2395	2395	...
Six-Cylinder Roadster	1745	1545	200
Six-Cylinder Touring	1745	1545	200
Davis			
Touring	$2185	$2085	$100
Sport Car	2225	2125	100
Special Sport	2350	2250	100
Five-Passenger Sedan	3185	3085	100
Four-Passenger Coupe	3185	3085	100
Three-Pas. Roadster	2225	2125	100
Three-Passenger Special	2350	2250	100
Essex			
Touring	$1795	$1595	$200
Roadster	1795	1595	200
Sedan	2650	2450	200
Cabriolet	2500	2100	400
Ford			
Runabout	$550	$395	$155
Runabout with Starter	625	465	160
Touring	575	440	135
Touring, Electric Starter	650	510	140
Coupe	850	745	105
Sedan	975	795	180
Chassis	525	360	165
Franklin			
Touring	$3100	$2600	$500
Two-Passenger Roadster	3050	2400	650
Four-Passenger Roadster	3100	2500	600
Brougham	4300	3500	800
Sedan	4350	3600	750
Gardner			
Touring	$1285	$1195	$90

Dodge Brothers' policy has ever been to give full value for price asked. There will be no reduction in the present prices of Dodge Brothers motor cars. Newspaper reports to the contrary are absolutely untrue."

Expects Usual Demand in Spring.

Dorris Motor Car Co.—"There has been no recent increase or reduction. We have guaranteed our prices until March 31, 1921, and from present indications feel sure that there will be no reduction. While business is rather slow just now, we look forward to the customary demand in the spring. We have reduced our output about 50 per cent. and do not anticipate any increase until about Jan. 1. We are not at all pessimistic regarding the outlook and feel that the readjustment of business came at a good time."—Webster Colburn, vice president and general manager.

Dort Motor Car Co.—"No change in price on any models. We guarantee against any price reduction which we may make on all 1920 models. The price of the Dort car is reasonable and fair; therefore, there will be no reduction made by this company. There has been as yet no break in material or labor costs that would warrant any price reduction on the Dort car. On the contrary, materials have been purchased by us, and by all motor car manufacturers, for 1921 production at a very considerable advance as a whole over 1920 material costs. Therefore, unless those purchase contracts are treated by the purchaser as 'Scraps of paper,' or the seller voluntarily revises contract prices downward, there can be no justification for any motor car manufacturer to reduce prices unless he has been profiteering, which means that he has been receiving an excess profit on his product. If there be any such manufacturers this is a most opportune time for them to properly adjust prices to the sound values of their products."—J. D. Dort, President.

Dupont Motors, Inc.—The price of the DuPont automobile has not been reduced. The present list prices are the same as those announced some months ago, before production started. DuPont distributors and dealers are guaranteed against reduction in prices prior to April 1, 1921.

Elgin Motor Car Corporation—Prices guaranteed to June 1, 1921.

Elkhart Carriage & Motor Car Co.—"No reductions have been made or contemplated. Our present prices are guaranteed until April 1, 1921. Our prices have not been raised through the general period of price advances, but remain the same as they were early in the year. Therefore, there can be no reductions until there is some decided change in the cost of labor and materials. Sales are doubtless going to be retarded for some time to come, but we are doing a fair volume of business, to which we have adjusted our production and feel that after the present transition period there will be a satisfactory and permanent volume of sales."—U. G. Manning, vice president.

H. H. Franklin Manufacturing Co.—"The way to readjust is to readjust. Lower prices have to come and the way to get them is to inaugurate them at once. Reductions can come only from the top down. The manufacturer has to make the first move and, as a result, the fabricator and producer of raw materials will fall in line. Necessarily the Franklin Co. will take a temporary loss on materials on hand which were purchased at figures out of line with the new price scheduled for the company's automobiles. We shall endeavor to obtain readjustments of existing contracts with vendors to meet the new conditions and to place new contracts at figures below what we have been paying. Wages at the Franklin plant will not be affected by the lowering of prices, but will remain at their present level. Our action also has in mind the responsibility of manufacturers to keep labor employed, and the only way it can be done is to set prices on a basis that will relieve congestion in trade channels regardless of any temporary sacrifice of profit."—H. H. Franklin, president.

Gardner Motor Co., Inc.—"The Gardner Light Four is not a war product and never has had an inflated price. The manufacturer for the present will be selling at cost. The Gardner Motor Co. has decided to make this reduction not because such a step is in any way justified by its present manufacturing conditions, but because it has recognized a widespread sentiment on the part of the American public for a general reduction and, in anticipation of the cooperation of its sources of supply, desires to assist in an attempt to bring this about."—Russell E. Gardner.

General Motors Corporation—"General Motors has never favored or encouraged profiteering. On the contrary, it has always given to the motor buying public splendid value, which is alone responsible for the enormous business enjoyed by the corporation."—W. C. Durant, president.

Halladay Motors Corporations—Prices guaranteed to Jan. 1, 1921. "As we have found no reduction in material, with but several minor discounts to date, and as labor remains at the same figures, we can see no reason for a reduction in the price of automobiles excepting by those who might have been in the large profit class. We see, from time to time, announcements of reductions in price of certain makes of automobiles, who frankly state in the same announcement that labor will not be affected. In order for the parts makers to reduce the price of their respective parts, it would be necessary for the reduction of labor, to lower the price of same, otherwise these parts must remain at the same figures, which necessarily would command the present price of the automobile."—Thomas E. Huth, president.

Hanson Motor Co.—Prices guaranteed to March 1, 1921.

Reduction the Maximum Possible.

Hare's Motors, Inc.—"In putting into effect the reduction in the price of Locomobile and Mercer cars of $1350 and $1000 respectively, we decided to make this reduction the maximum one possible instead of temporizing with half-way measures, even if it is necessary subsequently to revise our prices upward. It seems to us that the business difficulties which are confronting the American manufacturer today are not due to a real shortage of demand, but rather to suppressed demand occasioned by the insufficient purchasing power of the country through the deflated value of the dollar.

"What we all desire is a rapid return to normal business conditions so that merit may have the opportunity to obtain sufficient finances for development. I believe the reduction in prices by other manufacturers and ourselves, whether analyzed or not, is in reality a simple recognition of the fact that a reduction in prices is the only thing that can increase the purchasing power of the dollar to a point where there is sufficient money to properly finance the business heads of the country. If we are correct in reading the spirit of the times, then it is not only our duty, but the duty of every manufacturer, to hasten normal business conditions by taking an immediate loss, if necessary, rather than occasioning a far greater, if more protracted, loss through an endeavor to resist fundamental conditions stronger than ourselves.

"When we took over the Locomobile and Mercer companies early this year, our objective was to maintain and improve their quality through our unusually strong engineering organization, and then to effect manufacturing economies through increased sales, which are made possible by better distribution facilities, thus enabling us to offer the public still greater quality than they have received heretofore and at lower prices, with mutual benefits to distributors and ourselves. In view of the recent business depression, I believe we can take no little pride in the fact that the sales of both the Locomobile and Mercer for the last 90 days have been considerably in excess of the sales of these companies in any corresponding period of former years. But improvements in both products, plus increasing costs of labor and material, have more than kept pace with the increased production and, except for the obvious duty of collaboration among manufacturers to restore the morale of business, even at considerable temporary sacrifice, there would be no justification whatever for a price reduction at this time.

"Nevertheless, we are convinced that such a procedure is today both sound and constructive and that the greatest ultimate profit is to be earned by taking a present loss. It is our earnest hope that before the period expires within which, under existing conditions, we can afford to maintain the revised price list, our business will have expanded sufficiently and our costs will have dropped enough to warrant our making the new prices permanent. If not, we shall have no recourse but to revise it again and, this time, upward."—Emlen S. Hare, president.

Hamlin-Holmes Motor Co.—"Our car is

WHICH CHANGES HAVE BEEN MADE SINCE SEPT. 20

	Old	New	Ch'ge
Roadster	1285	1195	90
Sedan	2345	2145	200
Grant			
Touring	$1750	$1550	$200
Roadster	1750	1550	200
Coupe	2550	2450	100
Sedan	2550	2450	100
Hudson			
Seven-Passenger Touring	$2600	$2400	$200
Four-Passenger Roadster	2600	2400	200
Cabriolet	3450	3000	450
Touring Limousine	3925	3625	300
Limousine	4275	4000	275
Coupe	3575	3275	300
Jordan			
Sport Roadster	$2850	$2650	$200
Five-Passenger Touring	2850	2650	200
Brougham	3950	3700	250
Five-Passenger Sedan	3950	3700	250
Seven-Passenger Touring	3075	2875	200
King			
Touring	$2835	$2725	$110
Foursome	2835	2725	110
Road-King	2850	2740	110
Limourdan	4235	4035	200
Kline Kar			
Sport 6-5-5-K	$2600	$2290	$310
Auxiliary 6-5-5-K	2600	2290	310
Roadster 6-5-5-K	2600	2290	310
Sedan 6-5-5-K	3600	3290	310
Coupe 6-5-5-K	3560	3250	310
Liberty			
Five-Pas. Touring Car	$1985	$1795	$190
Two-Passenger Roadster	1985	1795	190
Four-Passenger Speedster	2085	1885	200
Coupe	2850	2825	25
Sedan	2900	2850	50
Locomobile			
Seven-Passenger Touring	$8900	$7550	$450
Four-Passenger Touring	9000	7650	1350
Seven-Pas. Limousine	10,500	9150	1350
Seven-Pas. Landaulet	10,500	9150	1350
Lone Star			
Five-Passenger 4-30	$1545	$1395	$150
Five-Pas. (Beauty Top)	1745	1595	150
Maibohm			
Phaeton	$1695	$1575	$125
Roadster	1695	1575	125
Coupe	2500	2395	115
Chassis	1550	1460	90
Maxwell			
Touring	$1155	$995	$160
Roadster	1155	995	160
Sedan	1895	1695	200
Coupe	1795	1595	200
Mercer			
Raceabout	$4675	$3675	$1000
Touring	4950	3950	1000
Sport Model	4950	3950	1000
Runabout	4950	3950	1000
Coupe	6150	5150	1000
Touring Limousine	6650	5650	1000
Moon			
6-42 Touring	$2285	$1885	$400
6-42 Roadster	2285	1985	300
6-48 Touring	2385	1985	400
6-48 Roadster	2485	2085	400
6-48 Sedan	3385	2985	400
6-48 Coupe	3385	2985	400
6-68 Touring	2950	2485	465
6-68 Roadster	3050	2585	465
6-68 Sedan	3950	3485	465
6-68 Coupe	3950	3485	465
Norwalk			
Five-Passenger	$1885	$1285	$100
Overland			
Touring	$1035	$895	$140
Roadster	1035	895	140
Coupe	1525	1425	100
Sedan	1675	1475	200
Paige			
Five-Pas. Touring 6-42	$1925	$1770	$155
Four-Pas. Sport, 6-42	2165	1990	175
Two-Pas. Roadster, 6-42	1925	1770	155
Five-Pas. Sedan, 6-42	2875	2645	230
Three-Pas. Coupe, 6-42	2775	2525	250
Seven-Pas. Tour. 6-66	2995	2795	200
Five-Pas. Sport, 6-66	3095	2895	200
Seven-Pas. Sedan, 6-66	3995	3750	240
Stanley			
Five-Passenger Touring	$4875	$3950	$925
Seven-Pas. Touring	4875	3950	925
Four-Passenger Coupe	6575	5650	925
Seven-Passenger Sedan	6700	5775	925
Chassis Only	4325	3400	925
Studebaker			
Special Six Touring	$1875	$1750	$125
Two-Passenger Roadster	1875	1750	125
Four-Passenger Roadster	1875	1750	125
Special Six Coupe	2850	2650	200
Special Six Sedan	2950	2750	200
Big Six Touring	2350	2150	200
Velie			
Five-Passenger 48	$1985	$1885	$100
Two-Passenger 48	1985	1885	100
Westcott			
Lighter Six Touring	$2690	$2290	$400
Lighter Six Roadster	2690	2290	400
Lighter Six Sedan	3890	3390	500
Larger Six Touring	3190	2990	200
Larger Six Sedan	4790	4590	200
Larger Six Limousine	4890	4690	200
Willys-Knight			
Touring	$2300	$2195	$105
Roadster	2300	2195	105
Coupe	2950	2845	105
Sedan	3050	2945	105

in a class by itself as it is a front-driven car, and we do not believe that the inactivity that is now existing in the automobile industry will affect us in any way or do we believe it will affect any of them but a short time."

Business for Future Looks Good.

Holmes Automobile Co.—"We have guaranteed our prices to our distributors until Jan. 1, 1921, and do not feel that there will be any change in our prices beyond this period unless we can see a material reduction in commodity prices. If there is, of course it is always our attitude to give the benefit of this reduction in cost to our distributors. Business for the future looks very good to us. On our new models, which we have greatly improved, the demand at the present time is very brisk. We do not look for any let-up in the demand; as a matter of fact we look for greatly increased sales."

Hupp Motor Car Corporation—A telegram to the Hupmobile Co. of New England from the Detroit factory reads: "Prices of Hupmobiles are based on costs of labor and material. Until such costs are lowered there can be no reduction in the price of our product without sacrificing quality, which we will not do. We will guarantee present list prices until March 1, 1921."

International Motor Co.—"The demand for motor trucks is maintaining its steady increase in spite of what would seem to be adverse general market conditions."

Jackson Motors Corporation—Prices guaranteed to July 1, 1921.

Jordan Motor Car Co.—"The Jordan Motor Car Co. has from the beginning maintained a policy of constant improvement in its product, aiming at a high degree of service to Jordan owners. It will continue to be the Jordan policy to command the respect and confidence of the public by adhering to this permanent ideal of service. Knowing this to be the only guarantee of success, in view of the present world-wide demand for service at lower cost, the Jordan Co. makes its contribution to this justifiable public demand."

Kentucky Wagon Manufacturing Co.—Prices of Dixie Flyer guaranteed to May 1, 1921.

Business Will Increase After Shows.

Kenworthy Motors Corporation—No increase or decrease in prices as this concern has just gotten into production in the last couple of months. In regard to business prospects, the president, C. Y. Kenworthy, writes as follows: "We feel that business will be quiet for the next three months, but will steadily increase after the national automobile shows. We believe there will be an arbitrary reduction in prices, but it will be necessary for high grade cars to advance their prices again possibly after the first of the year on account of the fact that those that have reduced have mostly done so to encourage sales, and not because they have been able to get an immediate reduction on all materials. If there is any noticeable reduction in high grade cars in general it will be because of the price of labor being reduced as well as food stuffs and household necessities."

Lafayette Motors Co.—"Lafayette prices, which were very recently announced, of course will not be reduced. In establishing our present prices we speculated on a downward trend in our costs and assumed that six or eight months from now we shall be operating under improved manufacturing conditions. These prices reflect an average estimated basis of cost over a period of several months. If they were based on costs today they would be considerably higher. If our premise is not substantiated and our production costs remain at their present high level, a price increase will be necessary. It is our policy to build a car which is stable in quality and consequently in price. Price stability was uppermost in our minds when we allowed ourselves to be influenced by a forecast and an anticipated equalization of labor."

Lexington Motor Co.—"We are only listing three models, as the programme on the balance of the models which we will produce has not been definitely settled. The change in price of the Model S touring car took effect Oct. 1. The change in price on the Lex-Sedan took effect Sept. 10. We are guaranteeing our present prices to distributors to and including Jan. 1. We had already made this announcement on Aug. 2. We are very optimistic as regards the future of the automobile business, and in our opinion, while there is a temporary slow-up in sales, we believe that immediately after the presidential election sales will again resume their normal state."—Jay Dewey, general sales manager.

Reductions Represent Overcharges.

President Frank B. Ansted states, in addition: "In our opinion, all reductions so far represent overcharges exacted from a market clamoring for more production. We have not heretofore made our prices on the basis of what the market would bear and are unwilling now to make a reduction because others are surrendering excessive profits. Model S is intrinsically 20 per cent. more expensive than Model R pre-war model. On this basis Model S is now priced less than 17 per cent. higher than pre-war prices. Most other companies making cuts are producing exactly the same models as before the war at 30 to 50 per cent. more than prewar prices, after the recent cuts."

Liberty Motor Car Co.—Reduced prices guaranteed to July 1, 1921. "It is the belief of officials of the Liberty Motor Car Co. that conditions will greatly improve in the automobile business. We believe that the total consumption of cars for next year will be greater than this year's, especially in the case of cars similar to the Liberty Six. Following the presidential election and completion of the handling of the crops, we believe a reaction will set in strongly in our favor, especially since car manufacturers, such as ourselves, have readjusted prices to the lowest possible levels. We think that the buying public will manifest its confidence in us by a great deal of buying. Following the National shows in New York and Chicago and with the coming of spring, we look for an especially big stimulus in sales of cars."—Verne E. Burnett, advertising department.

Lincoln Motor Car Co.—Commenting on price reductions, Wilfred C. Leland, vice president and general manager, said that he could foresee no condition for a long time that would permit any reduction in the price of the Lincoln car, and he added that conditions which seemed to warrant reductions in some instances had already been anticipated by his company, and that those conditions had been taken into consideration in establishing the recently announced Lincoln prices.

McFarlan Motor Corporation—Vice President B. M. Barrows states that his company brought out a new model, the first of July, of longer wheelbase, higher power and more careful detailed coach work, in which was embraced all the reduction in prices of both labor and material that could be hoped for or expected in the next season; consequently no comparison in prices can be made.

Reduction Caused by a Psychological Factor.

Maibohm Motors Co.—"We have issued a statement to our distributors and dealers stating that we do not anticipate any change of price before Jan. 1, and also guaranteeing our distributors protection if it is necessary for us to make a change. We believe we are in bearing with the other automobile manufacturers when we state that the recent price reduction has been caused more by a psychological factor than because of any other reason. It is very evident that, before the manufacturers can make any great reduction in price, both labor and material will have to be materially reduced. Therefore, I believe that I am stating the opinion of the officers of the company when I give it as my opinion that the Maibohm will always be priced just as low as possible, depending upon conditions which will be beyond our power to control."—W. W. Jeffrey, sales department.

Mitchell Motors Co., Inc.—Prices unchanged. Guaranteed to March 1, 1921.

Monitor Motor Car Co.—Prices unchanged.

Nash Motors Co.—"Our policy has always been to give the consumer the best automobile and best truck we could build at the least possible cost. We have never asked a dollar more simply because we could get it. In view of the fact that there is no reduction today in the price of materials or labor entering into Nash products and that there is no possibility of any reduction for some time to come that can substantially affect manufacturing costs, the policy of the Nash Motors Co. will be to absolutely maintain its present prices on both passenger cars and trucks to at least July 1, 1921. Our prices have never been inflated and, therefore, cannot be reduced. For example, the increase in Nash cars since 1917 has been 31 per cent., while the average increase in the cost of automobiles during that time has been 76 per cent., and living expenses generally, according to government figures, have increased 104 per cent. Our increase has really been only 24 per cent. when you consider that cord tires and other equipment have been added as standard."—C. W. Nash, president.

Ohio Motor Vehicle Co.—No reduction in price of Ferris cars.

Olds Motor Works—Prices guaranteed from Oct. 1, 1920, to July 1, 1921. Those makes that had a "war price," had to come down. Oldsmobiles were priced on costs. Things have settled to normal.

Packard Motor Car Co.—"The Packard Co. has not reduced its prices and does not expect to inasmuch as the manufacturing costs of its vehicles cannot permit of any reduction at this time. In the event of a future reduction, however, we have insured our prices up to July, 1921, in such a way as to give our customers the benefit of such a reduction should one occur."—A. G. Medlicott, assistant to the general sales manager.

No Economic Grounds for Reduction.

Paige-Detroit Motor Car Co.—Announcement is made by Harry M. Jewett, president, of new prices which went into effect on Sept. 27. "There are no economic grounds to justify these reductions in price," said Mr. Jewett. "The price of Paige cars has always been based on the cost of first class materials, expert workmanship and a fair profit. Materials from which cars are now being made were, of course, purchased months ago. There has been no reduction in cost since then. In fact, basic factors, like steel, transportation and coal have gone up. However, to support what seems at this time a worthy movement and to contribute a telling blow to the high cost of living, the Paige is willing to make its own sacrifices; and, at the new prices we are announcing, will cheerfully accept a loss."

Pan-American Motor Corporation—Prices, which were reduced $200 on all but the sedan G 6-55 model, are guaranteed to July 1, 1921.

W. A. Paterson Co.—Prices unchanged and guaranteed to March 1, 1921. "There has been no change in the price of material up to this time that would justify us in lowering our prices. There seems to be a trend that way, but it will be quite impossible for us to make a reduction until we in turn have had lower prices from our source of supply. In our opinion the present depressed condition, which applies not only to this industry, but even down the line to retail business of every description, will not change materially until the financial situation in this country has been adjusted. We naturally feel that too much of our money has gone abroad, leaving our banks very low on reserves and on deposits. Until a change has been brought about in that direction there will not be any very great improvement in the business conditions generally."—W. R. Hubbard, treasurer.

May Be Necessary to Increase.

Peerless Motor Car Co.—"The policy of pricing Peerless product has been fair to the purchaser and no attempt has been made to establish the very high prices which have been possible since the war. This policy will be evident by comparing Peerless prices with the prices charged for competing products during the entire cycle of price advance and at the present time. This policy has resulted in an excellent demand from users and has prevented accumulation of excessive stocks. Costs are still rising, and it may be necessary for us to again increase our prices, although we hope this will not be necessary. We cannot reduce prices under present conditions and certainly do not intend to do so."

Piedmont Says Must "Stand Pat."

Piedmont Motor Car Co.—"We have advised our agents that we cannot reduce the price of our car and must "stand pat." Our assumption is based as follows: Although some manufacturers can reduce prices and have done so, there are others who cannot, and we belong to the latter class. Our cars are built up to a standard, from which the price is set, after allowing ourselves a small margin of profit. Increases in both material and labor cost, from time to time, since our last prices went into effect, together with additional cost of refinements and improvements that have taken place in the meantime, have reduced the so-called small profit to a minimum. In fact, we are only breaking even at present day prices. There are only two ways in which we could reduce the price of our cars. First, material and labor costs would have to become normal, and there is no immediate relief in sight for either of these conditions inasmuch as the price of food and clothing must drop before labor prices decrease. The steel market still has a tendency upward instead of downward. The next solution would be to cheapen our product, and this, we refrain from doing. We believe that the prospective purchaser will consider value before price, and we believe further that salesmanship and the merit of the product will have more bearing than the price on future sales. It is our opinion that the manufacturers who are now reducing their prices have been profiteering during the war period, and although they are reducing their prices, we believe they are still making a handsome profit.

"It is our opinion also that a reduction in price may bring a few immediate sales, but as soon as the novelty wears off we believe sales will be as scarce as ever. We are not speaking for the industry as a whole, but we are giving you our unbiased opinion as it affects us. It is our aim to give the best dollar for dollar value of any product on the market, and in order that we may give this value we must uphold our present day prices. If we were to cheapen our product in order to reduce the price, in all fairness to the customers, we would be obliged to advise them accordingly, and we know they do not want a cheaper product."—H. W. Kriner.

National Motor Car & Vehicle Corporation—Contemplates no reduction in price. Distributors and dealers authorized to guarantee all retail buyers that if any reduction was made the factory would refund the amount of such reduction until July 1, 1921. "While not attempting to speak for other manufacturers, states President George M. Dickson, "it is certain that the prices of National cars cannot come down until there has been a material future reduction in the costs of material and labor."

Demand Rapidly Returning to Normal.

In regard to the business outlook, Fred Wellman, advertising manager of the National Corporation, writes as follows: "Now that the recent price flurry that disturbed the automobile industry is about over, we find that the demand for our cars is rapidly returning to a more normal basis. Our production of closed cars for the fall and winter months is proceeding about as usual, and we anticipate no difficulty in going through with our scheduled plans. It is a little early to make predictions for next year; however, at the present rate of improvement, business promises to be unusually good. The automobile shows will prove as big a factor in stimulating the demand as usual, we think, inaugurating a selling season that we expect to be more successful than any we have yet experienced."

E. A. Nelson Automobile Co.—New prices undetermined.

Noma Motor Corporation—No reduction.

Nordyke & Marmon Co.—The following announcement is made through Frank E. Wing, New England distributor of Marmon cars: "There is no real reason for any automobile manufacturer to reduce prices at this time unless they have been receiving an excess profit. Marmon won't cut prices because labor conditions and high cost of raw materials will not permit it. Walter C. Marmon, president of the Nordyke & Marmon Co., has wired to all dealers, stating that there will be no reduction in the price of Marmon cars, and that the price is guaranteed until July 1, 1921. He adds, that the Marmon car has never been sold because of its price, but because of the car itself. In comparing the Marmon car prices during the price advance period with those of other makes of cars, you will see that no attempt was made by Nordyke & Marmon Co. to get the very high prices that were possible during and since the war, which means that they are never influenced by price fluctuation on any other make of cars. Quality and individuality have always been foremost in the minds of the designers of the Marmon. Because of the quality of workmanship and material entering into the manufacture of the Marmon high-speed motor, the highest honor possible to be conferred upon any industrial organization was given to the workers of the Nordyke & Marmon Co. during the period of building the Liberty motor. It is the intention of this company to work with the idea of trying to improve the Marmon car rather than to cut the quality, which would be the only way they could cut price."

Norwalk Motor Car Co., Inc.—Price on Model 4-30 KS five-passenger pleasure car reduced $100; prices on Model 25 E one-ton and 35 E 1½-ton trucks are unchanged; guaranteed to March 1, 1921.

Oakland Motor Car Co.—"At this time when the public mind is disturbed by sensationally announced price reductions of automobiles and other merchandise and commodities, we desire to give assurance to those who require personal passenger transportation, such as provided by the Oakland Sensible Six, that we do not anticipate reducing the price of our cars. Starting with the production of the raw material required, and continuing through to the finished product, over 80 per cent. of the cost of an Oakland Sensible Six is labor. Over 80 per cent. of the cost of all other automobiles produced in large quantities is labor. When wages paid to labor are reduced, or when labor produces more per man, then may manufacturers of honestly priced automobiles legitimately consider the reduction of their selling prices. We have not heard of any instance where automobile workers are receiving lower wages. If wages may be lowered eventually, we see no immediate trend in that direction. In the production of so essential a factor in our economic life as the passenger automobile—increasing as it does the personal efficiency of owners by nearly 57 per cent. —we believe the workers, whose toil produces the vehicle, should be largely beneficiaries of the constructive character of their work. If abnormal demand has been responsible for over-enthusiastic expansion and inflated profits in certain instances, the wage earner should not be made to suffer as he must if powerful forces effect lower automobile prices whether or no. True enough, there have been many instances of inflated prices.

Belated Shaking Out of Abnormal Profits.

True enough, abnormal profits must be eliminated. And that is what has been going on all around you recently—the price reductions you have witnessed in automobiles and other merchandise are the belated shaking out of the abnormal profits. The normal profits are still there. Manufacturers whose goods have been priced on actual cost to produce, plus normal profit, have no inflated figures with which to appeal to the uninformed public in sensational announcements of 'price reductions.' Prudent, studious buyers will not be misguided by erroneous principles. We are able to say, with great conservatism, that the present price of the Model 34 C represents an increase, due solely to increased cost of labor and material of 27.4 per cent. (Since 1915.) Larger production each year has kept this increase at a low figure. Compare this increase with the increase of other automobiles and with commodities—with the things you buy every day. Nowhere have we been able to find a standard article of merchandise that has increased as little in selling price as the Oakland Sensible Six. In the event of unexpected reductions in the cost of the labor and material that enter into the construction of the Oakland Sensible Six to a point where we may properly and legitimately reduce the list price of our cars between Oct. 1, 1920, and May 1, 1921, we will refund to every Oakland purchaser who buys within the above mentioned period of time the amount of such reduction."

Will Not Sacrifice Quality.

Pierce-Arrow Motor Car Co.—In connection with the announcement of price increase, Col. Charles Clifton, chairman of the board of directors, made the following statement: "This increase in price is dictated solely by our determination to make no sacrifice in the quality of the Pierce-Arrow car. We have made this new schedule operative Oct. 15, 1920, in order that present orders covered by contracts can be filled. It must be understood that our problems are not similar to those of the manufacturers of popular priced cars, where quantity output decides the price. We make a comparatively limited number of passenger cars, aimed to appeal to a discriminating patronage. We cannot attempt to apply economies of quantity production that would be readily acceptable in models selling at lower prices. Like all manufacturers, we are eager to market our product at as low a price as possible, commensurate with a reasonable return on the investment, but must naturally regard the maintenance of quality as the factor of determining importance."

Pilot Motor Car Co.—Has not reduced the prices of its cars and does not intend to do so. On the other hand, it does not intend to increase the prices unless it should build, at some later date, a larger model, which would naturally sell at a higher price. Has guaranteed that there will be no decrease until July 1, 1921.

Premier Motor Corporation—Has not reduced prices and has guaranteed them to Jan. 1 on the present models. "The prospect for future business is more or less an unknown quantity. When we say future, we mean the next 60 or 90 days. After that we believe that the buying American public will readjust themselves and that we will have several years of sane and prosperous business. We do find that even now we're able to sell more closed cars than we can manufacture. On open cars the situation is entirely different and while we find that our distributors are making quite a few sales, they are not reordering to any extent this time of year. We believe that any automobile manufacturer that has been working on a conservative basis and is in position to finance himself until after the first of the year will easily make up the losses that necessarily must come with the present depression."—E. W. Hurd, director of sales.

Rauch & Lang, Inc.—Has made no change in prices of old models of Rauland cars, but expects to increase on its new series.

Reo Motor Car Co.—No reduction possible at this time. Prices guaranteed to April 1, 1921.

Revere Motor Car Corporation—No reduction.

Root & Vandervoort Eng. Co.—No reduction on R. & V. Knight cars. Guaranteed to Jan. 1.

Public Will Not Go Back to Stage Coaches.

Saxon Motor Car Corporation—"We have not changed our prices, inasmuch as the present prices when announced were based on present costs of labor and material with a legitimate margin of profit added, and inasmuch as we have not been taking advantage of the public demand we have no excess profits to deduct from our list prices. We do not believe there is anything the matter with the automobile industry other than the hysteria and panic that some manufacturers seem to be in who have apparently been caught profiteering and who have hastened to take the industry before the public and nailed it to the cross as an industry in which profiteering has been unbridled and rampant. Naturally, such actions in any industry tend to seriously disturb public confidence in the industry and where there is lack of confidence there is usually lack of buying and we believe that just as soon as automobile manufacturers as a whole recognize the value of public confidence and recognize the sound and basic principles of soundly priced merchandise and are able to reflect to the public that this industry is operated by men who are prepared to operate on a legitimate basis, buying will commence again because we do not believe that the public as a whole are at all inclined to go back to horses, trolley cars and stage coaches. We believe that there are just as many people in this country who want automobiles and intend to buy them as there ever were and probably more every day. But we cannot blame the public for not buying cars on what to them appears to be a falling price market. Cut prices are the psychological requirements when there are overstocks of merchandise and overstocks of merchandise usually result from two causes: Either because the public has laid off the merchandise because its value is not properly reflected in its price or else because the producers have produced far in excess of the normal demand for the particular merchandise. We do not know of any industry in which price cutting has stimulated business. We do know of many instances where price cutting has had the reverse effect.

"As to the prospects for future business, we believe it rests entirely with the automobile manufacturers as to how soon they want to establish themselves in public confidence so that the buyer may purchase an automobile with the assurance or at least with the confidence that he is not going to pay one price today only to find himself out on a limb, as far as prices are concerned, tomorrow."—C. H. Page, director, sales advertising service.

Sayers & Scovill Co.—New prices guaranteed to April 1, 1921.

Scripps-Booth Corporation—Prices unchanged and guaranteed to May 1, 1921.

Automobile Business Singled Out by Bankers.

Skelton Motors Corporation—Price on Skelton automobiles was increased $50 last May, since which time no increase or decrease has been made, and there will be no decrease unless there is a reduction in the price of material. Price is guaranteed to Jan. 1 and in special cases extended to March 1, 1921.

"We do not anticipate very much activity in the buying of automobiles until at least after election and in fact believe it will be some time during the spring of 1921 before conditions will become so improved as will make it possible for manufacturers to get into a reasonable production. Banking conditions have gradually become such that it is utterly impossible for automobile men to secure loans upon new automobiles and in almost every case we find bankers demanding that automobile distributors and dealers reduce their loans at almost any cost. While all businesses seem to have felt the heavy hand of curtailments of credit, the automobile business seems to have been especially singled out as being more or less non-essential and the cause of the extension of credit to be tightened."—W. A. Chapman, vice president and general manager.

William Small Co.—Prices on Monroe cars guaranteed to spring.

Standard Steel Car Co.—Prices on Standard cars are unchanged and guaranteed to April 1.

Stanley Motor Carriage Co.—"This reduction on each model of $925 from the previous list price is not warranted by costs, since there has been no corresponding reduction in materials, labor or transportation. We believe, however, that good business and public sentiment, demanding an end to abnormal prices, dictate reductions which will command the cooperation of dealers, buyers and material makers, and thus assist in restoring business to its normal, healthy state. Because of Stanley stored power, control by throttle only, the ability to burn low-grade fuels and our uninflated production, we were perhaps in stronger position to maintain prices than any other manufacturer save one, and he initiated this movement."—P. Warren, vice president.

Waiting for Prices to Reach the Bottom.

Stanwood Motor Car Co.—No change in prices. "As to present conditions, this is a dull time of the year in general and in particular the action of the Federal Reserve bank slowed up the automobile business and Ford's cut in price put the finishing touches on the job by making people hold off in their purchases of automobiles until they felt that the prices have really reached the bottom. It seems to us that the spring will bring some life into the automobile business, but decline in prices of products of every kind are going to slow up sales until the bottom actually has been reached. We look for no miracle to happen after election, which has nothing to do with present conditions, and we look forward to a very quiet year in 1921."—N. D. Thompson, Jr., president.

Will Increase Quality Rather Than Decrease Price.

F. B. Stearns Co.—Statement of George W. Booker, president, to Stearns-Knight dealers: "Answering your inquiry as to the possibility of a decrease in price of our cars, you are advised that absolutely no decrease in our present prices can be made. It is an absolute fact that cars we are producing today are costing us more than they did two months ago. It is equally true that material going into cars which we will manufacture beginning Jan. 1, 1921, will be even greater, and the present indications are all favorable to an advance in prices at that time. You of course know that when prices on automobiles were being advanced by leaps and bounds, that this company kept its prices at a reasonable level, and that the total increase in our price has been less than 10 per cent. since we began the present model two years ago. This is against the advance of other manufacturers, as you are aware, ranging anywhere from 30 per cent. to possibly 70 per cent. It is a fact, easy of verification, that the advance in materials of all kinds has been a larger percentage than that we have applied to our product. A reduction by a few manufacturers can have no bearing on the general situation. There are some manufacturers who have been charging prices too high and there are also some manufacturers who have had over-production and expansion, both of which were more than conditions warranted—such manufacturers have had to come down to somewhere near the level of others who have not over-priced or over-produced. The policy of this company has been and will continue to be: If at any time the cost of our car decreases we shall put it into the car in added quality where possible, leaving the price as it is, though this much-to-be-desired condition of costs seems to the writer far off. You know we have from time to time made improvements since we began the present model, even when materials were at their highest, though we made no advance in our prices for such improvements and additions. You are assured that there will be no decrease in the price of the current models of Stearns motor cars, and I think that any cut in price by other manufacturers will not affect us in the least, for the good and sufficient reason that our car has been and is honestly priced, and we believe is the most under-priced car built in America, and that like quality cannot be purchased within a range of $1000 to $1500 of our prices, and that like efficiency cannot be purchased at any price."

Stevens-Duryea, Inc.—No reduction in prices.

Studebaker Corporation—"Our plants have operated at capacity all year, and we have unfilled orders for more than 6000 cars. Nevertheless, we believe it highly desirable that lowering of prices be encouraged, and we are anticipating at this time our ability to purchase materials at lower figures during the coming year, to improve labor efficiency, and to increase our present volume of business, all with the effect of lowering the production cost of automobiles. Existing wage rates will be maintained at all plants, which at present are employing 15,000 persons. Our sales are running at the rate of $100,000,000 a year."—A. R. Erskine, president.

Stutz Motor Car Co. of America, Inc.—Prices unchanged and guaranteed.

Uncertain of Permanently Good Results.

Templar Motors Corporation—"To reduce prices without regard to conditions prevailing, simply because some one else has cut them, would be as uncertain of permanently good results as it is most certainly unwise business and unjust to both workers and stockholders."—Harry W. Anderson, sales manager.

Velie Motors Corporation—Each purchaser of a Velie car is insured by a bond, issued by the company, against increase between now and July 1 next. A. J. Shorey, president of the New England Velie Co., states that if the prices of materials do not decline it is his opinion that prices will once more have to advance, and this may be necessary in the next 60 or 90 days. "Velie prices have always been indicative of a real intrinsic value in automobile construction," continues Mr. Shorey. Never has Velie been over-priced due to an exceptional demand. Never has Velie exacted more than a deserved and living profit."

Westcott Motor Car Co.—No guaranty on present prices. "Prospects for fall and winter business are very uncertain.

Willys-Overland Co. — Accompanying the announcement of substantial reduction in the prices of motor cars, John N. Willys made the following statement: "We could not possibly have taken this action unless we felt thoroughly justified in anticipating reduced costs of materials, against which conditions our companies have made provision. It has been commented that the automobile business has been profiteering. The profit in proportion to the increase in prices has been much less in this industry than prior to the war. After two months of personal investigation of conditions abroad I am firmly of the opinion that this country cannot hope to develop a healthy business and be able to compete with foreign markets unless we reestablish merchandise selling prices more nearly on a par with the conditions existing prior to the war."

Winton Co.—"We have not reduced the price of our cars, nor recently increased them, but we guarantee the present price until the first of March, 1921. It is our idea that money will be easier shortly after election and that trade may have something of its normal character by the first of January."—Charles W. Mears, advertising manager.

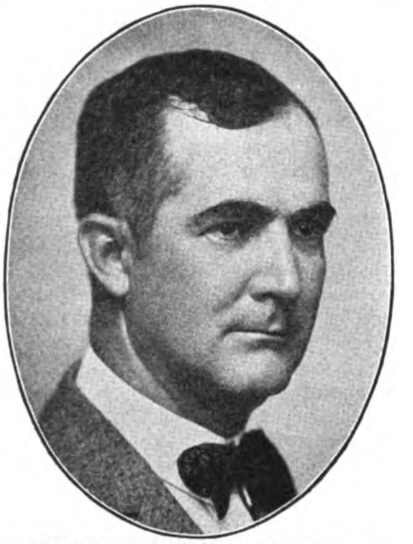
MOLTER BATTERY SERVICE.

A cooperative service plan by which storage battery dealers throughout the country can purchase storage batteries at production cost is now stated to be an accomplished fact through the efforts of the Molter Service of Chicago, Ill. This concern markets the M M battery, which is hand made throughout and carefully assembled from the highest grade of materials.

A postal card addressed to the Molter Service, 1513 Kimball building, Chicago, Ill., will bring full details of this service plan by return mail to anyone interested.

Remarkable Progress of Cooper Rubber Company

I. J. Cooper, President of Cooper Corporation, Cincinnati, O.



H. H. Brenner, General Manager of Cooper Corporation, Cincinnati, O.

J. W. Brumbaugh, Vice President of Cooper Corporation, Cincinnati, O.

FROM a small company, capitalized at a few thousand dollars, to a $3,000,000 corporation in less than 10 years is the remarkable record established by a concern in the automotive field, the I. J. Cooper Rubber Co., Cincinnati, O., now conceded to be one of the largest distributors of automobile tires and accessories in the country. The business of this company had its humble inception in a small store in Cincinnati, O., in September, 1911, with tires and tire sundries as its only distributing products. Due to its policy of dealer cooperation and the quality of its merchandise, the business expanded to such dimensions that additional stores were opened in Dayton, Columbus and Indianapolis. About the same time it was decided to add a complete line of automotive equipment. In January, 1919, branches were opened in Cleveland, Toledo, Memphis, Knoxville and Nashville, thus enabling the company to serve more efficiently the business that had been built up around these points.

In 1917, storage batteries and parts were added to the business, the Cooper storage battery was developed and production and distribution started. Within two years the manufacturer was unable to supply the demand and it was determined to provide for a certain source of supply. Accordingly, a company was incorporated under the name of the Cooper Storage Battery Manufacturing Co. in August, 1919. The site for the factory was selected, machinery installed and the month of October of the same year saw this company in actual operation. In less than a year the sales for the Cooper battery reached such proportions that additional buildings were required, doubling the space and equipment for production. One entire building, which has just been completed, will be given over entirely to the manufacture of battery parts for all makes of batteries.

The factory, starting with a capacity of 25 batteries, now has facilities for manufacturing 600 a day. At the present time over 1000 service stations represent the Cooper storage battery in the territory controlled by the I. J. Cooper Rubber Co. and its distributors.

In April, 1920, the Cooper Corporation was formed through the consolidation of the I. J. Cooper Rubber Co., the Cooper Storage Battery Manufacturing Co. and the Giant Tire & Rubber Co.—the last mentioned concern being a manufacturer of rubber products, such as reliners, tire repair kits, patches, etc.

Sales up to the present time indicate that the business the Cooper corporation will do in 1920 will amount to approximately $10,000,000.

The success of this mammoth organization can be attributed to the far-sighted merchandising principles of its president, I. J. Cooper, and his associates, H. H. Brenner, general sales manager, and J. W. Brumbaugh, vice president.

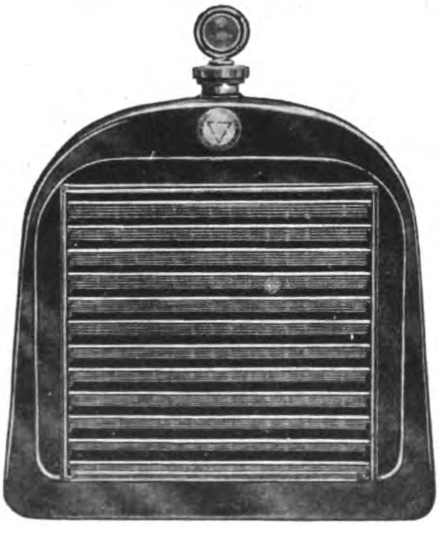
NATIONAL CHAIN MOTOR SERVICE CORPORATION.

The National Chain Motor Service Corporation, with offices at 739 Boylston street, Boston, which was organized several months ago to establish a chain of repair shops all over the country, recently opened its first station at 128 Cambridge street, Charlestown, Mass. The formal opening was in the nature of a house warming for the stockholders and directors of the organization. John C. Speirs, formerly general manager of the Autocar Co., now president of the Service Corporation, met the guests and took them on a tour of inspection of the shop. It has a floor area of 24,000 square feet on two floors and is of modern brick and cement fireproof construction. It is in the very heart of the heavy trucking district and well located to secure business from the many concerns in the vicinity.

When completely equipped the Charlestown station will be supplied with a Universal milling machine, 24-inch shaper, 20-inch by four-foot and 14-inch by six-foot lathes, 30-inch radial drill, 20-inch upright drill, 16-inch sensitive drill, floor grinder, bench grinder, No. 2 and 3 arbor presses and 22-ton press.

LARGER OUTPUT OF UNIVERSAL RADIATOR SHUTTERS.

The Auto Metal Parts Co., Des Moines, Ia., maker of the Universal Radiator Shutter, has reorganized its business in order to increase its manufacturing facilities. The executives of the company report that during its two years in business it has never been able to take care of the volume of orders for the shutter, and from now on only six models will be produced for the following makes of motor cars: Buick, Chevrolet, Dodge, Ford, Nash and Overland. Concentrating on these models will enable the concern to care for the large production required to equip this field.



Universal Radiator Shutter, Made by the Auto Metal Parts Co., Des Moines, Ia.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN CARS, TRUCKS, TRACTORS, ETC.

Pine Bluff, Ark.; Thomas, S. R., Motor Co.; $50,000; L. K. Duncan, G. C. Hammons.

Los Angeles, Cal.; Routledge Motor Co.; $100,000.

Bridgeport, Conn.; Buick Used Car Corporation; $25,000; William P. Herman, Anna Feinstein, Morris Fox.

Bridgeport, Conn.; Swit Motor Co.; $25,000.

Dover, Del.; Ambrose Motors Corporation; $3,750,000; C. T. Cohee, C. B. B. Outten, S. L. Mackey, Wilmington.

Dover, Del.; California Motor Car Corporation of Delaware; $200,000; T. L. Croteau, S. E. Dill, A. M. Hooven, Wilmington.

Dover, Del.; Dragon Tractor Corporation; $1,000,000; T. L. Ernst, L. S. Dumensil, S. M. Block, New York, N. Y.

Dover, Del.; Duryea Motor Corporation; $100,000; Henry Van Arsdale, Jr., Newark, N. J.; Charles E. Duryea, Philadelphia; John W. Cole, New York, N. Y.

Dover, Del.; Reifner Motor Car Co.; $2,000,000; M. M. Lucey, M. Butler, L. S. Dorsey, Wilmington.

Dover, Del.; Hollander Motors Corporation; $1,000,000; Samuel R. Howard, Robert R. Thistle, Harry C. Hand.

Dover, Del.; Kroyer Motors Co.; $5,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; McKee's Rocks Buick Garage, Inc., dealing in automobiles and conducting garages; $100,000.

Dover, Del.; Narmo Motor Corporation; $32,000,000; Samuel B. Howard, Robert K. Thistle, A. Roy Myers.

Dover, Del.; Oldsmobile Distributing Co.; $375,000; T. L. Croteau, S. E. Dill, A. M. Hooven, Wilmington.

Wilmington, Del.; Automotive Co. of America; $100,000; M. L. Rogers, T. A. Irwin, W. G. Singer.

Wilmington, Del.; Mercury Motors Corporation; $1,000,000; T. L. Croteau, S. E. Dill, A. M. Hooven.

Wilmington, Del.; Partridge Tractor Export Co.; $250,000; S. H. Barnard, Jr., A. M. Fox, A. S. Bishop.

Wilmington, Del.; Raleigh Motors Corporation; $300,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

Wilmington, Del.; Royal Ace Motors Corporation; $2,000,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

Washington, D. C.; Dort Distributing Co.; $100,000; Albert E. Sleeper, Frank W. Merrick, Harry Olstead, Heber R. Mason.

Cannelton, Ind.; Lehman Manufacturing Co.; to deal in automobiles and accessories; $100,000; Albert A. Lehman, William C. Lehman, Edgar A. Lehman.

Indianapolis, Ind.; Indiana Compression Tube & Tire Co., to deal in automobiles and accessories; $25,000; James T. Weart, L. L. Weart, M. L. Kyle, George W. Dewey.

Leavenworth, Kan.; Miner Ware Motor Co.; $30,000; George Ware, Fred Miner, Leavenworth; J. M. Sanderson, Lawrence.

Boston, Mass.; Chandler & Cleveland Co. of Fitchburg, Inc., to deal in automobiles and accessories; $50,000; Michael L. Fahey, Timothy J. Barter, Mary R. O'Connell, Paul Murray.

Boston, Mass.; Norfolk Community Garage, Inc., to deal in motor vehicles; $75,000; Rose B. Perry, William Nelson, William H. Morgan, Julius R. Cohen, Wendell H. Fraser, Carl Thompson, Harold F. Shurtleff.

Billings, Mo.; Meyer, C. A., Motor Co.; $25,000; W. P. Cullins, attorney, Bank of Billings building.

Kansas City, Mo.; Haynie & Goodwin Co., 1624 McGee street, to handle retail sales; James Y. Haynie, N. W. Goodwin.

Kansas City, Mo.; Robertson Motor Co., 26th and Grand avenue; $40,000; S. B. Robertson.

Nevada, Mo.; Vernon Motor Co.; $10,000; Carrie M. Stenum.

St. Louis, Mo.; Delmar Automobile Co., 4943 Delmar avenue; $10,000; William J. Doherty, attorney, 701 Olive street.

St. Louis, Mo.; Flory-Bradley Motor Corporation; $30,000; Oliver, Raithel & Lacy, attorney, Arcade building.

St. Louis, Mo.; Franklin Motor Car Co.; $60,000; Sheridan & Sheridan, attorney, Fullerton building.

St. Louis, Mo.; Tate Motor Co., Inc.; $200,000; Boyle & Priest, attorney.

Camden, N. J.; Peters Motor Corporation, to conduct a general automobile business; $150,000; F. R. Hansell.

Jersey City, N. J.; Marine Transportation Co., to deal in automobiles; $100,000; S. W. Nordell, Robert Boardman, Jersey City; Walter Shepperd, New York, N. Y.

Newark, N. J; Nash-Newark Co., to conduct a general automobile business; $250,000.

Rochelle Park, N. J.; A. C. Motor Truck Co.; $50,000; H. C. Chambers, Rochelle Park; William J. Aitken, New Rochelle, N. Y.; C. S. Bentley, New York, N. Y.

Albany, N. Y.; Northway Motor Sales Co. of Massachusetts; $2,500,000; P. R. Bean, representative, Albany.

Brooklyn, N. Y.; Alex Motor Car Co.; $6000; A. A. Fabricant, J. Rosen, J. Kosky, 373 Gates avenue.

Brooklyn, N. Y.; Big 3 Auto Service Co. to conduct an automobile business; $5000; A. Horowitz, A. H. Kestenbaum, J. Levine.

Brooklyn, N. Y.; Bilse Brooklyn Automobiles; $15,000; M. Wagner, P. and G. Bilse, 2184 Clarendon road.

Brooklyn, N. Y.; R. & G. Motor Sales Corporation; $5000; B. W. Griffenhagen, V. and M. Rappe, Freeport, L. I.

Buffalo, N. Y.; Schultz Motor Sales; $25,000; A. B. Schultz, B. D. Schultz, H. Putnam.

Corning, N. Y.; Tew Motor Sales & Service Co., to deal in automobiles; $50,000; R. M. Tew, W. H. Tew, C. C. Wilcox.

Endicott, Broome County, N. Y.; James-Lanew Motor Co.; $24,000; E. P. James, H. S. Lavalle, S. L. Newing.

Hempstead, N. Y.; Parker, Seacombe & Bennett, automobile business; $10,000; V. A. Parker, C. M. Seacombe, W. M. Bennett, Jamaica.

Lockport, N. Y.; Lockport Motors; $27,500; C. E. Williams, S. I. Classon, M. O'Grady, 359 Van Buren street, Brooklyn.

New York, N. Y.; Affiliated Motors Corporation; $100,000; H. Selnik.

New York, N. Y.; Banforth-Hall Corporation of Delaware, motor vehicles; $100,000; R. Ring, 1834 Broadway, representative.

Cincinnati, O.; Atlas Motor Co.; $10,000; H. A. Creed, W. J. Creed.

Cleveland, O.; Davis, C. E., Co., motor cars; $30,000; J. L. Dowling, E. P. Dowling, R. J. Moriarty, F. H. Devlyn, A. V. Bauer.

Dayton, O.; Richards-Dayton Automobile Co.; $10,000; F. P. Graham, F. A. Ashworth, R. I. Shroyer, E. T. Willis.

Steubenville, O.; Fellows, George W., Motor Car Co.; $35,000; G. W. Fellows.

Coalgate, Okla.; Williams, B. F., Motor Co.; $30,000; B. F. Williams, Clare Williams, Boone Williams.

Muskogee, Okla.; Mid-Continent Motor Corporation; $20,000; Homer P. Lee, L. W. Lee, George W. Sickles.

Oklahoma City, Okla.; Atkins-Bledsoe Motor Co.; $30,000; Hugh C. Atkins, M. K. Cruce, John F. Sharp.

Oklahoma City, Okla.; Bemis Oldsmobile Co.; $26,000; Harry V. Bemis, J. W. Taylor, George R. Tighe.

Purcell, Okla.; Slead Motor Co.; $25,000; Howard Roberts, K. Roberts.

McMinnville, Ore.; McMinnville Motor Car Co.; $10,000; Oscar H. Peterson, A. N. Jacobsen, A. L. Lienenweber.

Bedford, Pa.; King Motor Co.; $100,000.

Pittsburgh, Pa.; General Auto Supply Co.; $10,000; W. H. Williams.

Washington, Pa.; Magee Auto Supply Co.; $100,000; Charles L. Magee, Gustava L. Magee, Edgar M. Kitchin.

Providence, R. I.; Rhode Island Distributing Corporation, to deal in motor vehicles; $35,000; Charles Jettley, Earl A. Jettley, J. Leon Jettley, Edward R. Jettley.

Greenwood, S. C.; Greenwood Buick Co.; $10,000; W. R. Cothran, J E. Marshall.

Alto, Tex.; Pearman Auto Co.; $7500; J. I. Perkins, Jr., E. J. Holcombe, J. H. Pearman.

Austin, Tex.; Standard Motor Sales Co.; $15,000; Sam Sparks, S. A. Philquist, J. A. Belger.

Beaumont, Tex.; Kyle Owens Motor Co., 99 Broadway, dealing in automobiles; Kyle Owens, E. C. Setliff, E. C. Guilmartin.

Center, Tex.; Smith Motor Co.; $50,000; T. T. Smith, W. I. Davis, W. I. Powell.

Dallas, Tex.; Standard Auto Co.; $25,000; T. R. Peacock, H. C. MacNeath, W. E. Z. Grimes.

El Paso, Tex.; American Supply Co.; $20,000; H. W. Bauder, W. H. Aldredge, W. H. Aldredge, Jr.

El Paso, Tex.; El Paso Motor Co., Mesa avenue; to deal in automobiles; Jack O'Connell.

El Paso, Tex.; Franklin Motor Car Co.; $10,000; L. J. Trost, L. A. Whitaker, F. E. Sawyer.

Hereford, Tex.; Deaf Smith county; Motor Sales Co.; $10,000; Eli Dunlap, W. E. Dunlap, L. W. Hough.

Jasper, Tex.; Jasper Auto Co.; $50,000; G. G. Markley, P. H. Powell, J. H. Pruett.

Rusk, Tex.; Rusk Motor Co.; $5000; E. R. Gregg, R. L. Hatchett, J. I. Perkins, Jr.

Rusk, Tex.; Walker Motor Co.; $5000; W. R. Walker, T. H. Cobble, J. I. Perkins, Jr.

San Angelo, Tex.; Shepperson Automobile Co.; $25,000; J. G. Shepperson, R. C. Ferguson, Tom Cody.

Sherman, Tex.; Thompson Motor Sales Co.; $100,000; J. A. Thompson, J. K. Thomas, W. E. Edson.

Silsbee, Tex.; Silsbee Auto Co.; $25,000; G. G. Markley, P. H. Powell, N. A. Cravens.

Sinton, Tex.; Farmers' Motor Sales Co.; $35,000; J. W. Benson, C. C. Williams, Prescott Williams.

Smithville, Tex.; Smithville Motor Co.; $30,000; A. V. Bothage, Oswald Buescher, A. G. Buescher.

Stamford, Tex.; Starwalt Motor Co.; $20,000; A. E. Starwalt, R. A. Moore, A. Sekelski.

Taylor, Tex.; Prewitt-Buick Co.; $20,000; G. P. Prewitt, L. D. Prewitt, R. R. Brenning.

Whitesboro, Tex.; Shelton Auto Co.; $40,000; P. M. Shelton, Will Shelton, William Shelton.

Everett, Wash.; Everett Motors Corporation; $6000; W. T. Burwell, J. W. Capek.

Fond du Lac, Wis.; Yellowstone Sales Service Co.; $10,000.

Milwaukee, Wis.; Fountaine Lipman Auto Co.; $50,000; Adolph Lipman, B. C. Gutenstein, Fred Braun.

Milwaukee, Wis.; Hamper Johnson Co.; to deal in motor vehicles; $50,000.

Milwaukee, Wis.; Hare's Motors, Inc.; $100,000; Harry F. Krueger, Margaret C. Kreuger, Julius Rotter.

Montfort, Wis.; Montfort Motor Co.; $20,000.

Sheboygan, Wis.; Nash, S. V. T. Co.; $25,000; Arthur Schraut, George Van der Vaart, Robert Thull.

MANUFACTURERS OF CARS, TRUCKS, TRACTORS, ETC.

Wilmington, Del.; Ambrose Motors Corporation, manufacture of automobiles, etc.; $3,750,000.

Wilmington, Del.; Buick Manufacturing Co., to manufacture and sell automobiles; $100,000.

Wilmington, Del.; Dragon Tractor Corporation, manufacture of automobiles, tractors, etc.; $1,000,000; T. L. Croteau, L. S. Dumensil, S. M. Block, New York, N. Y.

Wilmington, Del.; Justice & Co., to manufacture tractors and automobiles; $100,000.

Wilmington, Del.; Mercury Motors Corporation, to manufacture and sell automobiles; $1,000,000; T. L. Croteau, S. E. Dill, A. M. Hooven.

Wilmington, Del.; Oldsmobile Distributing Co., to manufacture and sell automobiles; $375,000.

Kansas City, Mo.; Gregory-Craun Motor Car Co., to make motor cars; $1,500,000.

Buffalo, N. Y.; Schultz Motor Sales, to make vehicles and machines; $25,000; A. B. and B. D. Shultz, H. Putnam.

New York, N. Y.; Affiliated Motor Corporation, Manhattan borough, to make vehicles; $100,000; H. and E. Selnik, A. L. Levin, 606 West 116th street.

New York, N. Y.; Buick Manufacturing Co.; $100,000; Frank A. Gaynor, Henry M. Hogan, M. D. Hawley.

New York, N. Y.; Collier Motor Sales Corporation, Manhattan borough, to make automobiles; $50,000; W. M. and A. Leviti, A. Rosenbloom, 5659 21st avenue, Brooklyn.

New York, N. Y.; H. & M. Body Corporation, to manufacture automobiles; $1,575,000; S. Bacharach, J. J. Benjamin, R. M. Fields, H. Haas, 25 Broad street.

New York, N. Y.; Kassony Motor Sales Corporation, Manhattan borough, to make automobiles; $12,500; C. G. Keutgen, G. E. Merrifield, M. K. Kassony, 489 Fifth avenue.

Pittsburgh, Pa.; Garfield Steam Truck Corporation; $1,000,000; Duncan MacDonald, E. MacDonald, Garfield, O.; James J. McMahon, Pittsburgh.

Dallas, Tex.; Dallas Machine & Automobile Co.; $50,000; A. R. Holland.

MANUFACTURERS OF PARTS, EQUIPMENT, ETC.

Los Angeles, Cal.; Lap-Lock Tire Co. of California; $1,000,000.

Dover, Del.; A. B. C. Puncture Proof Innerliner Co., to manufacture and deal in puncture proof innerliners for automobiles; $500,000.

Dover, Del.; Bridgeport Auto Body Co.; $200,000; C. F. Killian, A. Schichowski, New York, N. Y.; A. J. Furth, Brooklyn, N. Y.

Dover, Del.; Crescent Tire & Rubber Co.; $100,00; M. L. Rogers, M. M. Nicholson, William G. Singer, Wilmington.

Dover, Del.; McNaull Tire & Rubber Co.; $3,000,000; T. L. Croteau, S. E. Dill, A. M. Hooven, Wilmington.

Dover, Del.; Robinson Carburetor Corporation; $5,000,000; J. F. Berry Baugh, Ray J. Emmerson, W. L. Shumate, Jr., Birmingham, Ala.

Dover, Del.; Runkel Automatic Gear Shift Corporation; $500,000; Louis Gehmanne, Jr., Charles B. Prichard, George Wasser.

Wilmington, Del.; Kelley Tire & Rubber Corporation, to manufacture and deal in automobile tires; $5,000,000.

Wilmington, Del.; Pioneer Tire & Rubber Co., Inc.; $2,000,000; M. L. Rogers, T. A. Irwin, W. G. Singer.

Wilmington, Del.; Pittsburgh Commercial Body & Hoist Co.; $1,000,000; T. L. Croteau, S. E. Dill, A. M. Hooven.

Wilmington, Del.; Pittsburgh Rubber Sundries Manufacturing Co., to manufacture and sell rubber products; $500,000; M. A. Bruce, C. M. Blaske, S. E. Dill.

Wilmington, Del.; Unity Tire & Manufacturing Co.; manufacture of tires, tubes, etc.; $250,000; F. R. Hansell, George H. B. Martin, E. M. McFarland.

Rockford, Ill.; Rockford Ray Tire & Rubber Co., to manufacture rubber tires; $20,000; Myrtle E. Ray, J. V. Slattery, J. T. Wollens.

Anderson, Ind.; Packard Gas Saver Co., to manufacture automobile accessories; $5000; W. J. Black, Carl Flatter, P. B. O'Neill, J. L. Flatter.

Indianapolis, Ind.; Tiffany Tire & Rubber Co.; $1,000,000.

Sioux City, Ia.; Rex Storage Battery Co.; $15,000; H. A. Pederson, J. M. Rasmussen, J. O. Bjorld, M. O. Peterson.

Louisville, Ky.; Raymond & Thompson Co., to manufacture automobile parts; $100,000; F. M. Thompson, M. E. Raymond, William F. Stockton.

New Orleans, La.; Standard Rubber Co., to manufacture puncture-proof pneumatic tires for automobiles; $5,000,000; I. J. McGee, Los Angeles, Cal.; L. C. St. Germain, Breaux Bridge; J. W. Olivier, Arnaudville; John T. Powers, Alexandria; W. A. Brownlee, Colfax.

Boston, Mass.; Brown Auto Specialties Co., automobile signals; $150,000.

Holyoke, Mass.; Nofalt Motor Products Co., Inc.; $300,000; Charles D. Haywood, George H. Morgenstern, Helen C. Connor.

Detroit, Mich.; Ray Battery Co.; $100,000.

Chaffee, Mo.; I. C. B. Muffler Manufacturing Co., to manufacture mufflers, gasoline and oil engines; $2000; L. C. Bisplinghoff, S. A. Ruch, C. E. Bisplinghoff.

St. Louis, Mo.; In-Co. Battery Corporation, 205 North 12th street; $12,000; Sheridan & Sheridan, attorney, 702-704 Fullerton building.

St. Louis, Mo.; Sterling Battery Manufacturing Co.; $20,000; Mason, Holmes & Mason, attorney, Wainwright building.

Jersey City, N. J.; Automatic Safety Signal Co.; $10,000; James J. McCarthy, N. Louis Paladean, John G. Flanigan.

Newark, N. J.; Cole-Birham-French Co., manufacturing motors, engines, machinery, etc.; $100,000.

New Brunswick, N. J.; N. J. Signalite Sales Corporation, 53 French street, manufacturing automobile accessories, parts, etc.; $100,000.

West New York, N. J.; Daylight Lamp Works, Inc., to manufacture and deal in automobile lamps, etc.; $25,000; Samuel Pollock, Sadie Englowitz, Tillis Ungerer.

Brooklyn, N. Y.; B. & J. Auto Spring Co.; $10,000; J. A. Jackson, A. H. and H. C. Brodie, 62 Bay 35th street.

Brooklyn, N. Y.; Greenpoint Rubber & Metal Corporation; $10,000; M. Fishman, P. Fogelman, H. Brum, 299 Broadway.

Brooklyn, N. Y.; Guaranteed Tire Filler Corporation; $50,000; J. Stander, M. Stander, A. M. Chamow.

Brooklyn, N. Y.; Standard Tire & Tube Works; $25,000; S. and E. A. Lifshutz, M. Sherman, 277 Glen street.

New York, N. Y.; Arrow Cylinder Grinding Co., Manhattan borough; $50,000; F. C. Glittenberg, C. Melidonis, J. E. Lolos, 321 West 136th street.

New York, N. Y.; Bedell, Inc., S. M., to manufacture tires; $5000; R. A. Wicksel, C. Schwartz, J. E. Ankus.

New York, N. Y.; Bell Safety Bumper Co., Manhattan borough, automobile accessories; $10,000; K. Katz, D. Weinberg, D. Robson, 263 East Seventh street.

New York, N. Y.; Canton-Blackstone Sales Co., to manufacture tires; $60,000; A. J. Ewald, P. A. Proal, A. E. Beckert.

New York, N. Y.; Fafair Bearing Co. of Connecticut; $100,000; H. Bristol, 5 Columbus circle, representative.

New York, N. Y.; Harlem Battery & Ignition Co., Manhattan borough, electric machinery and appliances; $5000; O. V. Fleischman, W. L. Greenfogel, M. Eckhaus, 398 Broadway.

New York, N. Y.; Hesser-Campbell Corporation, Manhattan borough, to make carbon eliminators and automobile accessories; $20,000; R. H. Long, J. R. Walker, C. T. Hesser, 116 West 39th street.

New York, N. Y.; International Taximeter Corporation, Manhattan borough; $300,000; E. A. Breck, E. N. Zorn, H .E. Bauer, 814 West End avenue.

New York, N. Y.; Mathey Brothers, Manhattan borough, to make tires; $15,000; M. M. Coughlin, J. H. Jackson, F. A. Mathey, 506 West 45th street.

New York, N. Y.; Power Saving Motor Corporation, mechanical engineer and manufacturer of motors, engines and other machinery; $200,000; A. Digioia, E. Denegris, C. Salvino, Bronx.

New York, N. Y.; Soulis Autoparts Corporation, Manhattan borough, to make machinery; $10,000; E. E. Hills, E. W. Searing, H. A. Souis, 251 West 129th street.

New York, N. Y.; Standard Wire Tire Corporation, Manhattan borough; $100,000; A. L. Chauvet, B. J. Bowers, S. S. Shears, 221 Hancock street, Brooklyn.

New York, N. Y.; Staten Island Selden Sales Co., Richmond borough, to make motors and engines; $20,000; W. S. Sierzma, E. G. Joseph, J. S. Koeninsberg, 170 Suffolk street.

New York, N. Y.; Stuart Bell Corporation, Manhattan borough, to make tires; $40,000; D. Stein, I. Bauermash, A. Joseph, 92 William street.

New York, N. Y.; Wonder Valve Grinder Co., Manhattan borough; $50,000; A. Sadow, J. Owens, K. G. J. Schades, 511 West 157th street.

Schenectady, N. Y.; Sterling Storage Battery Co.; $10,750; S. R. van Patten, M. J. Vandermark, C. E. School.

Yonkers, N. Y.; Hudson Tire & Rubber Corporation, to manufacture and sell cord and fabric tires; $1,000,000; W. M. Doucette, H. B. Seymour, U. Wiesendanger.

Asheville, N. C.; Collapsible Rim Co., to manufacture and sell rims for automobile wheels; $300,000; W. W. Bruce, J. J. Nichols, F. L. Sale.

Charlotte, N. C.; Southern Automatic Steam Carburetor Co.; $300,000; A. M. Nord, R. T. Puhlman, C. T. Shaner.

Akron, O.; Cable Cord Tire Co.; $10,000; A. H. Elliott, W. Kline, J. W. Rinear, L. W. Rinear, C. E. Foust.

Cleveland, O.; Steel Treating & Forging Co.; $50,000; H. D. Murray, J. R. Robinson.

Youngstown, O.; Commercial Automotive Products Co.; $285,000; A. W. Frantz, E. D. Haseltine.

Enid, Okla.; Enid Battery Manufacturing Co.; $10,000; F. W. Miller, Frank L. Wilkins, W. L. Kendall.

Oklahoma City, Okla.; Sweeney, H. L., Tire Co.; $25,000; H. L. Sweeney, L. T. Sammons, Oklahoma City; J. W. Shefner, Holdenville.

Okmulgee, Okla.; Scott Tire Co.; $20,000; T. M. Scott, E. J. Scott, George M. Arnold.

Portland, Ore.; Marvel Shock Absorber Co.; $1,000,000; S. L. Savidge, A. W. Regner, J. D. Guiss.

Philadelphia, Pa.; Bayard, M. L. & Co., Inc., to manufacture, erect, buy and sell machinery, tools, water supply and filtration equipment, gears, axles, automobile accessories, metal mechanical appliances of every description and metal specialties of all kinds; M. L. Bayard, Jerome H. Louchheim, Charles Q. MacDonough; solicitor, Samuel K. Louchheim.

Philadelphia, Pa.; Jon-Con Tire Protector Co.; $100,000; Lemuel Jones, G. Raymond Conover, Charles B. Downes.

Philadelphia, Pa.; S. & L. Tire & Rubber Co.; $300,000; F. R. Hansell, J. Vernon Pimm, E. M. McFarland.

Philadelphia, Pa.; Unity Tire & Manufacturing Co.; $250,000; F. R. Hansell, George H. B. Martin, E. M. McFarland.

Philadelphia, Pa.; Vetter, Charles L., Rubber Co. of Philadelphia; $150,000; Charles L. Vetter, Harwin B. Fox, Warren B. Zern.

Jellico, Tenn.; Jellico Cord Tire Co.; $1,500,000.

Amarillo, Tex.; Panhandle Tire & Rubber Co.; $40,000; A. E. Cullem, T. V. Reeves.

Richmond, Va.; Jefferson Tire & Rubber Sales Corporation, to manufacture and sell cord tires and tubes; $500,000; R. C. Slayton, Richmond, president; R. C. Lamos, Cleveland, O., manager.

Milwaukee, Wis.; C. H. P. Machinery & Auto Parts Manufacturing Co.; $25,000; W. McElroy, H. H. Cunningham, Herman Schweikart.

Milwaukee, Wis.; Milwaukee Ever Tight Co., to manufacture automobile parts; $10,000; J. L. O'Connor, Lysander B. Armstrong, James P. McGuigan.

Racine, Wis.; E. L. M. Tire & Rubber Co.; $200,000; Lawrence E. McKim, Otto E. Ahrens, Marion McKimm.

GARAGES, REPAIR SHOPS AND SERVICE STATIONS.

Stamford, Conn.; Hope Tire & Rubber Co., to rebuild tires; $20,000; B. Yaraus, S. Colitz, M. H. Plainfield.

Dover, Del.; McKee's Rock Buick Garage; $10,000; Wilber A. McCoy, Pittsburgh, Pa.; W. I. N. Lofland, Frank Jackson, Dover.

Sioux City, Mo.; Schutt Motor Co., to conduct a garage and deal in automobiles; $10,000; R. W. Schutt, W. A. Schutt.

Kittery, Me.; Lafayette Garage & Machine Co.; $10,000; Thomas Symington, Herbert E. Brackett.

Van Buren, Me.; Hammond Auto Co., to conduct a general garage and automobile business; $25,000; Allen E. Hammond, Charles A. Piltz, George V. Hammond, Henry K. Bradley, Joseph W. Hammond.

Manchester, Mo.; Gateway Garage & Sales Co.; $10,000; D. C. Taylor, attorney.

Albany, N. Y.; Webel Automobile Corporation, to conduct garages; $25,000; F. C. Schede, B. W. Webel, B. K. Webel.

Ardsley, N. Y.; Lind Brothers Garage; $15,000; C. A., J. E. and O. W. Lind, 423 East 76th street.

Brooklyn, N. Y.; Avenue M Garage & Repair Co.; $40,000; L. and P. Montalbine, S. J. Turner.

Brooklyn, N. Y.; Blake & Christopher Garage; $10,000; J. W. Berlinger, M. and S. Kusnetz, 558 Stone avenue.

Brooklyn, N. Y.; Colonial Stone Avenue Garage; $15,000; H. Leichtung, S. and J. Weinstein, 728 Georgia avenue.

Brooklyn, N. Y.; Ebbet's Field Garage; $20,000; J. Solowey, M. Zeldow, J. G. Abramson, 30 Church street.

Brooklyn, N. Y.; Fulton Bridgé Garage; $10,000; S. Berenson, J. Berenson, S. L. Zukerman.

Brooklyn, N. Y.; G. B. F. Garage Corporation; $10,000; L. Glickman, F. Fischer, S. Bearowitz, 120 Lewis street.

Brooklyn, N. Y.; G. C. S. Garage Co.; $15,000; D. Gang, C. Simkosky, H. Cohen, 47 Attorney street.

Brooklyn, N. Y.; Glazer & Abramowitz, garage; $10,000; D. Fried, M. Abramowitz, M. Glazer, 1088 38th street.

Brooklyn, N. Y.; King's Highway Garage Corporation; $10,000; A. E., G. M. and F. B. Tepfer, 1040 13th street.

Brooklyn, N. Y.; Schenectady Garage; $10,000; S. and L. Chrein, M. Schlessinger, 32 Schenectady avenue.

Brooklyn, N. Y.; Weinstein & Lerner, garage and repair shop; $10,000; H. and R. Weinstein, M. Lerner, 386 New Jersey avenue.

New York, N. Y.; Abbey Garage, Bronx borough; $1,0000; M. S. and F. Albert, H. Bowsky, 350 Broadway.

New York, N. Y.; Alhambra Automobile Station, Manhattan borough, garage and repair shop; $20,000; P. and F. and A. Paver, 691 East 138th street.

New York, N. Y.; Bayard Garage, Manhattan borough; $50,000; M. Knapp, S. Harwood, I. Lederer, 26 Bowery.

New York, N. Y.; Brier Garage, Queen's borough; $50,000; M. H. and J. Brier, Arverne, L. I.

New York, N. Y.; Broome & Mangin Garage, Manhattan borough; $20,000; S. Pankowitz, M. Sheinblum.

New York, N. Y.; Conavmen Enterprise Co., Manhattan borough, farming, hotel and garage; $100,000; L. Green, A. Evans, J. Miller, 131 West 135th street.

New York, N. Y.; Eldorado Garage Corporation, Manhattan borough; $50,000; S. H. Eisler, O. Kirshon, W. Lee, 2714 Broadway.

New York, N. Y.; Gypsy Auto Painting & Trimming Co., Manhattan borough; $10,000; J. A. Michel, L. Green, M. Levy, 15 Mitchell place.

New York, N. Y.; Hillside Garage, Bronx borough; $10,000; G. I. Jewell, J. A. Murphy, K. S. Nieas, 294 Burnside avenue.

New York, N. Y.; Longview Auto Repair & Specialty Co., Bronx borough; $15,000; F. A. Dede, G. W. Breitweiser, P. Shapiro, 1833 Seventh avenue.

New Lork, N. Y.; Lyons & Simmons Garage, Manhattan borough; $10,000; F. W. Simmons, J. E. A. and J. F. Lyons, 93 West 103rd street.

New York, N. Y.; Maresco Co., Manhattan borough, garage and stables; $50,000; S. and M. and V. Maresco, 2651 Eighth avenue.

New York, N. Y.; Meyers & Marks Garage, Manhattan borough; $20,000; A. and L. Meyer, S. Marks, 1045 Bryant avenue, Bronx.

New York, N. Y.; M. P. S. Automotive Corporation, Manhattan borough, garages; $15,000; S. Marmor, A. P. Perloy, L. B. Schwartz, 1295 Fulton avenue, Bronx.

New York, N. Y.; Riverside Transportation Co., Queen's borough, garage and trucking; $10,000; W. A. Peterson, F. Bamberger, C. A. Newell, Long Island City.

New York, N. Y.; S. F. & F. Garage, Manhattan borough; $30,000; L. Soloway, L. Fox, G. F. Mattuck, 135 Broadway.

New York, N. Y.; Titian Garage; $17,000; A. E. Hurwitch, A. D. Barton, B. Dryer.

New York, N. Y.; Warren-Olshan Garage, Manhattan borough; $30,000; J. S. and S. Warren, A. N. Olshanitzky, 858 Cauldwell avenue, Bronx.

Rochester, N. Y.; Northway, Thomas J., garage; $400,000; C. H. Agar, C. W. Frisbie, T. J. Northway.

Schenectady, N. Y.; Johnston-Tongue Motor Corporation, to conduct a general garage business; $10,000; R. B. Johnston, W. W. Johnston, W. N. Tongue.

Tupper Lake, N. Y.; Tupper Lake Garage & Supply Co.; $50,000; K. C. Ingham, H. E. Bellows, E. R. Empie.

Valley Stream, Nassau County, N. Y.; Queens-Nassau-Clydesdale Corporation, garages; $10,000; F. and C. A. Buscher, W. S. Doxsey, Far Rockaway.

Warren, O.; Ellis Motor Service Co.; $60,000; S. B. Ellis, P. W. Williams.

Philadelphia, Pa.; Keystone Realty-Auto Storage Corporation; $100,000; Horace E. Lee, William F. Page, Howard E. Lee, Jr.

Charleston, S. C.; Ericksen-Staples Co., to conduct a general garage business; $15,000; W. K. McDowell, E. L. Ericksen.

Alto, Tex.; Mack's Service Station; $12,500; J. M. Crawford, J. M. Crawford, Jr., R. F. Ray.

Neillsville, Wis.; Neillsville Garage Co.; $75,000.

Sheboygan, Wis.; South Side Garage Co.; $30,000.

DEALERS IN ACCESSORIES, EQUIPMENT, ETC.

Dover, Del.; Allen Tire & Rubber Sales Co.; $250,000; S. H. Baynard, Jr., A. S. Bishop, R. H. Ochletree, Wilmington.

Dover, Del.; Armstrong Tire & Supply Co.; $225,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland, Philadelphia, Pa.

Dover, Del.; Kokomo Rubber Co.; $6,500,000; Albert L. Ream, Jack Simons, Harry C. Kebe.

Dover, Del.; United Tires Stores of Buffalo; $250,000; Wilbur A. McCoy, Pittsburgh; W. I. N. Lofland, Frank M. Jackson.

Wilmington, Del.; Motor Utilities Corporation of America; V. P. Lacey, M. Butler, M. A. Davis.

Wilmington, Del.; Hawkeye Tire Sales Co. of Illinois; $10,000; C. T. Cohee, C. H. Outten, S. L. Mackey.

Wilmington, Del.; Hawkeye Tire Sales Co. of Oklahoma; $10,000; C. T. Cohee, C. N. Outten, S. L. Mackey.

Wilmington, Del.; International Tire Stores Corporation, to deal in rubber tires, tubes and accessories; $50,000,000; T. L. Croteau. M. A. Bruce, A. M. Hooven.

Wilmington, Del.; Seeanbee Tire & Rubber Co., to deal in rubber tires and tubes; $10,000,000; V. P. Lucey, M. M. Lucey, M. A. Davis.

Wilmington, Del.; Walton Auto Supplies; $500,000; T. L. Croteau, S. E. Dill, A. M. Hooven.

Indianapolis, Ind.; Tiffany Tire & Rubber Co., to deal in tires and rubber products; $1,000,000; G. L. Simon, W. J. Kearney, H. S. Ratlift.

Plymouth, Ind.; Crescent Tire & Rubber Co.; $4000; George M. Dausman, Lloyd M. Stump, John V. Stetler.

Waveland, Ind.; Montgomery Manufacturing Co., to deal in no-skid automobile chains; $200,000; E. E. Gates, R. L. Walker, J. C. Ralston.

Wichita, Kan.; Central Tire & Equipment Co.; $30,000.

Boston, Mass.; Harrington Tire Corporation; $100,000.

Boston, Mass.; Lane, Trotman & Henzler, Inc., to sell automobile tires and accessories; $15,000; John J. Lane, Frank P. Trotman, Joseph W. Hensler.

Boston, Mass.; National Tire & Rubber Co., to deal in automobile accessories; $75,000; Abraham Palder, Helen M. Clifford, John E. Crowley.

Boston, Mass.; Rimtoco Lubricator Co., Inc., to deal in automobile accessories; $25,000; Angelo D. Storti, William Gagnon, Walter E. Brown.

Boston, Mass.; Simplex Pneumatic Tire Co.; $100,000.

Boston, Mass.; Stahle Flex-Hub Wheel Co., to deal in wheels and tires for automobiles; $100,000; W. K. Beardsley, J. F. Moloney, P. J. Fitzpatrick.

Worcester, Mass.; Eastern Tire Supply Co., Inc.; $50,000; Harry E. Whitcomb, Charles F. Peters, Henry D. Whitcomb, Charles B. Rugg.

Springfield, Mo.; Link-McCluer Motor Supply Co., to deal in automobile truck supplies; $10,000; Rufus M. McCluer, Linder W. Link.

Jersey City, N. J.; Granville Tire Co., to sell automobile tires; $15,000,000; F. D. Buck, G. W. Dillman, M. L. Horty.

Newark, N. J.; Essential Auto Supply Co., to deal in automobile accessories; $50,000; Kent Bender, Arthur Schlabohm, W. E. Turton.

Newark, N. J.; Quality Tire Co., to deal in automobile tires; $50,000; J. J. Coley, E. Feenane, L. M. Ettinger.

Brooklyn, N. Y.; American Coil Corporation, to deal in accessories and automobiles; $10,000; Frederick Greenhut, Maurice Greenhut, Leanette Greenhut.

Brooklyn, N. Y.; A. & H. Fischer Auto Supply Co.; $10,000; A. Fischer, H. Fischer, M. Kohner.

Buffalo, N. Y.; Mayer Auto Accessories Corporation; $25,000; G. B. Plush, A. W. Corrigan, A. L. Mayer.

New York, N. Y.; Christensen Engineering Co. of New York, Manhattan borough, to sell automatic motor starting systems; $10,000; L. C. Wills, M. F. Walsh, I. Gousha, 540 81st street.

New York, N. Y.; National Motors Service Association, to deal in automobile accessories; $10,000; F. A. Guarino, A. Trautman, C. J. Jacoby.

New York, N. Y.; Pennsylvania Rubber Co. of America; $10,000; representative, G. C. McCullough, 1889 Broadway.

New York, N. Y.; Wadsworth Auto Supply Co. of New Jersey; representative, 1464 St. Nicholas avenue.

New York, N. Y.; Webber Carburetor Service, Manhattan borough; $110,000; W. E. Townsend, W. F. Wardrop, L. C. Burdett, 233 Broadway.

Barberton, O.; Youngstown-Akron Tire Exchange Co.; $50,000; R. E. Moton, F. B. Livermore, C. S. Livermore, H. H. Holloway, A. C. Cunningham.

Cincinnati, O.; Red Cap Batteries Sales Co.; $10,000; Walter R. Keagy, Edward R. Keagy.

Cleveland, O.; Tire Clearing House Co.; $5000; M. M. Jaffe, S. J. Gottlieb, A. D. Jaffe, N. Kats, J. Feniger.

Springfield, O.; Clark County Rubber Co.; $15,000; W. R. Marlin, C. W. Marlin, Sr.

Claremore, Okla.; Automotive Equipment Co.; $25,000; L. C. Carpenter, D. E. Carpenter, Claremore; J. M. Pope, Drumright.

Fort Worth, Tex.; Ellison-Friend Tire Co.; $10,000; James A. Ellison, A. Carrol Friend, H. W. Simmons.

San Antonio, Tex.; Bull Brothers Tire Co.; $40,000; Charles, Harry and Gilham Bull and Charles Bull, Jr.

Milwaukee, Wis.; Save U. Motor Sales Co.; $25,000.

RECORD OF BUILDING OPERATIONS FOR OCTOBER

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Andalusia, Ala.; Sessons-Darling Co.; two-story brick garage and sales room, 79x100.

New London, Conn.; T. Ragonese, 721 Bank streett; two-story brick and concrete garage and service station, 41x13, at 576 Bank stret; $40,000.

Washington, D. C.; Lambert Hudson Motors Co., 121 Connecticut avenue; three-story brick and concrete service station, 120x130.

Washington, D. C.; Irvin Laughlin, 706 17th street, northwest; three-story garage, 100x175.

Sanford, Fla.; Cook Automobile Co., Orlando, Fla.; one-story brick garage, 50x100.

Chana, Ill.; Thompson & Kasper; one-story brick and hollow tile garage and repair shop, 60x86.

Chicago, Ill.; R. Roylouski, 1432 North Paulina street; one-story brick, stone and reinforced concrete public garage, 50x30; $10,000.

Chicago, Ill.; J. F. O'Brien & Co., 235 East 61st street; one-story brick and stone public garage, 100x160, at 71st street and Constance avenue; $40,000.

Chicago, Ill.; H. K. Holsman, 175 West Jackson boulevard; 22-story concrete and brick service building; $2,850,000.

Chicago, Ill.; Hudson Motor Car Co., 1615 Michigan avenue; two-story service station, at 22nd street and Michigan avenue.

Chicago, Ill.; Triple "S" Motor Car Co.; three-story brick and reinforced concrete service station, 100x235; $80,000.

Chicago, Ill.; Rudolph Huebsch, 4822 South Ashland avenue; one-story brick public garage, 72x115; $40,000.

Chicago, Ill.; Joseph Brothers, 3393 Archer avenue; one-story brick and reinforced concrete private garage, 30x200, at 22nd street and Ashland avenue; $50,000.

Chicago, Ill.; E. C. Leonard, care of A. P. Dippold, 4747 South Cottage Grove avenue; one-story brick public garage, 100x250, at 5547-55 Harper avenue; $90,000.

Chicago, Ill.; A. Anderson, 4206 Potomac avenue; one-story stucco garage.

Chicago, Ill.; Alexander Brothers, 1459 East 69th street; one-story brick garage.

Chicago, Ill.; H. Anderson, 207 North Keystone avenue; one-story cement garage.

Chicago, Ill.; C. H. Anderson, 7552 Berhart avenue; one-story brick garage.

Chicago, Ill.; J. Behoolk, 10510 Erving avenue; one-story concrete garage.

Chicago, Ill.; Fred Arnold, 11729 Longwood drive; one-story brick garage.

Chicago, Ill.; W. Bredy, 6135 N. Paulina street; one-story brick garage.

Chicago, Ill.; J. H. Bobbitt, 5723 Kenwood avenue; one-story brick garage.

Chicago, Ill.; M. Borman, 3837 North Clark street; one-story brick garage.

Chicago, Ill.; Cohen & Roblin, 4037 Roosevelt road; one-story brick garage.

Chicago, Ill ; C. A. Carlson, 918 Dakin street; one-story brick garage.

Chicago, Ill.; D. Corbett, 159 North La Crosse avenue; one-story brick garage.

Chicago, Ill.; R. R. Covello, 1254 North Kedzie avenue; one-story brick garage.

Chicago, Ill.; Charles Callahan, 4917 West End avenue; one-story brick garage.

Chicago, Ill.; Charles Catanzaro, 4216 Crystal street; one-story brick garage.

Chicago, Ill.; George Cohen, 1634 South Millard avenue; one-story brick garage.

Chicago, Ill.; J. E. Day, 7648 Langley avenue; one-story brick garage.

Chicago, Ill.; John Cervase, 3517 West Congress street; one-story brick garage.

Chicago, Ill.; E. F. Curda, 642 South Central avenue; one-story brick garage.

Chicago, Ill.; Freeman S. Deuel, 4250 Drexel boulevard; one-story brick garage.

Chicago, Ill.; M. Engelstem, 1315 North Maplewood avenue; one-story brick garage.

Chicago, Ill.; C. W. Esler, 6943 East End avenue; one-story brick garage.

Chicago, Ill.; W. V. Fabizek, 9037 Commercial avenue; one-story brick garage.

Chicago, Ill.; J. H. Greer, 4114 South Michigan avenue; one-story brick garage.

Chicago, Ill.; James Hauser, 4742 Honore street; one-story brick garage.

Chicago, Ill.; Frank J. Frosh, 2850 West 21st street ;one-story brick garage.

Chicago, Ill.; F. E. Harrison, 6459 Magnolia avenue; one-story brick garage.

Chicago, Ill.; W. L. Hoffman, Sr., 5905 South Wells street; one-story brick garage.

Chicago, Ill.; E. A. Hicks, 2952 North Troy street; one-story concrete garage.

Chicago, Ill.; J. W. Ford, Jr., 1505 Dearborn parkway; one-story brick garage.

Chicago, Ill.; C. Hollander, 5749 Morgan street; tone-story concrete garage.

Chicago, Ill.; D. Goodman, 1865 South Aiers avenue; one-story brick garage.

Chicago, Ill.; A. Johnson, 4803 Indiana avenue; one-story brick garage.

Chicago, Ill.; J. F. Glach, 1400 Olive street; one-story brick garage.

Chicago, Ill.; E. Johnson, 7336 Vernon avenue; one-story brick garage.

Chicago, Ill.; George Johnson, 8036 Justine street; one-story brick garage.

Chicago, Ill.; Fred James, 1506 Hood avenue; one-story brick garage.

Chicago, Ill.; E. B. Jacobs, 6405 Kenwood avenue; one-story brick garage.

Chicago, Ill.; C. Johnson, 4738 North Talman avenue; one-story brick garage.

Chicago, Ill.; Lawrence Kolloch, 4253 North Robery street; one-story brick garage.

Chicago, Ill.; Nicholas Kiefer, 315 Hilldale avenue; one-story brick garage.

Chicago, Ill.; Mrs. Anna Klingberg, 7611 South Morgan street; one-story brick garage.

Chicago, Ill.; William Kinas, 3517 South Robey street; one-story brick garage.

Chicago, Ill.; J. S. Klinger, 1644 North Marshfield avenue; one-story brick garage.

Chicago, Ill.; C. Lundstrom, 5062 Menard avenue; one-story brick garage.

Chicago, Ill.; M. Mavone, 3518 Wrightwood avenue; one-story brick garage.

Chicago, Ill.; A. J. Link, 2570 Linden place; one-story brick garage.

Chicago, Ill.; Frank P. Lee, 1839 North Central Park avenue; one-story concrete garage.

Chicago, Ill.; Frank McAdams, 7137 Cranden avenue; one-story brick garage.

Chicago, Ill.; Charles Mattey, 1344 South Kolin avenue; one-story brick garage.

Chicago, Ill.; S. Macina, 1130 North Central Park avenue; one-story brick garage.

Chicago, Ill.; J. Pitkiewic, 5959 South Rockwell street; one-story brick garage.

Chicago, Ill.; W. Rudhman, 5043 Sunnyside avenue; one-story stucco garage.

Chicago, Ill.; T. O. Peterson, 2006 Howe street; one-story brick garage.

Chicago, Ill.; J. J. Suchy, 6100 South Rockwell street; one-story steel garage.

Chicago, Ill.; O. Swanson, 7321 Cranden avenue; one-story brick garage.

Chicago, Ill.; L. A. Stephan, 1500 Massassour street; one-story brick garage.

Chicago, Ill.; B. Sanawskis, 5420 South Spaulding avenue; one-story brick garage.

Chicago, Ill.; Vito Siemeca, 1870 Sheffield avenue; one-story concrete garage.

Chicago, Ill.; Fred Schulz, 5054 Windsor avenue; one-story brick garage.

Chicago, Ill.; C. W. Tabor, 1424 Juneway terrace; one-story stucco garage.

Chicago, Ill.; R. O. Reichardt, 2214 North Robey street; one-story brick garage.

Chicago, Ill.; Herman Rothenberg, 2646 North Sawyer avenue; one-story brick garage.

Chicago, Ill.; H. Teichner, 2938 Rooseveer road; one-story brick garage.

Chicago, Ill.; Joseph Upsall, 4835 Washington boulevard; one-story concrete garage.

Chicago, Ill.; J. G. Valodare, 8500 South Sangamon street; one-story brick garage.

Chicago, Ill.; John Volcke, 4422 North Kedzie avenue; one-story brick garage.

Chicago, Ill.; W. G. Vorreitzr, 1345 Arthur street; one-story brick garage.

Chicago, Ill.; Samuel Vitter, 1238 South Central Park avenue; one-story brick garage.

Decatur, Ill.; Community Service Co., Bloomington, Ill.; one-story garage and service station.

Freeport, Ill.; Maurer Brothers, 17 Stephenson street; two-story brick public garage and repair shop, 60x120; $40,000.

Galesburg, Ill.; E. D. Horrell; two-story brick and reinforced concrete public garage; $80,000.

West Englewood, Ill.; Z. T. and C. D. Davis, 64 East Van Buren street, Chicago, Ill.; one-story brick and stone garage, 125x20; $90,000.

Greenfield, Ind.; Brock Filling Station Co., Anderson, Ind.; one-story service and filling station.

Mishawaka, Ind.; Dodge Manufacturing Co.; one-story garage and service station; $12,000.

Waterloo, Ia.; C. A. Marsh, care of H. A. Maine Auto Co.; one-story brick and stone garage, 60x100; $20,000.

Frankfort, Ky.; Department of State Roads and Highways; two-story brick garage, 83x222; install $3500 machinery.

Glenview, Ky.; R. B. Hickman; two-story garage, 45x60.

Lexington, Ky.; Consumers' Service Station; Third and Limestone streets; one-story service station; $10,000.

Louisville, Ky.; Jefferson County Court House; one-story brick garage, 110x160; $20,000.

Louisville, Ky.; B. F. Jarbol, 406 South Eighth street; one-story fireproof garage.

Louisville, Ky.; Louisville Motors Co.; one-story garage, 120x255; $35,000.

Lewiston, Me.; Wade & Dunton Co., 29 Park street; three-story garage and sales room, 100x100; $150,000.

Baltimore, Md.; George Klein, 2921 Belmont avenue; 45 one-story garages, 10x18 each; rear 1616-38 North Smallwood street; $18,000.

Baltimore, Md.; H. M. Dinsmore, 915 South Lakewood avenue; one-story brick garage; $10,000.

Baltimore, Md.; Nash Motors Co., 134 West Mount Royal avenue; one-story garage and show room, 120x150.

Baltimore, Md.; Jacob Lewis, 1411 East Baltimore street; two-story garage, 26x60.

Melvale Heights, Md.; Charles R. Lerman, 1000 B Prospect avenue; one-story brick garage, 25x71; $10,000.

Towson, Md.; Acme Motor Sales Co., 1712 Greenmount avenue; one-story brick garage and service station.

Boston, Mass.; G. Marsh; two- story brick and concrete public garage, 145x100, at Cambridge and Mano streets and Brighton avenue; $125,000.

Lynn, Mass.; Gastano Cianino, 68 Tremont street; one-story brick garage, 94x133; $25,000.

New Bedford, Mass.; August Servais, 54 Sycamore street; one-story garage and paint shop.

New Bedford, Mass.; Eugene Colbec, 137 Tinkham street; one-story public garage and repair shop, 66x95, at Bowditch and Shaw streets; $15,000.

Northbridge, Mass.; Whittens Machine Works; four-story brick garage, 200x75; $150,000.

Worcester, Mass.; J. Rice, 306 Main street; two-story reinforced concrete public garage, 150x180.

Detroit, Mich.; Union Cooperative Baking Co., 1060 Chene street; one-story garage and repair shop, at Hendrie and Granby streets; $10,000.

Detroit, Mich.; City Council, care of Lewis H. Echlin, deputy commissioner, public works; one-story garage and service station; $68,000.

Detroit, Mich.; Evening News Association, Second avenue and Lafayette boulevard; one-story brick and reinforced concrete garage, 90x158, at Fort and Third streets; $80,000.

Eaton Rapids, Mich.; Standard Oil Co.; one-story garage and filling station, at Main and Knight streets.

Fenville, Mich.; F. H. Koolker; one-story brick and tile garage, 65x120; $40,000.

Ludington, Mich.; D. T. Smith, Scottsville, Mich.; one-story brick garage, 110x140; $50,000.

Vicksburg, Mich.; Tobbey Brothers; two-story brick and concrete garage, 65x165; $75,000.

Minneapolis, Minn.; C. O. Maland, 3816 Aldrich avenue, South; one-story brick garage.

Minneapolis, Minn.; W. R. Locke, 4244 Floral avenue; one-story concrete garage.

Minneapolis, Minn.; Clyde Undine, 3959 Lyndale avenue, South; one-story brick garage.

Minneapolis, Minn.; A. J. Granville, 2436 Bloomington avenue; one-story concrete garage.

Minneapolis, Minn.; Clover Leaf Creamery Co., 2011 Fourth street; one-story concrete garage.

Minneapolis, Minn.; A. G. Grierson, 3236 Grand avenue; one-story brick garage.

Kansas City, Mo.; Benjamin Elboun, 2411 Olive street; one-story brick and stone trim garage, 50x132, at 3767 Broadway; $12,000.

Camden, N. J.; Benjamin Howell Lackey, 509 Federal street; two and four-story garage and service station, 60x135.

Elizabeth, N. J.; Enterprise Coal & Supply Co., 140 Third street; one-story garage; $20,000.

Newark, N. J.; Pellecrona Pellecohia, 21 Mount Prospect avenue; one-story garage and sales room, at 978-80 Broad street; $40,000.

Passaic, N. J.; Morris Osherov, 406 Monroe street; one-story garage and repair shop; $10,000.

Brooklyn, N. Y.; B. & B. Construction Co., 41 Park row, New York; one-story brick and limestone garage, at northwest corner Bedford avenue and Crown street; $75,000.

Brooklyn, N. Y.; William, Ralph and I. Rosenstein, 204 New Lots road; two-story brick garage; $75,000.

Brooklyn, N. Y.; Barrey Waller, 320 Rutledge street; one-story brick garage, 44x100; $15,000.

Brooklyn, N. Y.; Charlotte Place Corporation, 254 Park place; one-story brick garage, at Knickerbocker avenue and Covert street; $25,000.

Brooklyn, N. Y.; Elizabeth Fischer, 2542 Fulton street; one-story brick garage, at 50 and 60 Pennsylvania avenue; $25,000.

Brooklyn, N. Y.; Simon Ables, 44 Court street; one-story brick show room; $150,000.

Brooklyn, N. Y.; Butler Realty Co., 16 Court street; one-story brick garage, at 264 Butler street; $30,000.

Brooklyn, N. Y.; M. C. K. Contracting Co., 1438 Park place; one-story brick garage; $35,000.

Brooklyn, N. Y.; Lazarus Rosenburg, 189 Montague street; one-story brick garage; $35,000.

Brooklyn, N. Y.; Boro Park Realty Co., 5001 17th avenue; one-story brick garage; $40,000.

Brooklyn, N. Y.; Pincus Glickman, 44 Court street; one-story garage; $40,000.

Brooklyn, N. Y.; Realty Construction Co., 44 Court street; one-story brick garage; $45,000.

Brooklyn, N. Y.; Perri Contracting Co., 17 Spencer street; one-story brick garage; $45,000.

Brooklyn, N. Y.; Baldwin Building Corporation, 2697 Ocean avenue; one-story brick garage; $30,000.

Brooklyn, N. Y.; Joseph Nass, 424 Neputen avenue; one-story brick garage; southeast corner Neputen avenue and West First street; $25,000.

Brooklyn, N. Y.; Realty Associates, 162 Remsen street; one-story garage, at 209-27 Empire boulevard. Lessee, Franklin Motor Car Co.

Brooklyn, N. Y.; Barnet Wiener, 496 Hopkinson avenue; one-story brick garage; $25,000.

Brooklyn, N. Y.; B. B. & F. Realty Corporation, 145 North Vernon avenue, Arverne, L. I.; one-story brick garage; $25,000.

Brooklyn, N. Y.; Julius Hochman, 575 Greene avenue; one-story brick garage; northeast corner Gravesend avenue and Albermarl road; $60,000.

Brooklyn, N. Y.; Charshad Realty Co., 1199 Eastern parkway; one-story brick garage, at Empire boulevard and New York avenue; $40,000.

Buffalo, N. Y.; Marcus Barmen, 937 Broadway; two-story brick and hollow tile garage, 25x50, at Amherst estates; $10,000.

Buffalo, N. Y.; Jacob Dold Packing Co., 703 William street; one-story public garage, 53x157.

Cornwall, N. Y.; James P. O'Mara; one-story garage and storage station, 50x50.

Long Island City, L. I., N. Y.; J James Brown, 44th street and Broadway, New York; one-story garage and storage station; northeast corner Allen and Hulst streets; $30,000.

Long Island City, L. I., N. Y.; John Hinch, Graham and Maryland avenue; one-story brick garage; $15,000.

Long Island City, L. I., N. Y.; Waverly Building Corporation, 44 Court street, Brooklyn; one-story garage, at Washington place and Jackson avenue; $35,000.

Mt. Kisco, N. Y.; C. S. Brown, 14 Wall street, New York; two-story frame and stucco garage, 50x70; $15,000.

New York, N. Y.; George D. Engineering Co., Inc., 43 West 37th street; two and three-story garage and service station, at 529-33 West 55th street; $175,000.

New York, N. Y.; Richmond Construction Co., 690 Broadway, Brooklyn; one-story brick garage, at Whitlock avenue and Barrette street; $20,000.

New York, N. Y.; Marcus & Goldstein, 170 East 96th street; two-story brick and stone garage, at 340 West 40th street.

New York, N. Y.; John W. Goff, 309 Broadway; one-story brick garage; northwest corner Jerome avenue and 177th street; $50,000.

New York, N. Y.; John Brown, 614 West 146th street; one-story brick public garage, at 51 Jumel place; $60,000.

New York, N. Y.; Colonial Land & Stone Co., 650 West 49th street; two-story brick garage, at 643 West 50th street; $35,000.

New York, N. Y.; Hup Realty Co., 229 East 38th street; one-story brick and frame garage, at 317-21 East 38th street; $30,000.

New York, N. Y.; A. J. Goodwin, 332 East 35th street; two-story brick public garage, at 332-36 East 35th street; $60,000.

New York, N. Y.; Jacob Zimmerman, 557 East 160th street; one-story garage; $50,000.

New York, N. Y.; M. J. P. Jacobs, 326 Audubon avenue; one-story brick garage; $40,000.

New York, N. Y.; Isaac Shore, care of M. Talsky, 32 Avenue C; one-story brick garage, at 804 East Fifth street; $10,000.

New York, N. Y.; Willis Construction Co., 10 West 143rd street; one-story garage; northwest corner 174th street and Carter avenue; $18,000.

New York, N. Y.; D. Riordan, 237 South street; one-story brick garage, at 402-6 Cherry street; $20,000.

Yonkers, N. Y.; August Bushmeaster, 194 McLean avenue; one-story brick garage; $12,500.

Yonkers, N. Y.; N. Treiano and F. Tucco, 182 Oak place; one-story brick garage, at 167-69 Willow street; $15,000.

Cincinnati, O.; Anton Schwallie; one-story reinforced concrete garage, 20x20; $25,000.

Cincinnati, O.; Peter Cassinelli, 1507 Dana avenue; one-story brick garage.

Cincinnati, O.; John Miller, 666 Steiner street; one-story brick garage.

Cincinnati, O.; Frank Pretthoff, 28 Lynn street; one-story brick garage.

Cleveland, O.; Vincent Brothers, 13412 Hartford road, East Cleveland, O.; two-story brick garage, 56x110, at 12805 Penobscot avenue; $10,000.

Cleveland, O.; C. H. Schsey, 505 Superior building; one-story sales rom, at 1375 East 33rd street; $15,000.

Dayton, O.; Peter Klinger, 235 Grafton avenue; one-story brick garage.

Eaton, O.; Stanley Bower; one-story concrete public garage, 30x60; $10,000.

Eaton, O.; Frances Van Ansdal; one-story brick and concrete public garage, 48x136; $18,000.

Norwood, O.; Fred Blasing, Main street and Cleneay avenue; one-story brick public garage, 107x50.

Norwood, O.; Truck Delivery Co., 4424 Ashland avenue; one-story public garage, 140x229, at Montgomery and Hopkins avenues; $75,000.

Norwood, O.; William Etter, 4923 Pine street; one-story fireproof garage.

Norwood, O.; A. Streicher, 2516 Shanmoore avenue; one-story concrete garage.

Toledo, O.; Clover Leaf Realty Co.; one-story brick and frame garage, 109x40; $9000.

Troy, O.; Hemm Brothers, Piqua, O.; one-story brick and concrete garage, 90x125, at Market and Race streets; $20,000.

Bedford, Pa.; King Motor Co.; two-story brick and concrete commercial garage, 60x295.

Hazleton, Pa.; Pilner Brewery Co.; two-story brick and concrete garage, 45x80; $25,000.

Pittsburgh, Pa.; David Rowland, Conestoga building; one-story brick and stone trim commercial garage, 90x100; $65,000.

Pittsburgh, Pa.; A. W. King, care of King Motor Co., Bedford, Pa.; two-story commercial garage, 60x209.

Scranton, Pa.; L. Reisman, Miller building; two-story brick public garage, 80x200; $150,000.

Wilkes-Barre, Pa.; A. H. Bleckley, 124 West River street; one-story stone garage; $15,000.

Williamsport, Pa.; Durkin Brothers, rear 15 Public square; one-story brick public garage, 45x100; $20,000.

Bristol, Tenn.; Shelby Automobile Co.; one and two-story garage, 60x200 and 70x160.

Dayton, Tenn.; Dayton Automobile Co.; one and two-story brick and frame garage, 70x100; $25,000.

Shelbyville, Tenn.; Jacobs Automobile Co.; one and two-story brick garage, 60x150; $30,000.

Pittsburgh, Tex.; F. J. Phillips, Greenville, Tex.; one-story garage, 100x100. Lessee, J. T. Webster Motor Co.

Cape Charles, Va.; Fitzhughs Automobile Co.; one-story fireproof garage, 78x125; $30,000.

Norfolk, Va.; Travelers' Garage; three-story public garage, 120x238, at Plume and Cove streets; $200,000.

Portsmouth, Va.; Arcade Garage Corporation; two-story garage and repair shop; $120,000.

Portsmouth, Va.; L. Kootz; two-story brick and stone trim garage, 60x113.

Milwaukee, Wis.; S. Buchbinier, 545 Van Buren street; one-story garage, 70x65, at Marshall and Jackson streets; $15,000.

Neilsville, Wis.; Neilsville Auto Co.; two-story brick and reinforced concrete garage, 90x104; $55,000.

Reedsburg, Wis.; John Snesler; one-story garage and filling station, at Railroad and South Walnut streets.

Sheboygan, Wis.; Side Garage Co., South 21st street and Indiana avenue; two-story public brick garage, 44x120; $55,000.

The **WASHBURN** *Torch*

A Real Measure of $25.00 Worth

The real measure of value is *not* how much you pay for a thing, but how much it will pay *you*.

We have nothing to conceal in the price of the Washburn Torch. It is $25.00, from your jobber or from us. This price is arrived at in exactly the same manner that you arrive at *your* prices—cost plus a fair profit.

Consider the Washburn Torch as an investment. As previous advertisements have informed you, the Washburn is a gas-and-air-burning torch developing 5300 degrees of heat from Prest-o-lite gas and compressed air (2 lbs. pressure or over). A range of 4000 degrees of this intense heat may be controlled instantly to just the heat you require. The flame is always *needle pointed* and never pops out. The extra tips furnished make the Washburn an Oxy-Acetylene torch when you so desire.

Here you have in *one* torch all that can be found in *any* torch—and then some! A soldering tip, and combination torch-and-soldering tip does away with your soldering iron and blow torch.

With the Washburn Torch in your possession you are instantly ready for every job that comes into your shop requiring soldering, light welding, lead burning, brazing or oxy-acetylene work. You assign highly paid men to work of this kind. When you put into their hands a tool that enhances their skill, saves their time, applies to any job and does a *better* job, you are not long in earning the price of that tool. One demonstration is enough to prove that *the Washburn Torch is your money's worth.*

The outfit includes Complete Washburn Torch, Mixer (gas and air regulator) two hose lengths, hose connections, four varied oxy-acetylene tips, and combination torch-and-soldering tip. Get it from your jobber, or from us direct if he can't supply you. Complete information for the asking.

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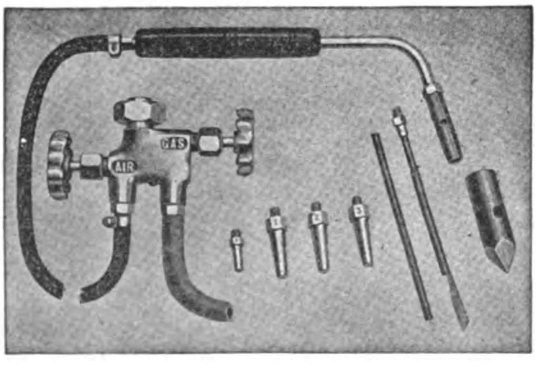
309 DESPATCH BLDG. KOKOMO, INDIANA



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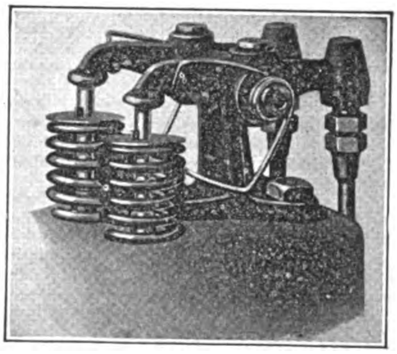

Guaranteed to eliminate from 75% to 90% of that clacking noise caused by the action of push rods and rocker arms in Buick, Chevrolet, Oakland, Oldsmobile, Scripps-Booth motors. Adds pep to motor. Eliminates continual tappet adjustment. Dealers say it is the fastest selling accessory they ever saw.

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967 Woodward Ave. Detroit, Mich.

CONTRACTS AWARDED.

Birmingham, Aa.; E. F. Hettrick Engineering Co.; one-story brick and concrete garage, 100x190; for Park Development Co.; $50,000. Lessee, Whitman-Foyd Motor Co.

Little Rock, Ark.; Johnson & Dickerson; one-story garage; for Shoemaker Automobile Livery; $45,000.

Greenwich, Conn.; J. M. Darling, Jr., Co., 280 South Main street; two-story private garage, 100x40; for R. T. Bailey.

New Haven, Conn.; Larkin Carey Co., 166 Brewery street; one-story garage, at 170 Whalley avenue; for L. C. Realty Co.; $30,000.

Wilmington, Del.; Smyth Construction Co., 826 Orange street; one-story sales and service station, 41x120, at 840-42 French street; for Delaware Cycle Co., 1105 Orange street; $60,000.

Washington, D. C.; L. P. Steaurt & Brother, 138 12th street, northeast; two-story public garage, 67x105, at 145 12th street, northeast; $18,000.

Daytona, Fla.; Fuquay & Gheen; one-story terra cotta and tile wall automobile building, 76x110; cement floors; install electric elevator; for W. B. Goldberg; $75,000.

Chicago, Ill.; N. Anyalone, 951 North Trumbull avenue; one-story brick garage.

Chicago, Ill.; C. Anderson, 959 North Parkside avenue; one-story brick garage.

Chicago, Ill.; John Appel, 7637 Merrill avenue; one-story brick garage.

Chicago, Ill.; J. A. Christensen, 7219 Vernon avenue; one-story brick garage.

Chicago, Ill.; Victor Dake, 5001 Barry avenue; one-story brick garage.

Chicago, Ill.; Elizabeth Hoffman, 2014 Howe street; one-story brick garage.

Chicago, Ill.; Alfred Carlson, 3240 North Racine avenue; one-story concrete garage.

Chicago, Ill.; Joseph Kurch, 3823 Fullerton avenue; one-story concrete garage.

Chicago, Ill.; Theodore Carlberg, 11235 Union avenue; one-story brick garage.

Chicago, Ill.; H. Goldstein, 1429 North California avenue; one-story brick garage.

Chicago, Ill.; Geraci Brothers, 1118 West Grand avenue; one-story brick garage.

Chicago, Ill.; W. V. Kuszner, 2621 North Harding avenue; one-story brick garage.

Chicago, Ill.; William T. Kolb, 4148 North Harrison street; one-story brick garage.

Chicago, Ill.; Max Lemberg, 1548 South St. Louis avenue; one-story brick garage.

Chicago, Ill.; A. Larson & Co., 4241 North Sacramento avenue; one-story brick garage.

Chicago, Ill.; James A. McAndrews, 7630 Constance avenue; one-story brick garage.

Chicago, Ill.; Charles Youngberg, 662 Diversey parkway; one-story brick garage.

Chicago, Ill.; M. Providence, 649 North St. Louis avenue; one-story concrete garage.

Chicago, Ill.; F. G. Reiss, 434 South Central Park avenue; one-story brick garage.

Chicago, Ill.; Mr. Schulz, 4038 North Ridgeway avenue; one-story brick garage.

Chicago, Ill.; J. Murphy, 6844 Waus avenue; one-story brick garage.

Chicago, Ill.; S. Schreiber, 1488 Winnemac avenue; one-story brick garage.

Chicago, Ill.; A. Morderstorp, 4818 Gladys avenue; one-story brick garage.

Chicago, Ill.; E. Holl, 614 North Le Claire avenue; one-story frame garage.

Chicago, Ill.; A. Heyer, 2002 Hastings street; one-story frame garage.

Chicago, Ill.; N. H. Holgate, 7310 Harvard avenue; one-story frame garage.

Chicago, Ill.; F. Hilliard, 3721 West 22nd street; one-story frame garage.

Chicago, Ill.; R. W. Huptner, 6744 North Ashland avenue; one-story frame garage.

Chicago, Ill.; J. C. Horton, 1440 East 71st place; one-story frame garage.

Chicago, Ill.; J. Horlich, 1624 South St. Louis avenue; one-story frame garage.

Chicago, Ill.; L. O. Hyming, 2449 North Kostner avenue; one-story frame garage.

Chicago, Ill.; John Jirousek, 1530 South Keeler avenue; one-story frame garage.

Chicago, Ill.; Harry B. Jenkins, 620 Woodlawn pike; one-story frame garage.

Chicago, Ill.; Edward Jensen, 2241 North Spaulding avenue; one-story frame garage.

Chicago, Ill.; Paul Jacobs, 4915 Iowa street; one-story frame garage.

Chicago, Ill.; E. Juergensen, 3310 North Albany avenue; one-story frame garage.

Chicago, Ill.; John Kvelton, 5527 South Winchester avenue; one-story frame garage.

Chicago, Ill.; Albert Klawekofsky, 5917 South Wood street; one-story frame garage.

Chicago, Ill.; John Kuriv, 2052 West Garfield boulevard; one-story frame garage.

Chicago, Ill.; Mrs. G. Kalnenska, 4050 Waveland avenue; one-story frame garage.

Chicago, Ill.; H. Pomerance, 3444 West 63rd street; one-story frame garage.

Chicago, Ill.; Cyril Popilka, 1452 South Kedvale avenue; one-story frame garage.

Chicago, Ill.; L. W. Post, 3334 Lexington street; one-story frame garage.

Chicago, Ill.; W. Pullman, 4026 North Troy street; one-story frame garage.

Chicago, Ill.; E. O. Peterson, 1052 North Parkside avenue; one-story frame garage.

Chicago, Ill.; C. Pederson, 708 Christiana avenue; one-story frame garage.

Bluffton, Ind.; Charles Sanders, Portland, Ind.; one-story garage, 60x100; for O. E. Shafer, 510 South Morgan street; $25,000.

Hammond, Ind.; Rufus Danner, 1000 Park avenue; one-story garage, 150x150; for Bunnell Auto Sales Co., 508 Hohman street; $30,000.

Carroll, Ia.; C. F. Reimer, Marshalltown, Ia.; one-story garage and sales room, 82x156; for Western Grocery Co.; $50,000.

Des Moines, Ia.; A. Sugarman, Masonic temple; one-story garage, 130x135; at 515 West Fourth street; for Brown Auto & Supply Co., 317 West Grand avenue; $50,000.

Grinnell, Ia.; C. E. Ennis; one-story garage, 50x165; for Hagen Brothers; $30,000.

Glenview, Ky.; John Botts; two-story garage, 45x60; for R. B. Hickman.

Baltimore, Md.; Alfred S. Hunley, 2205 Roslyn avenue; one-story garage, at 3100 Windsor avenue; $10,000.

Baltimore, Md.; Consolidated Engineering Co., 243 Calvert building; one and two-story garage, 57x120, at 609-13 Fremont avenue; $30,000.

Pocomoke, Md.; McIver Construction Co., 1802 Whitmore avenue, Baltimore; one-story garage, 60x150 and 60x120, for L. M. Cloggs; $50,000.

Attleboro, Mass.; E. O. Dexter; one-story garage, 57x200; for C. L. Rogers; $38,000.

Boston, Mass.; John B. Broderick, 101 Tremont street; two-story public garage, 100x100, at Second and Dorchester streets.

Boston, Mass.; Tuck, Gilman & Snyder, 34 School street; two-story public garage and repair shop, 200x75, for L. K. Alintuck; $150,000.

Greenfield, Mass.; Perry & Siano; two-story garage, 152x64, for J. Schick; $30,000.

Holyoke, Mass.; Joseph La Libertio, 263 Oak street; three-story public garage, 60x150; for Lachapelli & Bouger; $125,000.

Lawrence, Mass.; D. J. Dorman, 49 Forest street; one-story garage, 38x18, for J. Naistadt, 75 Bay State road; $15,000.

Somerville, Mass.; F. H. Harris, 120 Perkins street; one-story public garage, 132x22, at 364-66 Somerville avenue; for Albert F. McMillan, 7 Columbus avenue; $15,200.

Battle Creek, Mich.; R. G. Phelps, 731 Maple street; two-story public garage, 128x132; for Cushman Auto Sales Co.; $200,000.

Battle Creek, Mich.; Standard Oil Co., 606 South Michigan avenue; one-story filling station; $10,000.

Detroit, Mich.; Glasser & Hoffman, 190 Garfield avenue; one-story garage, 58x120.

Jackson, Mich.; North Griffin; one-story garage, 55x150; for W. J. Dowsett, 224 Courtlandt street; $65,000.

Kalamazoo, Mich.; Byers Brothers; two-story garage, 61x81, at Fourth street and G. R. & I. road; for Kalamazoo county; $20,000.

Kalamazoo, Mich.; J. J. Campbell, Court House; one-story private garage, 60x80; $35,000.

Lansing, Mich.; H. G. Christman Co.; one-story public garage; for W. W. Brown; $15,000.

Port Huron, Mich.; August Schultz; two-story sales room and service station, 100x224; for A. B. Parbet; $100,000.

Minneapolis, Minn.; Victorson Construction Co., 322 South Fourth street; one-story public garage, 50x100, at 811 South Sixth street; for Henry J. Bardin, 807 South Sixth street; $12,000.

Minneapolis, Minn.; Carlstead Brothers, 542 Builders exchange; one-story garage, 50x80; for Clover Leaf Creamery Co.; $15,000.

St. Louis, Mo.; Kellerman Construction Co., Victoria building; one-story garage, 150x150, at Chansing and Lawton streets; for Columbia Taxicab Co., 4539 Delmare avenue; $66,000.

Kearney, N. J.; F. J. Cope, 584 South Orange avenue, Newark, N. J.; one-story public garage, at 336-38 Kearney avenue; for Edward L. Weile, 340 Kearney avenue; $12,000.

Newark, N. J.; Edward Petti, 240 Oliver street; one-story public garage, at Passaic avenue and Blanchard street; for John Ebersberger, 188 Wilson avenue; $30,000.

Newark, N. J.; Edel Resnick, 180 Howard street; one-story public garage; $15,000.

Newark, N J.; M. Berkowitz, 61 Hillside place; one-story brick and limestone public garage, at 1196 Broad street; $35,000.

Newark, N. J.; Griffin & Tynan, 520 Union building; one-story commercial garage; $18,000.

Orange, N. J.; Frank Cope, 584 South Orange avenue, Newark, N. J.; 25 individual garages, rear 104-6 Center street; for Charles H. Phillips Realty Co., 170 Parker street, Newark, N. J.; $10,000.

Trenton, N. J.; Stephen Dierneit, 440 Hanover street; one-story public garage, 40x101 and 20x81, at 318-20 South Broad street, for Christian Kline, 228 Cummings avenue; $13,000.

Lancaster, N. Y.; B. I. Croaker, Niagara Life building, Buffalo, N. Y.; one-story garage, 32x90; for Depew & Lancaster Light, Power and Conduit Co., 173 Central avenue; $10,000.

New York, N. Y.; Sobray Whitcomb, 105 West 40th street; four-story garage, at 148-50 East 24th street; for Scharlin Brothers, 238 East 20th street; $100,000.

Pulaski, N. Y.; Peter Raby, 23 West Cuyuga street; one-story garage, 60x100; for Motor Sales Corporation.

Cleveland, O.; Windsor Construction Co., Swetland building; one-story garage, 65x130; for Hugh O'Neill; $15,000.

Brownsville, Pa.; Brownsville Construction Co.; two-story commercial garage, 65x180, at Fifth avenue and Market street; for C. C. Garlett; $60,000.

Dormont, Pa.; Central Homes Co.; one-story brick commercial garage, 60x96; for Alexander Garage Co.; $10,000.

Folcroft, Pa.; C. B. Shaw; three one-story garages, 14x20 each.

McAdoo, Pa.; John Dvorshock, 22 North Manning street; one-story public garage, 50x100; for Andrew Lukas, 115 North Tamaqua street; $20,000.

Pittsburgh, Pa.; Murdoch-Transfer & Storage Co., 546 Neville street; one-story brick garage, 243x50.

Northfield, Vt.; Cross Brothers Co.; two-story garage, 160x60; $10,000.

Milwaukee, Wis.; R. P. Hansen, 529 26th avenue; one-story garage, 100x160, at Ogden and Farwell streets.

Milwaukee, Wis.; Packard Motor Car Co., 35th street and Grand avenue; one-story garage and repair shop, 80x150; $30,000.

Concerns Engaged in Distribution of Automotive Equipment

The names published below were submitted through various sources, and from the viewpoint of many manufacturers of automotive equipment, supplies, accessories, etc., are listed as jobbers. It must be admitted, that from the standpoint of manufacturers generally there are great variances as applied to the term "jobber." However, as this list contains the names of concerns who are recognized by many manufacturers as jobbers, it is only reasonable to assume that all producers seeking the patronage of the trade will draw their conclusions from their own point of view as to what concerns are entitled to the distinction of being a jobber.

ALABAMA.

Hale Buggy Mfg. Co., 310 W. 15th St	Anniston
Johnston & Co	Athens
Long Lewis Hdw. Co., 2006 Second St	Bessemer
Drennen Motor Car Co., Ave. C & 20th St	Birmingham
Electric Auto Supply Co., 2104 First Ave	Birmingham
Moore Handley Hdw. Co., 1st Ave. & 20th	Birmingham
Southern Tire & Accessories Co., 526 N. 20th St	Birmingham
United Auto Supply Co., 421 S. 20th st	Birmingham
Hudson, J. A. & Son	Demopolis
Auto Supply Co., 116 N. Foster	Dothan
Baker Bush Auto Supply Co., 106 N. St. Andrews Ave	Dothan
Clendlener & Co., B. W	Dothan
Clifton Hdw. Co., 136 Broad St	Eufaula
Gadsden Hdw. & Supply Co., Broad St	Gadsden
Lasetis, E	Greenville
Jarvis Supply Co., 115 Fovernment	Mobile
McGowin Lyons Hdw. & Sup. Co., 113 N. Water St	Mobile
Marine Supply Co., Water & Francis Sts	Mobile
Barnett Hdw. Co., G. W., 116 Commerce St	Montgomery
Hobble Motor Car Co., 217 Lee St	Montgomery
Johnson Tire & Auto Co., Bibb & Moulton Sts	Montgomery
Loeb Hdw. Co., 120 Commerce St	Montgomery
Standard Auto Supply Co., 128 Lee St	Montgomery
Dowling, G. P. Hdw. Co	Ozark
Schuster, Benj. L	Selma
Siegel Co., 19 Broad St	Selma
Tissier Hdw. Co., 10 Broad St	Selma

ARIZONA.

Old Dominion Rubber Co	Globe
Central Commercial Co	Kingman
Attaway Latham Hdw. Co	Mesa
Roy & Titcomb, 301 Morley	Nogales
Bennett Auto Supply Co., 326 N. Central Ave	Phoenix
Central Auto Supply Co., 517 N. Central Ave	Phoenix
Motor Supply Co., 315 N. Central Ave	Phoenix
Palace Hdw. & Arms Co., 14 W. Washington	Phoenix
Rudolph, Ed., 316 E. Adams St	Phoenix
Smith Hughes & Co., 506 N. Central Ave	Phoenix
Western Auto Supply Co., 141 N. Central Ave	Phoenix
Motor Supply Co., 39 N. Sixth St	Tucson

ARKANSAS.

Atkinson Williams Hdw. Co., Fourth St. & Rogers	Fort Smith
Meister Bros. Bracht Co., 201 S. Sixth St	Fort Smith
Speer Hdw. Co., 205 Rogers	Fort Smith
Yantis Harper Co., 1201 Garrison	Fort Smith
Morris Clyde, 220 Ouachita Ave	Hot Springs
Johnson Berger & Co., Church & Huntington	Jonesboro
Dobson Lester & Patton	Lewisville
Arkansas Auto Appliance Co., 120 Scott	Little Rock
Bracy Bros. Hdw. Co., 510 Main St	Little Rock
Enterprise Harness Co., 124 W. Fourth St	Little Rock
Motor Car Supply Co., 917 Main St	Little Rock
Rossner Auto Supply Co., 803 Main St	Little Rock
Voss Barbee Mfg. Co., 618 E. Markham	Little Rock
Fox Bros. Hdw. Co., 417 Main St	Pine Bluff
Benton Country Hdw. Co	Rogers
Logan Electric Co., 202 E. Broad St	Texarkana
Hankins, C. W. & Sons	Warren

CALIFORNIA.

Glenn, W. C., 14 N. Hidalgo	Alhambra
Bakersfield Garage & Auto Sup. Co., 20th St	Bakersfield
Pioneer Mercantile Co., 1526 20th St	Bakersfield
Evans, S. Geo. Co., 2055 University	Berkeley
Motor Supply Co., 2286 Shattuck	Berkeley
Putsker, Otto A., 2284 Shattuck	Berkeley
Imperial Valley Hdw. Co	Brawley
Valley Auto Supply Co., Eighth & Main Sts	Brawley
Imperial Valley Hdw. Co	Calexico
Varney Bros. Co., Second & Paulin Sts	Calexico
Williams, H. E	Cassel
Wards Hdw. Store	Concord
Imperial Valley Hdw. Co	El Centro
Motor Hdw. & Equipment Co., Fifth & Main	El Centro
Varney Bros. & Co., Main St. & P. R. R	El Centro
Humboldt Auto Supply Co., 219 Fifth St	Eureka
Kramer, H. J., 323 Fifth St	Eureka
Broadway Auto Equipment Co., 1239 J St	Fresno
Chanslor & Lyon Co., Merced St. & Van Ness	Fresno
Evins Rubber & Supply Co., Merced & J Sts	Fresno
Fresno Hdw. Co., 1247 J St	Fresno
Inland Iron Co., 922 H St	Fresno
Kutner Goldstein Co., 1801 Mariposa	Fresno
Smith Webb Auto Supply Co, 1302 I St	Fresno
Wells Brown Co., Van Ness Blvd. & Kern St	Fresno
Bosserman Hdw. Co., 339 Brand Blvd	Glendale
Hollywood Motor Supply Co., 6130 Hollywood Blvd	Hollywood
Howland, F. C., 6650 Hollywood Blvd	Hollywood
Imperial Valley Hdw. Co	Holtville
Imperial Valley Hdw. Co	Imperial
Varney Bros. & Co	Imperial
Superior Cyclery, Pine & School Sts	Lodi
Buszek & Cosart	Lindsay
Adams, Herb. E., Ocean & Locust	Long Beach
American Auto Supply Co., 247 American	Long Beach
Auto Tire & Supply Co., First St. & American	Long Beach
Christensen Auto Supply Co., 142 American	Long Beach
Wiley Motor Stores Co., 218 American Ave	Long Beach
Bill, John T. & Co., 846 S. Main St	Los Angeles
Broadway Auto Equipment Co., 1227 S. Main St	Los Angeles
Chanslor & Lyon Co., 1200 S. Grand Ave	Los Angeles
Colyear Motor Sales Co., 1222 S. Hill	Los Angeles
Ewing Lewis Co., Equitable Bldg	Los Angeles
Featherstone, E. A., 958 S. Los Angeles	Los Angeles
Foster, E. D., 4223 Vermont	Los Angeles
Hamburger, A. & Sons, B'way, Eighth & Hill Sts	Los Angeles
Harper & Reynolds Co., 152 N. Main St	Los Angeles
Hughson & Merton, Marsh Strong Bldg	Los Angeles
James & Thomas, 8773 Figueroa	Los Angeles
Jones, C. N. & F. W., Equitable Bldg	Los Angeles
McCoy Motor Supply Co., 1020 S. Los Angeles	Los Angeles
Masterson, Jos. A. & Co., 1213 S. Hope St	Los Angeles
Motor Car Supply Co., 920 S. B'way	Los Angeles
National Rubber & Supply Co., 610 S. Olive	Los Angeles
Pacific Motor Supply Co., 924 S. Main St	Los Angeles
Reighard Auto Supply, E. M., 735 S. Figueroa	Los Angeles
Union Hdw. & Metal Co., 411 E. First	Los Angeles
United Auto Supply Co., 1100 S. Main	Los Angeles
Vanderpool, D., 1044 S. Main St	Los Angeles
Waterhouse & Lester Co., 345 N. Los Angeles	Los Angeles
Weinstock, Nichols Co., 1211 S. Olive	Los Angeles
Western Auto Supply Co., 1200 S. Main	Los Angeles
Western Rubber & Supply Co., 1011 S. Olive St	Los Angeles
Los Catos Auto Supply Co., 16½ Santa Cruz Ave	Los-Catos
Madera Hdw. Co., 116 South D St	Madera
Northern Rubber & Supply Co., 404 D St	Marysville
Roberts, Geo. W., 324 D St	Marysville
Hanna Auto Supply Co., Tenth & J Sts	Modesto
Modesto Auto Supply Co., 916 J St	Modesto
Osvald Hdw. Co., 536 Tenth St	Modesto
Quien, P. M., 211 Third St	Napa
Homeland Building Co., 25 E. 8th St	National City
Berg Auto Supply Co., 2065 Broadway	Oakland
Chanslor & Lyon Co., 2428 Webster	Oakland
Day, E. J. & Co., 140 12th St	Oakland
Dinsmore Bros., 4007 Piedmont	Oakland
Fry, Perry C., 3300 E. 14th St	Oakland
Hogan & Leder, 331 14th St	Oakland
Jones Auto Supply Co., 2505 Broadway	Oakland

Kanouse & Foote, Jackson St. & 1st ...... Oakland
Meese, Walter, 279 12th St ...... Oakland
Record Tire Co., 2279 Broadway ...... Oakland
United Auto Supply Co., 1631 Broadway ...... Oakland
Waterhouse & Lester Co., 2500 Webster ...... Oakland
Weinstock, Nichols Co., 2300 Broadway ...... Oakland
Western Hdw. & Iron Co., 430 Ninth St ...... Oakland
Wright, Roy M. ...... Pacific Grove
Western Rubber & Supply Co., 55 W. Colorado St. ...... Pasadena
Ye Sportsman's Shop ...... Placerville
Barnes, S. B., 182 W. Third ...... Pomona
Davies, E. W., 246 S. Thomas St ...... Pomona
Hayden's Auto Accessories, 517 Main St ...... Porterville
Stice's Auto Supply Store, 613 Main ...... Red Bluff
McCormick Saeltzer Co ...... Redding
Redlands Auto Supply Co., 13 E. State ...... Redlands
Funk, Geo. S. & Son, 108 S. Pacific ...... Redondo Beach
Auto Equipment & Supply Co., 624 W. Eighth ...... Riverside
Riverside Motor Supply Co., 576 Eighth St ...... Riverside
Kimball Upson Co., 607 K St ...... Sacramento
Remick, Jas. S. Co., 12th & K Sts ...... Sacramento
Schaw, Batcher Co., 211 J St ...... Sacramento
Thomson, Diggs Co., Third and R Sts ...... Sacramento
United Auto Supply Co., 1021 J St ...... Sacramento
Peck, E. C., 432 Third St ...... San Bernardino
Perkins & Hager, 595 Third St ...... San Bernardino
Auto Specialty Co., 10th St. & Broadway ...... San Diego
Bittaker, Henry F., 1256 Fourth St ...... San Diego
Cornell, Mead, 301 W. Broadway ...... San Diego
Gavin, Williams Co., 1300 Fifth St ...... San Diego
Grable, H. D., 1198 Sixth St ...... San Diego
Kern's Auto Sup. Station, 3825 Fifth St ...... San Diego
Laursen, Jas. P., 1111 Market St ...... San Diego
Maryland Auto Supply Co., 7th & F Sts ...... San Diego
Motor Hdw. & Equipment Co., 1328 Fifth St ...... San Diego
The Auto Shop, 730 B St ...... San Diego
Western Auto Supply Co., 1364 Fifth St ...... San Diego
Adair, Leslie G. Co., 461 Market ...... San Francisco
Bailey, Drake Co., 149 E. Montgomery ...... San Francisco
Baker, Hamilton & Pacific Co, 7th & Townsend .. San Francisco
Beckley, Ralston Co., 449 Turk St ...... San Francisco
Bill, Bernard I., 543 Golden Gate Ave ...... San Francisco
Caldwell Sales Co., 320 Market ...... San Francisco
Chanslor & Lyon Co., 1238 Van Ness ...... San Francisco
Coates, Alfred H., 41 Spear St ...... San Francisco
Cobbledick, Frank M. Co., 593 Mission ...... San Francisco
Consolidated Sales Co., 35 Montgomery ...... San Francisco
Cowan, Norman Co., Rialto Bldg ...... San Francisco
Detsch & Co., 1111 Post Ave ...... San Francisco
Dunham, Carrigan & Hayden Co., Kan. & Div. Sts. San Francisco
Electric Appliance Co., 807 Mission St ...... San Francisco
Ewing, Lewis Co., Underwood Bldg ...... San Francisco
Haven & Haven Co., 508 Mission St ...... San Francisco
Hughson & Merton Co., 77 O'Farrell St ...... San Francisco
Jackson, W. E. & W. H., 785 Mission St ...... San Francisco
Jonas, C. N. & F. W., 111 New Montgomery .... San Francisco
Lathan Auto Supply Co., 1521 Van Ness ...... San Francisco
Leavitt, J. W. & Co., 301 Golden Gate Ave ...... San Francisco
McCoy Motor Supply Co, 1624 Bush St ...... San Francisco
Manhattan Electric Supply Co., 604 Mission .... San Francisco
Marwedel, C. W., 76 First St ...... San Francisco
Merry, Edwin F., 200 Van Ness ...... San Francisco
Pacific Motor Supply Co., 1438 Market St ...... San Francisco
Pacific Motor Sales Corp., 404 Golden Gate Ave .. San Francisco
Peterson, F. Somers Co., 60 Pine St ...... San Francisco
Reed & De Yonge, 1219 Van Ness ...... San Francisco
Henstrom, Frank O. Co., Van Ness & Golden Gate San Francisco
Revalk, John F., 316 Gough St ...... San Francisco
Rex Auto Supply Co., 200 Golden Gate Ave .... San Francisco
Scovel Iron Store Co., 754 Howard St ...... San Francisco
Service Supply Co., 350 Market St ...... San Francisco
Spotswood, Helfer Co., 258 First St ...... San Francisco
Starr Motor Supply Co., 1131 Van Ness, ... San Francisco
United Auto Supply Co., 683 Mission ...... San Francisco
Waterhouse & Lester Co., 540 Howard St ...... San Francisco
Weinstock, Nichols Co., 538 Golden Gate ...... San Francisco
Wolfe Lumber & Hdw. Co., 19th & Folsom Sts .. San Francisco
Campbell, Collins Co., 241 S. First ...... San Jose
San Jose Auto Supply Co., 246 N. First St ...... San Jose
San Pedro Motor Sup. & Vul. Wks., 129 5th St ...... San Pedro
Livesays, 214 E. Fourth ...... Santa Ana
Nickey Hdw. Co., F. P., 119 E. Fourth St ...... Santa Ana
Freeze & Freeze, 700 State St ...... Santa Barbara
McGregor & Sons, 1215 State ...... Santa Barbara
Crescent Bay Motor & Supply Co., 1501 Ocean .... Santa Monica
Jenkins, Henry, 208 Davis St ...... Santa Rosa
Imperial Valley Hdw. Co ...... Seeley
Branch's, 309 Weber E ...... Stockton
California Auto Supply Co., 246 N. Eldorado ...... Stockton
Remick, Jas. S. Co., 301 E. Weber ...... Stockton
Stockton Auto Supply Co., 208 Eldorado St ...... Stockton
Williard Hdw. Co., 25 N. Hunter ...... Stockton
Cox Hdw. Co ...... Ukiah
Ukiah Auto Supply Co., 203 S. State St ...... Ukiah
Weed Mercantile Co ...... Weed
Moebes, Lowry & Uhl, Court & Center Sts ...... Visalia
Danforth, C. H., 144 S. Greenleaf ...... Whittier

COLORADO.

General Auto Supply Co., 212 N. Tejon St ...... Colorado Springs
Weber Auto Supply Co., 6 E. Kiowa St ...... Colorado Springs
Auto Accessory & Speedometer Co., 1558 Broadway ...... Denver
Auto Equipment Co., 14th & Lawrence ...... Denver
Bilbrough, Jones Hdw. Co., 1015 15th St ...... Denver
Denver Auto Goods Co., 1600 Broadway ...... Denver
Foss, M. L., 1725 California ...... Denver
Foster Auto Supply Co., 138 16th ...... Denver
Hendrie & Bolthoff Mfg. & Sup. Co., 1635 17th ...... Denver
Mayer, Geo. Hdw. Co., 1518 Araphoe ...... Denver
Quinn & McGill Motor Sup. Co., 1532 Broadway ...... Denver
Sweeney Elec. B. K. Co., 231 15th St ...... Denver
Wagman Auto Supply Co., 1606 Wilton St ...... Denver
Western Auto Supply Co., 1562 Broadway ...... Denver
Western Electric Co., 1425 Curtis St ...... Denver
Larkin Bros ...... Eaton
Greeley Auto Equip. Co., 921 Eighth St ...... Greeley
Moore Auto Supply & Tire Co., 1021 Eighth St ...... Greeley
McCue Merc. Co., W. F ...... Lamar
Kyle Elec. Co., 226 N. Union St ...... Pueblo
Motor Accessory & Tire Co., 905 N. Main St ...... Pueblo
Robinson, Gardner Hdw. Co., 105 W. Fourth St ...... Pueblo

CONNECTICUT.

Todd Rubber Co., 95 Main St ...... Ansonia
Woodford Tire & Supply Co., 338 Main St ...... Ansonia
Stanhard, Geo. R., 238 Main St ...... Branford
Alling Rubber Co. of Conn., 1126 Main ...... Bridgeport
American Hdw. Stores, 140 Middle St ...... Bridgeport
Ashmore Auto Supply Co., 53 Sterling ...... Bridgeport
City Auto Co., Fairfield & West Aves ...... Bridgeport
East End Auto Supply Co., 1390 Stratford ...... Bridgeport
Jaycox Rubber Co., 1044 Main St ...... Bridgeport
Jennings, Edwin M. Co., 277 Fairfield ...... Bridgeport
Post & Lester Co., 278 Fairfield ...... Bridgeport
Schweizer, George, 1222 E. Main ...... Bridgeport
Smith, Comstock Co., 603 Water St ...... Bridgeport
Todd Rubber Co., 377 Fairfield Ave ...... Bridgeport
Von Wettberg, E. F., 1188 Main St ...... Bridgeport
Case, Leon M., 10 Summer ...... Bristol
Alling Rubber Co. of Conn., 264 Main St ...... Danbury
Higson, Alfred H., 87 White St ...... Danbury
Jennings, Erwin M. Co., 48 Elm St ...... Danbury
Meeker, H. E., 86 White St ...... Danbury
Todd Rubber Co., 5 West St ...... Danbury
Abbott & Co., 246 Main St ...... Derby
O'Neill, G. M., Main St ...... East Hampton
Auto Supply Co., 265 Greenwich ...... Greenwich
Greenwich Hdw. Co., 325 Greenwich Ave ...... Greenwich
Morgan & White, 125 Thames ...... Groton
Alling Rubber Co., 167 Asylum ...... Hartford
Connecticut Auto Parts Co., 583 Franklin ...... Hartford
Jennings, Erwin M. Co., 41 Ann St ...... Hartford
Kelly Springfield Tire Sales Co., 338 Pearl St ...... Hartford
Knoek, L. S. & Co., 158 State St ...... Hartford
Metcalfe & Berry, 134 Church St ...... Hartford
Post & Lester Co., 112 Allyn ...... Hartford
Todd Rubber Co., 274 Trumbull ...... Hartford
Universal Auto Co., 136 Allyn St ...... Hartford
Alling Rubber Co. of Conn., 5 Colony St ...... Meriden
Griswold, Richmond & Glock Co., 2 Main St ...... Meriden
Todd Rubber Co., 87 W. Main St ...... Meriden
Connery, J. F., 96 Main St ...... Meriden
Fortin, W. L., 55 Rapallo St ...... Meriden
Lane, A. B., 570 Main St ...... Meriden
Harrison & Gould, 22 Broad St ...... Milford
Alling Rubber Co. of Conn., 240 Main ...... New Britain
Gogswell, T. H., 8 Chestnut St ...... New Britain
Hawker, A. G., 11 Elm St ...... New Britain
Rackliffe Bros. Co., 250 Park St ...... New Britain
Alling Rubber Co., 7 Church St ...... New Haven
Bronson & Townsend, 294 State ...... New Haven
Bushnell, N. T. Co., 259 State St ...... New Haven
Edgewood Hdw. Co., 843 Whalley ...... New Haven
Hessel & Hoppen Co., 30 Crown St ...... New Haven
Horton, Henry, 422 State St ...... New Haven
Jennings, Erwin M. Co., 347 Crown St ...... New Haven
Lightbourn & Pond Co., 33 Broadway ...... New Haven
Mersick, C. S. Co., 274 State St ...... New Haven
Post & Lester Co., 1085 Chapel St ...... New Haven
Smith, F. W., 31 Temple St ...... New Haven
Todd Rubber Co., 442 State St ...... New Haven
Weed & Co., 71 Elm St ...... New Haven
Alling Rubber Co. of Conn., 162 State ...... New London
Post & Lester Co., 392 Bank St ...... New London
Todd Rubber Co., 504 Bank St ...... New London
Norwalk Supply Shop, 29 Wall ...... Norwalk
Baird Tire & Supply Co., 331 Main ...... Norwich
Eaton, Chase & Co., 129 Main St ...... Norwich
Preston Bros., 209 Main St ...... Norwich
Todd Rubber Co., 60 Franklin ...... Norwich
Blish Hdw. Co., F. T., 825 Main St ...... South Manchester
Fox Cycle & Hdw. Co., 108 Washington ...... South Norwalk
Hardware & Auto Supply Co., 42 Water St ...... South Norwalk
Balmer & Ferris, 290 Main ...... Stamford
Cornish, L. H., 335 Fairfield ...... Stamford
Todd Rubber Co., 587 Main ...... Stamford
Brown, S. G., 119 Main St ...... Thompsonville
Thompsonville Hdw. Co., 114 Main St ...... Thompsonville
Lyford Hdw. Sporting Goods Co., Main & Water Sts. Torrington
Dickerman Hdw. & Supply Co ...... Wallingford
Todd Rubber Co., 47 N. Colony ...... Wallingford
Auto Shop, 462 W. Main St ...... Waterbury

Guilbert Supply Co., 126 E. Main St	Waterbury
Hamilton Hdw. Corp., 90 Bank St	Waterbury
Hotchkiss Co., 85 S. Main St	Waterbury
Jennings, Erwin M. Co., 436 Meadow St	Waterbury
Post & Lester Co., 186 Grand	Waterbury
Templeton, Chas. A., 13 E. Main St	Waterbury
Todd Rubber Co., 150 Grand Ave	Waterbury
Hitchcock Hdw. Co., Pythian Bldg	Watertown
Guyer & Sons, W. S., State St	Westport
Barnes Auto Tire Co., 7 Union St	Willimantic
Jordan Hdw. Co., 670 Main St	Willimantic

DELAWARE.

Stoops, J. T., 310 Delaware	New Castle
Automobile Supply Co., 905 Shipley St	Wilmington
Delaware Hdw. Co., 201 Shipley St	Wilmington
Ryan, Wm. H., 1300 French St	Wilmington
The Tire Shop Co., Delaware Ave. & West St	Wilmington

DISTRICT OF COLUMBIA.

Armentrout & Sons, 1710 14th St., N. W	Washington
Barber & Ross, 11th & G Sts., N. W	Washington
Central Auto Supply Co., 1004 Pennsylvania	Washington
Columbia Auto Supply Co., 2525 Sherman Ave	Washington
D. C. Auto Supply Co., 1415 14th St	Washington
Davis & Child, 1110 14th St., N. W	Washington
Doubleday, Hill Electric Co., 715 12th St., N. W	Washington
Federal Auto Supply Co.. 477 Pennsylvania	Washington
Hayden, E. A. & Co., 331 Pennsylvania	Washington
May, F. P. Hdw. Co., 469 C. St., N. W	Washington
Miller, Dudley Co., 1625 14th St, N. W	Washington
Modern Auto Supply Co., 917 H St., N. E	Washington
National Elec. Sup. Co., 1328 New York Ave., N. W	Washington
Neely, R. W. Co., Woodward Bldg	Washington
Rubel, Chas. & Co., 1621 L St., N. W	Washington
Rudolph & West Co., 1332 New York Ave., N. W	Washington
Smithdeal Hdw. Co., 3411 M. St., N. W	Washington
Southern Auto Supply Co., 1232 Penn. Ave., N. W	Washington
U. S. Auto Specialty Co., 1946 N. Hamp. Ave., N. W	Washington
Washington Auto Sup. Co., 1227 N. Y. Ave., N. W	Washington

FLORIDA.

Tower Hdw. & Supply Co	Apoka
Travis, S. F. Co	Cocoa
Heltman, Evans Co	Fort Myers
Sands, Chas. E., Pine St	Fort Pierce
Baird Hdw. Co	Gainesville
Lillenblum, B	Gainesville
Wiggins Hdw. Co., Walnut St	Green Cove Springs
Homestead Mercantile Co	Homestead
Baughman, G. Norman Co., 438 W. Adams	Homestead
Burroughs, McMeekin Co., 30 E. Bay St	Homestead
Chase, Geo. E. & Co., 323 E. Bay St	Homestead
McGraw, Coombs & Co., 427 E. Main	Homestead
Norton, K. W. & Co., 513 Main	Homestead
Weyer, J. J., 410 Riverside	Homestead
Pierce Bros. Co., Fleming & Elizabeth	Key West
Pinch Co., Kentucky Ave	Lakeland
Largo Hdw. Co	Largo
Moore, Cammon Hdw. Co	Marianna
Stewart Hdw. Co	Melbourne
Budge, Frank T. Co., 12th & Ave. D	Miami
Miami Tire Co., 235 11th St	Miami
Ralley, Milam Hdw. Co	Miami
Mt. Dora Hdw. Co	Mt. Dora
Pearce Hdw. Co	Newberry
Marion Hdw. Co	Ocala
Borras Auto Supply Co., 117 W. Garden	Pensacola
Root, H. E., 29 W. Garden	Pensacola
Archibald Hdw. Co., 202-14 Main St	Sarasota
Prime, G. B	Sarasota
Miner, W. H	Starke
Baughman, G. Norman Co., Florida Ave. & Jackson	Tampa
Greene, C. W. Co., Tampa & Madison Sts	Tampa
Tampa Hdw. Co	Tampa
Wholesale Auto Supply House, 309 Washington	Tampa

GEORGIA.

Albany Auto Supply Co., 204 Pine	Albany
Hule Auto Co., M. C., Pine & Jackson Sts	Albany
Sheffield Co	Americus
Ashburn Drug Co	Ashburn
E. S. Sporting Goods Co., College & Washington	Athens
Huggins, H. T. & Son, 346 E. Broad	Athens
Talmage Hdw. Co., 131 E. Clayton	Athens
Alexander, Seewald Co., 145 Edgewood	Atlanta
Beck & Gregg Hdw. Co., 66 Marietta	Atlanta
Colley, John E., Healey Bldg	Atlanta
Elyea, Austell Co., 15 N. Pryor St	Atlanta
Johnson, Gewinner Co., 186 Peachtree	Atlanta
King Hdw. Co., 53 Peachtree	Atlanta
Miller, Chas. E., 12 Houston	Atlanta
Ozburn, Abston & Co., 328 Peachtree	Atlanta
Augusta Hdw. Co., Washington & Reynolds	Augusta
Central Auto Supply Co., 958 Broad St	Augusta
Evans, John J., 865 Broad St	Augusta
Georgia Welding & Supply Co., 1262 Broad St	Augusta
Standard Auto Supply Co., 1106 Broad St	Augusta
Tennent Supply Co., H. C.. 613 Broad	Augusta
Wingfield Hdw. Co., 1039 Broad St	Augusta
Harris Hdw. Co.. 11 Alabama	Carrollton
Knight Mercantile Co., 16 Main	Cartersville
Cody, W. E. Co., 1236 First Ave	Columbus
Rosengerg, Max	Columbus
Watt & Holmes Hdw. Co	Cordele
Love, H. M. & Co., 111 Ward St	Douglas
Robinson Hdw. Co	Dublin
Schiff & Baum Co., Jackson St	Dublin
Stevens Hdw. Co., 123 W. Jackson	Dublin
Rogers Hdw. Co	Eastman
Fitzgerald Motor Supply Co., 103 Pine St	Fitzgerald
Pruitt Barrett Hdw. Co., 20 S. Bradford	Gainesville
Seckinger Hdw. Co	Glennville
Hudson Hdw. Co., 109 Main St	Lagrange
Spinks Hdw. Co., 16 Court Sq	Lagrange
Hatcher, A. S. Co., 470 Second St	Macon
Merritt Hdw. Co., Broadway & Cherry	Macon
Rogers Auto Supply Co., 310 Second St	Macon
Small, A. F. Auto Supply Co	Macon
McCurdy, C. W	Maysville
Monroe Hdw. Co	Monroe
Askew, R. B., 11 Jackson St	Newman
Reid Hdw. Co	Rochelle
Boyd Tire Co., 112 Drayton	Savannah
Brown Auto Supply Co., 42 Drayton	Savannah
Frank, Leo, 27 Congress St., W	Savannah
Harris Tire Co., Perry & Drayton Sts	Savannah
Weed, J. D. & Co., 217 Broughton	Savannah
Brandon Grocery Co	Thomasville
Cooper Auto Supply Co., 119 S. Broad	Thomasville
Gribben, James, Broad & Fletcher Sts	Thomasville
Farmers' Hdw. Co	Vienna
Vienna Hdw. Co	Vienna
Pitman Equipment Co	Waycross
Watt Hdw. Co., 6 Elizabeth	Waycross
Fulcher, Morris Hdw. Co	Waynesboro
Adams Hdw. Co	West Point
Smith Hdw. Co., Jackson & Athens St	Winder

IDAHO.

Wilhoit, M. B	Bliss
Bertram Motor Supply Co. of Idaho, 121 S 10th	Boise
Boise Auto Supply Co., Ninth & Idaho Sts	Boise
Idaho Electric Supply Co., 911 Main St	Boise
Idaho Hdw. & Plumbing Co	Boise
Sweet, Teller Hdw. Co., 900 Main St	Boise
Idaho Falls Electric Supply Co., 375 Broadway	Idaho Falls
Lewiston Hdw. Co., 514 Main St	Lewiston
Gem State Oil & Products Co., 440 Center	Pocatello

INDIANA.

Charley Supply Co., J. F., 25 Main St	Evansville
Clifford Hdw. Co., 116 First St	Evansville
National Auto Supply Co., 425 Vine St	Evansville
Orr Iron Co., 17 E. Pennsylvania	Evansville
Swanson, A. L. & Co., 404 Main St	Evansville
Varney Electrical Supply Co., 204 Upper First St	Evansville
Automobile Supply Co., 119 Washington Bl., W	Fort Wayne
Fort Wayne Iron Store Co., 332 E. Superior	Fort Wayne
Fort Wayne Oil & Supply Co., 225 E. Columbia	Fort Wayne
Kaough, R. M. & Co., 224 W. Main	Fort Wayne
Lomont & Co., 129 E. Columbia	Fort Wayne
Main Auto Supply Co., 215 W. Main	Fort Wayne
Mossman, Yarnelle Co., Pearl St	Fort Wayne
National Mill Supply Co., 209 Columbia	Fort Wayne
Protective Elec. Supply Co., 130 W. Columbia Ave	Fort Wayne
Huntington Motor Supply Co., 22 W. Franklin	Huntington
Adams Sales Co., 31 W. Ohio	Indianapolis
Auto Equipment Co., 210 N. Meridian	Indianapolis
Block, Wm. H. Co., Illinois, Market & Court Sts	Indianapolis
Bohannon, S. C. Co., 425 N. Capitol	Indianapolis
Central Rubber & Supply Co., 120 S. Meridian	Indianapolis
Cooper, I. J. Rubber Co., Capitol & Vermont Sts	Indianapolis
Emrich Hdw. Co., 2526 W. Michigan	Indianapolis
Gibson Co., 418 N. Capitol	Indianapolis
Griffey Specialty Co., Wm. R., Hume Mansur Bldg	Indianapolis
Hearsey, H. T. Co., 408 Capital	Indianapolis
Holliday, W. J. & Co., 326 W. Georgia	Indianapolis
Hurst & Co., Hurst Bldg	Indianapolis
Indianapolis Saddlery Co., 237 S. Meridian	Indianapolis
Lawreie Fredk. S., Odd Fellows Bldg	Indianapolis
Minesinger, C. W., 211 S. Illinois	Indianapolis
Nichoalds Co., 421 N. Capital	Indianapolis
Van Camp Hdw. & Iron Co., 401 W. Maryland	Indianapolis
Varney Elec. Supply Co., 121 S. Meridian	Indianapolis
Wheeler, W. R. Co., 426 N. Meridian	Indianapolis
Armstrong, Landon Co., Main & Sycamore	Kokomo
Columbia Tire & Supply Co., 427 Columbia	Lafayette
Shipley Hdw. Co., 330 Main	Lafayette
Shuee, Bahls Hdw. Co., 210 N. Third	Lafayette
Lebanon Hdw. Co., 213 W. Main	Lebanon
Weaver, A. B	Ligonier
Young, Chas. & Son, 318 Market	Logansport
Marlow Hdw. Co., 501 S. Washington St	Marion
Frisz, Jacob, 108 N. Fifth	Fort Vernon
Peru Sales Co., 69 S. Broadway	Peru
Jones Hdw. Co., 923 North E. St	Richmond
Lee Tire Shop, 8 S. 7th	Richmond

Miller Bros. Hdw. Co	Richmond
Strong Hdw. Co., 46 South Side Sq	Shelbyville
Cranfill, Howard Co., 221 Main St	South Bend
Terre Haute Heavy Hdw. Co., 545 N. 13th	Terre Haute
Auto Supply Co., 211 Busseron	Vincennes
Rettig, F. J. & Sons, 485 W. Canal	Wabash

IOWA.

Burlington Iron Store Co., 416 N. Main St	Burlington
Churchill Drug Co., 110 N. Fourth	Burlington
Donahue Iron & Hdw. Co., Third & Market Sts	Burlington
Motor Car Supply Co., 709 Jefferson	Burlington
Dayton Co., 115 E. Fourth St	Cedar Falls
Barr, Fred J., 317 Third Ave., E	Cedar Rapids
Cedar Rapids Pump Co., Sixth St. & G Ave., W	Cedar Rapids
Fawcett, C. E., 119 Third Ave	Cedar Rapids
Western Auto Specialty Co., 624 Second Ave., E.	Cedar Rapids
Wetzel, H. & Co., 207 Fourth Ave	Cedar Rapids
Clarinda Hdw. Co., 115 N. 15th St	Clarinda
Moeszinger Marquis Hdw. Co., 2nd St. & 8th Ave	Clinton
Jordan's Auto Supply Co	Colfax
Empkie, Shukart, Hill Co., 109 Main St	Council Bluffs
Barr, Fred J., 115 E. Third St	Davenport
Hanssen's Sons, Louis, 213 W. Second St	Davenport
Peterson's, J. H. C. Sons, 123 W. Second St	Davenport
Sickles & Preston Co., 503 Rock Island St	Davenport
Sieg Co., 500 Iowa St	Davenport
Tri City Electric Supply Co., 121½ E. Fourth St	Davenport
Conover & Co	De Witt
Central Auto Supply Co., 1111 Locust St	Des Moines
Des Moines Tent & Awning Co., 913 Walnut St	Des Moines
Downing Electrical Co., 216 Second St	Des Moines
Evans Hdw. & Sporting Goods Co., 318 Seventh	Des Moines
Globe Machinery & Supply Co., 205 N. Court	Des Moines
Herring Motor Co., 108 W. Tenth St	Des Moines
Hipper States Co., 706 Mulberry	Des Moines
Luthe Hdw. Co., Ninth & Cherry	Des Moines
Spurrier, W. A. Jr. & Co., 417 Sixth St	Des Moines
Times Square Auto Supply Co., Ninth & Locust Sts.	Des Moines
U. S. Rubber Co., 201 E. First St	Des Moines
Ernsdorff Iron Co., John, Jones & Main	Dubuque
Ris, Fred C., 590 Main St	Dubuque
Roshek Bros. Co., Eighth & Main Sts	Dubuque
Tredway & Sons Hdw. Co. A., 761 Iowa Ave	Dubuque
United Tire Sales Co., 299 Seventh	Dubuque
Barbary's Hardware	East Peru
Elliott Implement Co	Elliott
Auto Supply Co	Estherville
Bagge, A. G	Fonda
Hansen & Tyler Auto Co., 7th St. & First Ave., E.	Fort Dodge
Leighton Supply Co	Fort Dodge
Prusia Hdw. Co	Fort Dodge
Amana Society	High
Simmons, L. C	Independence
Western Auto Specialty Co., 15 E. Washington	Iowa City
Guaranty Vulcanizing & Supply Co	Lake Mills
Mason City Auto Co., 118 S. Washington Ave	Mason City
Sanders, V. P	Osceola
Fitch, R. F. & W. B. Co., 113 N. First St	Oskaloosa
Harper & McIntire Co., 216 Commercial St	Ottumwa
Haw Hdw. Co., N. Market St	Ottumwa
Giesler Hdw. Co., 4100 Floyd St	Sioux City
Haller Bros. Auto Supply Co., 413 Pearl St	Sioux City
Hansen & Tyler Auto Co., 623-625 Pearl St	Sioux City
Knapp & Spencer Co., Third & Nebraska Sts	Sioux City
Motor Supply Co., Fifth & Douglas Sts	Sioux City
Schultz Auto Supply Co., 417 6th St	Sioux City
Sioux City Auto & Supply Co., 207 5th Ave	Sioux City
Sioux City Iron Co., 314 Court St	Sioux City
Tolerton & Warfield Co., 217 Nebraska St	Sioux City
Warnock, Wm. Co., 609 Douglas St	Sioux City
Alexander, A. L. Co., 208 Park Ave	Waterloo
Burd Auto & Supply Co., 416 W. 7th St	Waterloo
Cutler Hdw. Co., 400 Sycamore St	Waterloo
Padden Auto Co., Harry, 714 Sycamore St	Waterloo
Repass Automobile Co., 217 W. 5th Ave	Waterloo
Hanson & Tyler Auto Co., First & Division Sts	Webster City

KANSAS.

Blish, Mize & Sillian Hdw. Co., Fifth St. & Utah Ave.	Atchison
Harwi Hdw. Co., A. J., 826 Commercial St	Atchison
Klostermeier Bros. Hdw. Co	Atchison
Blood, N. E	Beloit
Detrick Trading Co	Caldwell
Auto Supply Co., E. Main St	Chanute
Baxter, C. S	Circleville
Patterson, E. A. & Co	Clyde
Baker-Ossmann Hdw. Co	Concordia
Auto Supply Co	Dodge City
Chase Motor Supply Co., 722 Commercial St	Emporia
Haynes Hdw. Co., 618 Commercial St	Emporia
Newman, J. P. & Co	Galesburg
Young, Henry Hdw. Co	Gardner
Ochs, Grin Co	Hoisington
Auto Supply Co., 114 E. Sherman St	Hutchinson
Colladay, Frank Hdw. Co., 420 Second Ave	Hutchinson
Duvalls Motor Supply Co., 112 E. Sherman St	Hutchinson
Graber Supply Co., 17 E. First St	Hutchinson
Hockaday Auto Supply Co., 27 Sherman Ave	Hutchinson
Ferguson, J. E. Hdw. Co	Kingman
Evans Auto Supply Co	Lawrence
Crancer, H. W. Co	Leavenworth
Tholen Bros., 204 Shawnee St	Leavenworth
Rostine & Hopkins, 206 N. Main St	McPherson
Dunbar Specialty Co	Miltonvale
Cain & Son	Morland
Hills, S. C. & Son	Pawnee Rock
Lee Hdw. Co., 250 N. Santa Fe Ave	Salina
Salina Auto Supply Co., Fifth & Iron Sts	Salina
Watson Weldong-Durham Co., 217 N. Santa Fe St	Salina
Capper Auto Supply Co., 919 Kansas Ave	Topeka
Palmer Auto Supply Co., 220 W. Sixth St	Topeka
Southwick Auto Supply Co., 925 Kansas Ave	Topeka
Thompson, W. A. L. Hdw. Co., 511 Kansas Ave	Topeka
Hockaday Auto Supply Co., 406 E. Douglas St	Wichita
Morton-Simmons Hdw. Co	Wichita
Motor Equipment Co., 115 William St	Wichita
Shattuck-George Iron Co., 309 N. Rhode Island	Wichita
Times Square Suply Co., 140 N. Main St	Wichita

KENTUCKY.

Ogden Hdw. Co., 108 W. Greenup Ave	Ashland
Monarch Auto Supply Co., 409 Madison Ave	Covington
Theissen Auto Supply Co., 438 Scott St	Covington
Bunnell, G. W. & Son	Hardyville
Lambert-Grisham Hdw. Co., 229 First St	Henderson
Miller, J. W., 103 W. Main St	Lebanon
Nevitt Co., 228 E. Main St	Lexington
Strode, L. Gay, 120 Forest St	Lexington
Albrecht Sons Hdw. Co., 230 W. Jefferson St	Louisville
Belknap Hdw. & Mfg. Co., 2nd & Washington Sts.	Louisville
Cowan, Andrew & Co., 421 W. Main St	Louisville
Deeler, George, Jr., 402 E. Market St	Louisville
Dixie Auto Supply Co., 444 S. Third St	Louisville
Harbison & Gathright, 709-13 W. Main St	Louisville
Heick Hdw. Co., Henry, 322 W. Market St	Louisville
Kentucky Auto Supplies Co., 508 S. 3rd St	Louisville
Louisville Auto Supply Co., 307 W. Broadway	Louisville
Peaslee-Gaulbert Co., 407 W. Main St	Louisville
Robinson Bros. & Co., 609-11 W. Main St	Louisville
Schneiger Auto Supply Co., 2547 W. Market St	Louisville
Wolke Rubber Co., A. F., 624-26 S. Third St	Louisville
Guenther Hdw. Co., 224 Frederica St	Owensboro
Owensboro Auto Supply Co., 122 W. Main St	Owensboro
Petter Supply Co., Henry A., 117-19 S. First St	Paducah

LOUISIANA.

Brown, Roberts Hdw. & Sup. Co., 3rd & Zavier Sts.	Alexandria
Doherty Hdw. Co	Baton Rouge
Hogue Auto Supply Co., 409 Main St	Baton Rouge
Bogalusa Stores Co	Bogalusa
Smith Hdw. Co	Covington
Fried, J. M	Monroe
Monroe Hdw. Co., St. John St	Monroe
Shannon Hdw. Co., Front St	Morgan City
Baldwin, A. & Co., Camp & Common Sts	New Orleans
Electric Appliance Co., 408 Canal St	New Orleans
Electrical Supply Co., 326 Camp St	New Orleans
General Automobile Co., 418-26 Carondelet St	New Orleans
Interstate Electric Co., 352 Baronne St	New Orleans
McGlehan, T. H. Co., 1537 Canal	New Orleans
Miller, Chas. M., 747 St. Charles	New Orleans
Schwartz, Jos. Co., 544 Baronne	New Orleans
Shuler Auto Supply Co., 613 Baronne	New Orleans
Southern Hdw. & Woodstock Co., 711 Baronne	New Orleans
Buckelew Hdw. Co., 122 Texas	Shreveport
Cahn Electric Co., 517 Milam	Shreveport
Henderson, W. K. Jr., Spring & Fannin	Shreveport
Lew Hdw. Co	Shreveport
Thomas Ogilvie Hdw. Co., Market & Crockett	Shreveport

MAINE.

Darling Auto Co., 29 Turner	Auburn
Bragg, N. H. & Sons, 74 Broad	Bangor
Crosby, S. L. & Co., 146 Exchange	Bangor
Rice & Miller Co., 28 Broad	Bangor
Warren Auto Supply Co., 40 Postoffice Square	Bangor
Hines & Smith Co	Caribou
Watson, John & Co	Houlton
Kennebunk's Auto Supply House	Kennebunk
Davis, Fulton B	Kezar Falls
Hall & Knight Hdw. Co., 58 Lisbon	Lewiston
Stuart, W. A. Co	Livermore Falls
Bailey, James Co., 18 Free	Portland
Cleveland, L. W. Co., 441 Congress	Portland
Farrar, Brown Co., 492 Forest	Portland
Haron, W. E. & B. J., 228 Middle	Portland
Keating & Shaw, Exchange & Federal	Portland
Maine Tire & Auto Supply Co., 190 State	Portland
Talbot, Brooks & Ayer, 260 Middle	Portland
Automobile Supply Co., Main, Park & Congress	Portland
York & Boothby Co., 222 Middle	Portland
French, Willard B	Turner

MARYLAND.

Auto Equipment Co., 631 N. Howard	Baltimore
Auto Supply Co. of Baltimore, 217 W. Saratoga	Baltimore
Baltimore Bargain House, 204 W. Baltimore	Baltimore

Baltimore Hub Wheel & Mfg. Co., Gay St. & Fallsby....Baltimore
Baltimore Motor Car Supply Co., 705 N. Howard....Baltimore
Becker, Harry, 521 N. Howard....Baltimore
Coggins & Owens, 19 S. Charles....Baltimore
Frank Bros., 114 W. Mt. Royal....Baltimore
Hemeter & Son, P., 8 E. German....Baltimore
Holland, Baden, Ramsey Co., 25 Hanover....Baltimore
Logue, Bernard J., 931 N. Broadway....Baltimore
Marburg, Wm. A., 32 South....Baltimore
Norris, R. W. & Sons, 342 Gay....Baltimore
Parker, H. F. & Co., 623 W. North....Baltimore
Piet, Robertson, Rainey Co., 108 S. Howard....Baltimore
Poehlmann Auto Supply Co., Cathedral & Chase....Baltimore
Reus Bros. Co., Mt. Royal & Cathedral....Baltimore
Seaboard Electric Supply Co., 223 W. Saratoga....Baltimore
Spoerer's Sons Co., Carl, 901 S. Carey....Baltimore
Tire Mart, 1419 N. Charles....Baltimore
Tire Sales Co., 204 St. Paul....Baltimore
Wiesenfeld Co., Little Joe, Baltimore & Howard....Baltimore
Hubbard Hdw. Co., Samuel E., 18 Poplar....Cambridge
United Stores Co., 107 Race....Cambridge
United Accessories Co., 51 N. Centre....Cumberland
Wilson & Pugh, 26 S. George....Cumberland
Nuttle Hdw. Co....Denton
Federalsburg Auto Supply Co....Federalsburg
Gumby, L. W. Co., 21 Main....Salisbury

MASSACHUSETTS.

Weaver, Frank E., 407 Peguolg....Athol
Rogers Auto Supply Co., 40 S. Main....Attleboro
Ayer Hdw. & Auto Supply Co., Park....Ayer
Williams, A. G. & Sons....Barre
Whitcomb, Carter Co., 182 Cabot....Beverly
American Motor Equipment Co., 181 Massachusetts....Boston
Atwood, J. H. & G. L., 182 Friend....Boston
Auto Owners Supply Co., 370 Columbus....Boston
Auto Supply Co., 14 Columbus....Boston
Larrabee, Samuel L., 133 Columbus....Boston
Bascom, Geo. R., 222 Columbus....Boston
Bay State Hdw. Co., 1321 Washington....Boston
Bay State Tire Co., 306 Columbus....Boston
Bigelow & Dowse Co., 229 Franklin....Boston
Boice Motor Equipment Co., 76 Brookline....Boston
Boice, Perrine Co., 48 Cummington....Boston
Boston Auto Tire Exchange, 304 Columbus....Boston
Brothy, Barrabee Co., 46 Columbus....Boston
Burditt & Williams, 95 Summer....Boston
Butts, Ordway Co., 33 Purchase....Boston
Caldwell, John, 280 Columbus....Boston
Chandler & Barber Co., 122 Summer....Boston
Chandler & Farquhar Co., 36 Federal....Boston
Cherry, A. L., 903 Boylston....Boston
Collins, Geo., 215 Columbus....Boston
Connell, W. J. Co., 171 Massachusetts....Boston
Coward Auto Supply Co., 222 Eliot....Boston
Curry Bros. Oil Co., 253 Franklin....Boston
Cut Price Auto Supply Co., 527 Boylston....Boston
Davis, S. H. Co., 68 Portland....Boston
Decatur & Hopkins Co., 120 High....Boston
Eisner, Lenk Co., 1096 Boylston....Boston
Fairbanks Co., 42 Pearl....Boston
Foster, Chas. M. S., 243 Columbus....Boston
Goodrich, Homer F., 1105 Commonwealth....Boston
Greene, Jos. E. Co., 238 Purchase....Boston
Green & Swett Co., 921 Boylston....Boston
Crow Auto Co., Geo., 321 Columbus....Boston
H. & H. Motor Specialties, 755 Boylston....Boston
Hardy, F. S., 351 Congress....Boston
Harriman, J. P. Co., 46 Columbus....Boston
Hartley, Bishop Co., 243 Columbus....Boston
Hill & Hill, 90 Federal....Boston
Johnson Sporting Goods Co., 155 Washington....Boston
Linscott Supply Co., 568 Commonwealth....Boston
Macomber & Co., H. S., 150 Milk....Boston
Malton Specialty Co., 213 Columbus....Boston
Maynard, John B., 56 Humphrey....Boston
Miller, Chas. E., 201 Columbus....Boston
Mitchell & Smith, 1090 Commonwealth....Boston
Morss, A. S. Co., 132 Federal....Boston
Motor Accessories, 165 Massachusetts....Boston
Motor Car Equipment Co., 180 Massachusetts....Boston
Motor Parts Co., 104 Brooklyn....Boston
O'Brien, Harry M., 245 Columbus....Boston
Pettingell Electric Supply Co., 47 High....Boston
Post & Lester Co. of Boston, 223 Columbus....Boston
Standard Auto Supply Co., 239 Columbus....Boston
Standard Tire & Rubber Co., 104 Portland....Boston
Sullivan, Francis, 314 Columbus....Boston
Times Square Auto Supply Co., 159 Massachusetts....Boston
Travers, Jas. A. Co., 64 Brookline....Boston
U. S. Rubber Co., 280 Summer....Boston
Wahn, Geo. H. Co., 69 High....Boston
Washington Hdw. Co., 1307 Washington....Boston
Wetmore, Savage Co., 76 Pearl....Boston
Wilkinson, A. J. & Co., 180 Washington....Boston
Williams, Walter H., 175 Massachusetts....Boston
Wilson, John V. Co., 191 Massachusetts....Boston
Kedian Auto Supply, 38 W. Elm....Brockton
Packard, Nathan E., 221 Warren....Brockton
Stedman Auto Supply Co., 52 N. Main....Brockton
King Auto Supply Co., 207 Washington....Brookline
Mackey, J. P., Harvard Square....Brookline
Katz, Harry Co., 712 Massachusetts....Cambridge
Rix, Burt H....Chester
Alden, Percy M., Market Square....Chicopee
Spinney, Chas. A., 16 Union....East Bridgewater
Ryan, James, 49 Cottage....Easthampton
Congdon & Carpenter Co., 56 4th....Fall River
Covel & Osborn Co., 151 Pleasant....Fall River
Fontaine's Auto Supply Co., 47 Purchase....Fall River
Fitchburg Hdw. Co., 314 Main....Fitchburg
Johnson Sporting Goods Co., 510 Main....Fitchburg
Gray, Chas. J., 127 Main....Gloucester
Finkie, H. M. & Co., 212 Main....Great Barrington
Atherton Tire & Rubber Co., 46 Federal....Greenfield
Fox, Daniel G., 103 Washington....Haverhill
Alling Rubber Co., 252 High....Holyoke
Russell, J. & Co., 361 Dwight....Holyoke
Walker, C. E. & Co., 396 High....Holyoke
Robinson, H. J. & S. M., 35 Main....Hudson
Eidam Motor Car & Supply Co., 2 Lawrence....Lawrence
Treat Hdw. & Supply Co., 582 Essex....Lawrence
Leominster Hdw. Co., 18 Main....Leominster
Boston Auto Supply Co., 96 Bridge....Lowell
Pitts Auto Supply Co., 7 Hurd....Lowell
Iverson, John, 463 Broad....Lynn
Lynn Auto Co., 396 Broad....Lynn
Child, A. W., 710 Purchase....New Bedford
Cut Price Auto Supply Co., 678 Pleasant....New Bedford
New Bedford Rubber Co., 66 William....New Bedford
North End Auto Supply Co., 93 Weld....New Bedford
Zeitz, Barney, 132 Union....New Bedford
Crowell Auto Supply Co., 1020 Commonwealth....Newton Center
Carlisle Hdw. Co., 99 Main....North Adams
Hoosac Auto Supply Co., 15 Center....North Adams
Foster, Farrar Co., 162 Main....Northampton
Stevenson & Lord....Oak Bluffs
Chamberlin's Hdw. Store, H. P., 4 N. Main....Orange
Snow, W. H. & Son, 223 Main....Orleans
Whitcomb & Faulkner, 425 Main....Palmer
Hamblet Hdw. Co., 13 Lowell....Peabody
Alling Rubber Co., 128 North....Pittsfield
Berkshire Mill Supply Co., Clapp Ave....Pittsfield
Peirson Hdw. Co., 41 North....Pittsfield
Riga, J. G. & Sons Co., 318 North....Pittsfield
Plymouth Hdw. Co., 18 Main....Plymouth
Bent, F. W., 1056 Hancock....Quincy
Gillis, J. B., 9 Franklin....Quincy
Waldron, Curtis Co., N. Shore Road & Shirley....Revere
Condon's Salem Auto Supply Co., 6 Washington Sq., W....Salem
Spencer Hdw. Co., 166 Main....Spencer
Alling Rubber Co., 261 Main....Springfield
Boise Perrine, 95 Broadway....Springfield
Carlisle Hdw. Co., 324 Main....Springfield
Forbes & Wallace, 390 Main....Springfield
Forer & Forer, 37 Dwight....Springfield
Imperial Auto Supply Co., 304 Worthington....Springfield
Post & Lester Co., 270 Worthington....Springfield
Riga, J. G. & Sons Co., 624 Main....Springfield
Tarbell, Watters Co., 160 Chestnut....Springfield
U. S. Rubber Co., 211 Worthington....Springfield
Winchester Auto Supply Co., 814 State....Springfield
Pierce Hdw. Co., Main St....Taunton
Hartley, Bishop Co., 92 Moody....Waltham
Sibley, J. B. & Son, 41 Main....Ware
Tucker & Perkins, Warren....Warren
Baker Auto Supply Co., 1255 Washington....West Newton
Winthrop Auto Co., 317 Main....Winthrop
Alsten & Goulding Co., 36 4th....Worcester
Blake, Geo. F. Jr. & Co., 98 Mechanic....Worcester
Cochlin, Wilson Electric Co., 924 Main....Worcester
Duncan & Goodell Co., 404 Main....Worcester
Guy, A. G. Co., 122 Main....Worcester
Johnson Sporting Goods Co., 304 Main....Worcester
New England Motor Supply Co., 24 Austin....Worcester
Post & Lester Co., 84 Franklin....Worcester
Waite Hdw. Co., H. M., 185 Front....Worcester

MICHIGAN.

Savage, F. M....Adrian
Phillips Bros....Allegan
Boomhower, Louis S., 86 S. Jefferson....Battle Creek
Sanders Bros., 110 W. Amin....Battle Creek
Williams & Co., 17 W. Jackson....Battle Creek
Bay City Tire & Supply Co., 200 6th....Bay City
Graves Cycle & Auto Supply Co., 709 Washington....Bay City
Jennings Hdw. Co., 901 N. Water....Bay City
Drury & Kelly Hdw. Co....Cadillac
Carlton Hdw. Co., 400 5th....Calumet
Chesaning Hdw. Co....Chesaning
Henning & Wicker....Coldwater
Hill, Harry W., Paw Paw & Washington....Colona
Durham Hdw. Co....Coopersville
American Motor Supply Co., 577 Woodward....Detroit
Arcade Hdw. Co., 1156 Grand River....Detroit
Automobile Equipment Co., 225 Jefferson....Detroit
Automobile Supply Co., 218 Jefferson, E....Detroit
Bolton, Geo. W. & Co., 733 Woodward....Detroit
Bowman, Gould Co., 842 Woodward....Detroit
Brandenburg & Co., Kresge Bldg....Detroit
Brown, Elmer W. & Co., 967 Woodward....Detroit
Buhl Sons Co., 103 Woodbridge....Detroit

C. A. S. S. Engineering Co., 790 Woodward	Detroit
Cass Auto Supply Co., 115 Grand River	Detroit
Clarke, Wm. J., 965 Woodward	Detroit
Davie's Auto Accessories, 41 Broadway	Detroit
Detroit Auto Hdw. Co., 146 Park Blvd	Detroit
Diebel, A. J., Kresge Bldg	Detroit
Federal Sign System, 199 Jefferson Ave., E	Detroit
Fullington Auto Parts Co., 324 Grand River	Detroit
General Sales Co., 212 Jefferson Ave., E	Detroit
Gregg Hdw. Co., 48 Cadillac Square	Detroit
Hartwig, W. J. Co., 205 Jefferson Ave., E	Detroit
Harvey Service Sales Co., Book Bldg	Detroit
Heath & Carpenter, 208 Jefferson	Detroit
Heyn's Bazar, 147 Woodward	Detroit
Holmes, Fred E. Co., 1602 Woodward	Detroit
McGookin, E. W., Book Bldg	Detroit
Modern Auto Supply Co., 800 Grand River	Detroit
Monson, Chas. S., Dime Bank Bldg	Detroit
Morris, E. Mack, 1575 Woodward	Detroit
Nichoalds Co., 424 Grand River	Detroit
Puritan Machine Co., 10th & Lafayette	Detroit
R. D. Motor Parts Co., Ford Bldg	Detroit
Rayl, T. B. Co., 3 Grand River	Detroit
Roehm & Davidson, 91 Woodbridge	Detroit
Schneider, Mart J., 603 Dix	Detroit
Stein Auto Equipment, 990 Grand River	Detroit
Svensgaard Sales Corp., Harry, 214 E. Jefferson	Detroit
Van (the Accessory Man), 63 Monroe	Detroit
Watkins & Radcliffe Co., 769 Woodward	Detroit
Weber, Hy C. & Co., 230 Woodward	Detroit
Westminster Auto Co., 1827 John	Detroit
Woodward Tire & Rep. Co., 1319 Woodward	Detroit
Delta Hdw. Co., 402 Ludington	Escanaba
Arnold, Harry, 809 S. Saginaw	Flint
Auto Sup. & Electric Service Station, 712 S. Saginaw	Flint
Cumings Bros., 901 S. Saginaw	Flint
R. D. Motor Parts Co., Dryden Bldg	Flint
French, Jas. B	Flushing
Becker Auto Co., Sheldon & Island	Grand Rapids
Driesens, A. & Sons, 808 W. Leonard	Grand Rapids
Grand Rapids Auto Parts Co., 7 Fountain	Grand Rapids
Hall, Sherwood Co., 24 Lonia	Grand Rapids
Michigan Tire & Acces. Co., 212 Michigan, N. W	Grand Rapids
Tisch Auto Supply Co., 215 Division	Grand Rapids
Lincoln & Decker, 29 Broad	Hillsdale
Portage Lake Hdw. Co., 78 Shelden	Houghton
Rundle, A. J., 101 W. Ludington	Iron Mountain
ABC Auto Supply Co., 621 E. Main	Jackson
Record Supply House, 210 W. Pearl	Jackson
Smith Winchester Co	Jackson
Edwards & Chamberlain Hdw. Co., 129 E. Main	Kalamazoo
Money Back Tire Shop, 7 126 N. Rose	Kalamazoo
Allen Sparks Co., 420 Michigan	Lansing
K. & H. Auto Supply, 121 W. Washtenaw	Lansing
England, C	Lapeer
Seaman, F. G. & Co., 130 State	Marshall
Northern Hdw. & Supply Co	Menominee
Boomhower Auto Supply Co., 168 W. Western	Muskegon
Towner Hdw. Co., 45 W. Western	Muskegon
Northern Auto Supply Co., 93 N. Saginaw	Pontiac
Pontiac Motor Supply Co., 99 S. Saginaw	Pontiac
Richmond & Dewey, 80 N. Saginaw	Pontiac
Beard, Campbell & Co., 312 Huron	Pt. Huron
Morley Bros	Saginaw
Missen, Paul, 803 Genesee	Saginaw
Popp & Wolf Hdw. Co., 722 Genesee	Saginaw
Saginaw Hdw. Co., 200 S. Hamilton	Saginaw
Rankin, A. J	Shelby
Satterwaite Bros	Tecumseh
Warner & Doolittle	Tekonska
Wakefield Electric Co	Wakefield

MINNESOTA.

W. K. Supply Co., 436 S. Broadway	Albert Lea
Thornton F. C., Pacific Ave	Benson
Reep Bros	Buffalo Lake
Kelley Hdw. Co., 118 W. Superior	Duluth
Kelley Hdw. Thomson Co., S 5th	Duluth
Marshall, Wells Co., 301 Lake	Duluth
Baltes, Jos. N	Farmington
Bren Bros	Hopkins
Barnum's Auto Supply Co., 424 S. Front	Mankato
Auto Gear Co., 1404 Hennepin	Minneapolis
Bailey, Drake Co., Plymouth Bldg	Minneapolis
Butler Bros., 1st Ave. N. & 6th	Minneapolis
Clark, Geo. A. & Son, 901 N. 3rd	Minneapolis
Empire Tire & Rubber Co., 1110 Hennepin	Minneapolis
Fenstermacher Auto Supply Co., 211 S 5th	Minneapolis
Gopher Hdw. Co., 212 First, N	Minneapolis
Hudson Mfg. Co., 308 3rd, N	Minneapolis
Janney, Semple, Hill & Co., Marquette Ave. & 2nd	Minneapolis
Johnson, J. N. Co., 1018 Nicollet	Minneapolis
McClintock, Edw., 221 S 5th	Minneapolis
McDonald Bros. Co., 5th & 1st Ave	Minneapolis
Minneapolis Iron Store Co., 518 Washington, N	Minneapolis
Nott, W. S. Co., 201 3rd, N	Minneapolis
Plant Rubber Co., 318 1st, N	Minneapolis
Power Equipment Co., 216 3rd, N	Minneapolis
Reinhard Bros. Co., 11 S. 9th	Minneapolis
Savage Fctrys, M. W., 117 3rd, N	Minneapolis
Simmonds Hdw. Co., 4th & 2nd Ave., N	Minneapolis
Sterling Electric Co., 29 S. 5th	Minneapolis
Thompson Hdw. Co., 608 1st, N	Minneapolis
Times Sq. Auto Supply Co., 1229 Hennepin	Minneapolis
Van Sant Co., F. W., 1206 Hennepin	Minneapolis
Warner Hdw. Co., 13 S. 6th	Minneapolis
Western Motor Supply Co., 12th St. & Harmon Pl	Minneapolis
Williams Hdw. Co., 100 2nd, N	Minneapolis
Ortonville Oil Co	Ortonville
Gunderson & Jacobson	Ortonville
Ashton, G. A. Co., 1547 University	St. Paul
Electric Mfg. Co., 164 W. 6th	St. Paul
Farwell, Ozmun, Kirk & Co., 2nd & Jackson	St. Paul
Hackett, Gates & Hurty Co., 280 E. 4th	St. Paul
Hardenbergh, P. R. L. & Co., 237 E. 8th	St. Paul
Manhattan Oil & Linseed Co., 606 Vandelia	St. Paul
Motor Accessories Co., 151 W. 3rd	St. Paul
Nicols, Dean & Gregg, 8th & Sibley	St. Paul
Northwestern Electric Equipment Co., 174 E. 6th	St. Paul
Reed Motor Sup. Co., 78 W. 7th	St. Paul
Scheffer & Rossum Co., 104 E. 10th	St. Paul
Schmeizel, W. H. & Co., 117 University	St. Paul
Schornstein, W. F. Sales Co., 217 Bates	St. Paul
Smith, C. J. & Co., 153 W. 5th	St. Paul
Sommers, G. & Co., Park Sq	St. Paul
Times Sq. Auto Supply Co., 118 W. 6th	St. Paul
White Auto Supply Co., 6th & Market	St. Paul
Bradford Hdw. Co., 102 S. 5th	Virginia
Cone, W. D. Co., 66 E. 2nd	Winona
Minnesota Auto Supply Co., 101 W. 2nd	Winona

MISSISSIPPI.

Sommers Hdw. Co., Delta Ave	Clarksdale
Hill Hdw. Co., Main St	Columbia
Avery, B. D	Crystal Springs
Doyle Auto Co., Railroad & Short	Hattiesburg
Houston Hdw. & Furn. Co	Houston
Auto Supply Co., 167 E. Capital	Jackson
Baker & McDowell Hdw. Co	Natchez
Schwartz & Stewart, 410 Main	Natchez
Fried, J. M., 1219 Washington	Vicksburg
Richardson, Lee & Co., 1312 Washington	Vicksburg
Wright Bros. Hdw. Co., S. Washington	Vicksburg

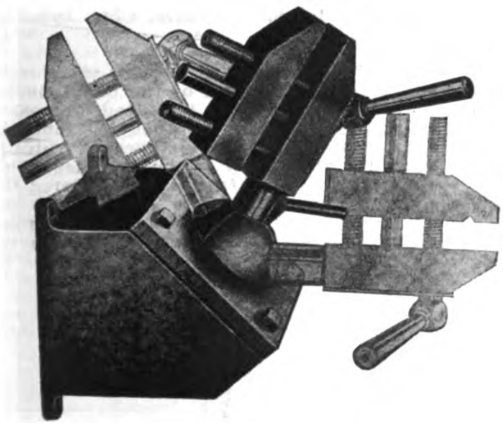
MISSOURI.

Tucker, L. C	Baring
Auto Tires & Parts Co., 252 Broadway	Cape Girardeau
Carthage Auto Supply Co., 508 Howard	Carthage
Renle Hdw. Co., 24 N. 8th	Columbia
Hafer Supply Co	Joplin
Joplin Supply Co., 4th & Wall	Joplin
Kleinschmidt, Hemphill Supply Co., 530 Wall	Joplin
Sorber, Zurn Auto Supply Co., 512 Joplin	Joplin
Bailey, Drake Co., Rialto Bldg	Kansas City
Bittel, Leftwich, 26th & McGee	Kansas City
Bonniwell, Calvin Iron Co., 1207 10th	Kansas City
Equipment Co., 1529 Walnut	Kansas City
Faeth Iron Co., 1125 W. 8th	Kansas City
Harbison Mgr. Co., 10th & Mulberry	Kansas City
Hardware Spec. Co., 2117 E. 15th	Kansas City
Haysler Iron Co., 509 Main	Kansas City
Jones Store Co., 12th, Main & Walnut	Kansas City
Kansas City Auto Supply Co., 1504 Grand	Kansas City
Motor Machinist's Supply Co., 1617 Grand	Kansas City
Peake Auto Supply Co., 1701 Grand	Kansas City
Pioneer Auto Supply Co., 22nd & Grand	Kansas City
Richards & Conover Hdw. Co., 5th & Wyandotte	Kansas City
Samis Auto Supply Co., 1530 Grand	Kansas City
Auto Motive Supply Co., 1316 McGee	Kansas City
Times Sq. Auto Supply Co., 1400 Grand	Kansas City
Townley Metal & Hdw. Co., 2nd & Walnut	Kansas City
Western Auto Supply Co., 1426 Grand	Kansas City
Central Auto Supply Co., 401 S. Franklin	Kirksville
Morrison, John & Sons, 1113 Main	Lexington
Nix & Berghofer Hdw. Co	Palmyra
Wright Dalton Bell Anchor Store Co	Poplar Bluff
Ayers Farmer Auto Supply Co., 13th & Frederick	St. Joseph
Robinson Heavy Hdw. Co., 306 S. 4th	St. Joseph
Ross Frazer Iron Co., 210 S. 4th	St. Joseph
Tootle, Campbell Dry Goods Co., 308 N. 4th	St. Joseph
Wyeth Hdw. & Mfg. Co., 2nd & Jule	St. Joseph
Adams Tire Co., Bart S., 4701 Washington	St. Louis
Anderson, Ferner Co., 309 N. 10th	St. Louis
Auto Owners Supply Co., 209 N. 12th	St. Louis
Auto Parts Co., 4116 Olive	St. Louis
Barnicle, Robt., 4262 Olive	St. Louis
Beck & Corbitt Iron Co., 1st & Ashley	St. Louis
Bittel, Leftwich Co., Lindell & Grand	St. Louis
Butler Bros., 18th & Olive	St. Louis
Campbell Auto Supply Co., 1109 Locust	St. Louis
Campbell Iron Co., Cass & 8th	St. Louis
Continental Auto Supply Co., 5835 Delmar	St. Louis
Ever Ready Auto Supply Co., 2014 Locust	St. Louis
Fairbanks, Morse & Co., 217 S. 8th	St. Louis
Famous & Barr Co., 6th & Olive	St. Louis
Field, Lippman Auto Supply Co., 1120 Olive	St. Louis
Frazier Hdw. & Supply House, 6704 Delmar	St. Louis
Geller, Ward & Hasner Hdw. Co., 412 N. 4th	St. Louis
Gerdelman Auto Supply Co., 4614 Washington	St. Louis
Holthaus Saddlery & Supply Co., 3226 Locust	St. Louis
Illmo Motor Mdse. Co., 1174 N. Kinghighway	St. Louis

(To Be Continued.)

ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The Grip-Tite and Giant Handi-Vise Combination is a patented bench tool that appeals to repairers and mechanics in the service station and machine shop because of the many unusual uses for which it is adapted. The Grip-Tite may be fastened to the work bench and the Giant Handi-Vise, fitting the ball socket, allows the vise to be turned to any convenient position and locked while work is being performed. The Handi-Vise consists of two heavy jaws made of wrought steel, while the jaws, gears and screws are case hardened and finished. The jaws of the Handi-Vise are opened and closed by means of the center rod, which in turn operates the end screws through a train of gears enclosed in the jaw made integral with the vise support. A locking device is located at the end of the first screw, which prevents the screws from allowing the jaws to loosen when work is being held in them.

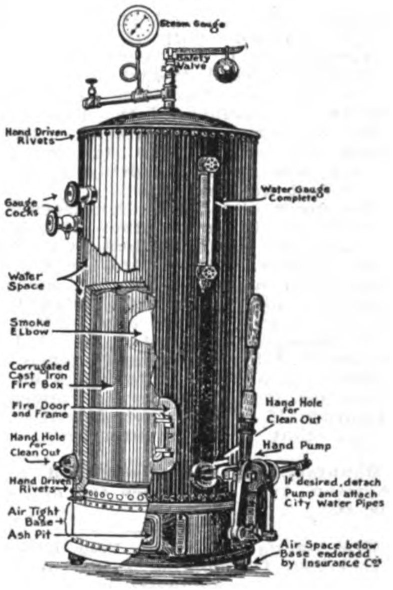


Many other useful and novel devices are manufactured by this manufacturer which fill admirably the needs of the repairer or mechanic in the service station and repair shop. Among these may be mentioned the Newman tail stock turret, Newman adjustable pull feed, Newman tool post turret, knurling tool, four-in-one changeable drill head and the Newman spot light bracket.

All tools made by this company show original design, are made of the best of materials obtainable and are accurate to a thousandth of an inch, it is stated. Tools of this type have a tendency to lessen the time required to perform a given operation, at the same time increasing the margin of safety of the mechanic or repairer using power machinery.

Manufactured by the Newman Manufacturing Co., Cincinnati, O. Prices and literature on request.

The Gate City Steam Generator is constructed from one piece of sheet steel with a cast iron head and corrugated fire box. The base is also cast iron and sheet steel and is raised from the floor as a protection against fire. There are no tubes to clog up with soot or burn out and leak. The fittings are the best that money can buy and the hand pump can be placed either on the right or left side, or it can be connected to city water. Each generator is provided with three hand-hole plates easily accessible for cleaning out purposes, which may be necessary from lime or other deposits from the water used.



It is stated that the chief point in favor of the Gates city generator lies in its steaming qualities due to the corrugated fire box and direct water contact with all fire exposed surfaces. Garages, service stations and all branches of the automotive trades will find this generator very satisfactory for heating and steaming purposes, the manufacturer states.

Manufactured by the Pechstein Iron Works, Keokuk, Ia. Prices and literature on request.

The Newson Tire Valve is a patented article which has been on the market for some time and offers features that should recommend it to the trade, chief among them being that it is leak proof, which the manufacturer guarantees even in the large sized pneumatic tires used on many of the heavy trucks. The plunger passes through the valve stem and is equipped at the lower end with a rubber gasket, held in place by a metal band crimped over a flange so that it cannot collect dust or get out of place. This rubber gasket rests on the valve seat, which is countersunk into the swaged bottom of the valve. The air pressure in the tube, together with the spring in the valve stem, draws up the plunger, sealing it air tight. As a further insurance to make it 100 per cent. leak proof the cap nut screws on to the top, locking the plunger.

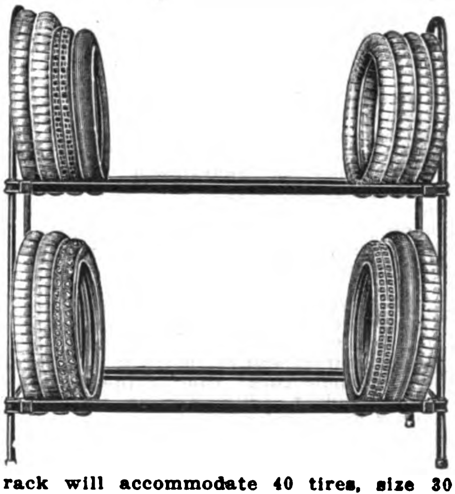
All parts of the valve are made of brass, plated and machined to S. A. E. standards. They are assembled in the tube in the same manner as the ordinary valve. Every valve, it is stated, is tested and carefully inspected before leaving the factory, thus insuring uniform quality and reliability.

SNAP LOX
DUST CAP
"IT JUST SNAPS ON"

FOR AUTO TIRE VALVES

Sold by the R. T. Sales Co., 3847 West Madison Street, Chicago, Ill. Prices and literature on request.

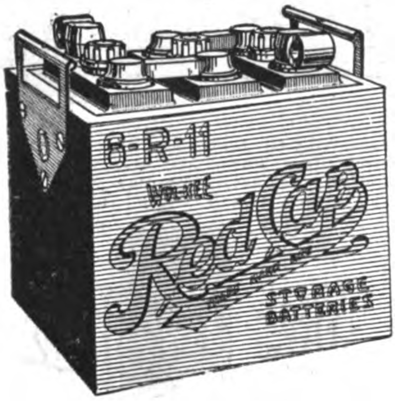
The Dow Stock and Display Rack for Automobile Tires, shown in the illustration, is especially designed and constructed to display automobile tires of all sizes in a very attractive manner. This rack will accommodate 40 tires, size 30 by 3½ inches, and larger tires in proportion to their sizes. The rack is made of steel tubing and can be set up by anyone without the aid of tools.



Manufactured by the Dow Wire and Iron Works, Louisville, Ky. Prices and literature on request.

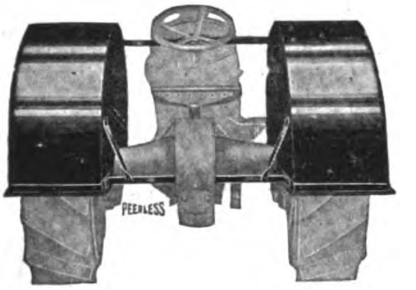
The Red Cap Storage Batteries are manufactured for replacement purposes where starting and lighting systems are used in passenger cars and trucks. It is stated that this battery has a longer life as compared to other batteries of similar price and that the batteries are built especially heavy to take care of the abnormal shocks to which batteries are subjected.

The manufacturer has gone into the details of compiling data for replacement literature and advertising matter which is claimed to be second to none. A generous advertising campaign has also been planned for the dealers handling this line, which is guaranteed to get business. There is a Red Cap dealer located in nearly every city throughout the country so it is possible to obtain batteries of this popular make without much effort.



Manufactured by the Wolke Lead Battery Co., Louisville, Ky. Prices and literature on request.

Peerless Tractor Fender. Many tractors when they come from the factory are not equipped with fenders and for this reason there is a wide demand for tractor fenders, which may be purchased separately. A fender especially adapted for use on the light weight tractor such as the Fordson, is now on the market. It is made of heavy gauge steel, finished in two coats of lustrous black enamel and furnished with the necessary irons and bolts to hold it firmly to the tractor. Such a fender is essential to the protection of the operator and engine and, furthermore, adds greatly to the appearance of the tractor.

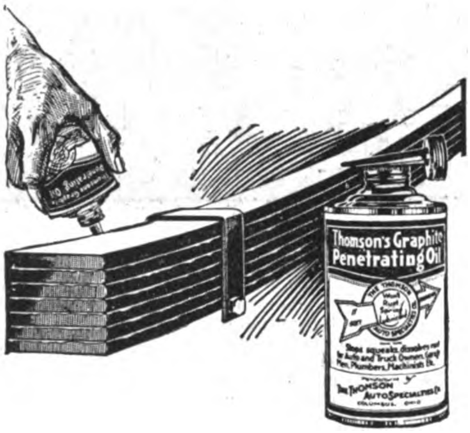


The Peerless guaranteed fender for Fordson tractors is one of the best and information regarding it will be forthcoming to all who address inquiries to **Department 8, Corcoran Manufacturing Co., Cincinnati, O.**

Thomson's Graphite Penetrating Oil is a new product which should appeal particularly to all motorists who desire maximum comfort and efficiency in the operation of their cars. One of the most annoying noises, while driving the car, is caused by squeaky springs, which are not only harrowing to the nerves, but are actually damaging to the springs. Rusty or gritty springs will wear out quickly; they cut hundreds of miles from the life of the tires and they will put a car into the second hand class long before its time.

It is well known that one of the best of all lubricants for springs is graphite, but applying graphite in the old way is mean, dirty work. The leaves must be wedged apart in some way to insert the graphite and, if the spring is rusted, it should be taken apart and each leaf polished, a long, disagreeable job.

Thomson's Graphite Penetrating Oil supplies the graphited lubricant easily and quickly. A few drops squirted on the edge of each leaf will rapidly work through the spring and in only a few minutes will come seeping through on the other side. This oil dissolves rust and it is claimed will clean springs as thoroughly as if the leaves were taken apart and polished. It carries pure graphite in solution, depositing it as a dry film on the surface of the leaves. The graphite lubricates perfectly, while the liquid element of the oil evaporates quickly, leaving a dry spring, which will not collect dirt and dust.

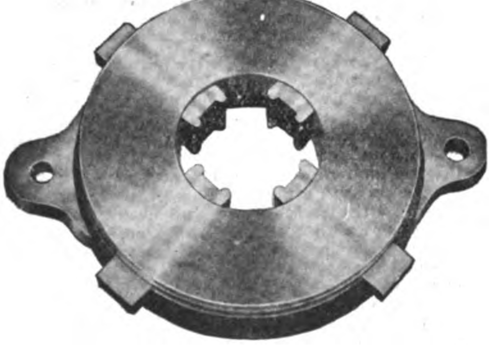

Thomson's Graphite Penetrating Oil
The Thomson Auto Specialties Co.
Stops squeaks, dissolves rust
for Auto and Truck Owners, Garage Men, Plumbers, Machinists Etc.
The Thomson Auto Specialties Co.
Columbus, Ohio

Thomson's Graphite Penetrating Oil may be put to many other uses around the garage. It will instantly release frozen brakes and equalize brake linings without the need of taking off wheels or heating joints. It is also stated that a few drops will release any bolt or pin, even when it has rusted so hard that otherwise it is impossible to move it. It is ideal for shackle bolts and king pins.

The oil is sold under a money-back guarantee if it does not do all of the things that the manufacturer claims for it.

Manufactured and distributed by the Thomson Auto Specialties Co. of Columbus, O.

Messenger's Universal Vise is a universal tool for holding round or square parts of the automobile when work is being done upon them. It is the invention of Jack Messenger, a practical automobile mechanic of Des Moines, Ia., and embodies several features which place it in a class by itself, it is stated. The Universal vise has four movable jaws that are adjusted by a revolving handle, two and one-half turns of which will move the jaws from the minimum capacity of one-quarter of an inch to the maximum of 4½ inches or the reverse.

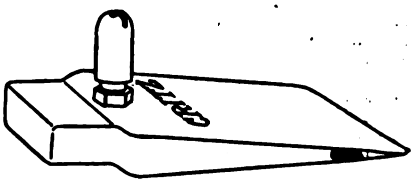


Pistons, gears, differential housings, Ford transmission drums, wheels, wheel hubs and axles, crank, cam and drive shafts are some of the parts for which this vise is especially adapted. It also makes an excellent drill press vise.

The Universal vise is furnished with two sets of jaws, one for holding enameled and highly finished parts without scratching or marring; another for ordinary rough work. The vise weighs only 50 pounds, is three inches high and occupies a bench space of only 12 inches in diameter.

Manufactured by the Auto Metal Parts Co., 246-6-8 East Locust Street, Des Moines, Ia. Price, $40, complete, with full instructions for use.

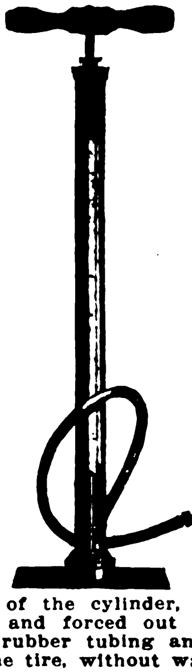
The Critz Spring Lubricator consists of a wedge-shaped attachment to the Critz lubricating system with which it is possible to force grease or oil between the spring leaves after the leaves have been separated with a jack. The oiler is wedge shaped, is made of drop forged steel and tempered. When the oiler is in place the lubricator is attached to the nipple and the lubricant forced between the leaves.



CRITZ SPRING LUBRICATOR

Manufactured by the Critz Manufacturing Co., Inc., Santa Maria, Cal. Price on request.

The Fapco Force Air Pump, while manufactured in the form of the usual single-cylinder air pump, it is stated, yet offers many new features not usually found in air force pumps of this type. A valve is provided at the top of the cylinder which cuts off the air after it has entered the cylinder, preventing its escape into the atmosphere, while the plunger, on its upward stroke, allows it to pass into the lower part of the cylinder, where it is compressed and forced out through the connecting rubber tubing and valve fitting into the tire, without waste.

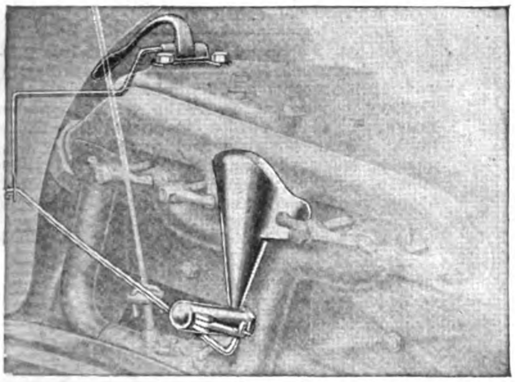


It is claimed that the Fapco force air pump will pump a tire to the desired pressure quickly and without great effort, and is so simple that a child would find no difficulty in operating it. Nothing but high grade materials enter into its construction.

Manufactured by the Force Air Pump Co., Jefferson, Ia. Price, $5.

The Footair Gas Saver and Accelerator for Ford Cars is an attachment which is screwed into a hole drilled and threaded in the engine intake manifold and is connected through suitable linkage to an accelerator pedal located on the floor boards under the dash. A funnel and fastening are also provided which allow the entrance of fresh air to the Footair attachment, while a valve governs the flow of air into the intake manifold.

The manufacturer states that when the car is running on a good road at 20 miles an hour, stepping on the accelerator and opening the air valve will cause a Ford to immediately increase its speed to between 25 and 30 miles an hour without changing the throttle position on the quadrant, showing that the admission of air alone causes increased speed. It is further stated that the device will naturally save gasoline, causing the engine to show greater mileage for the amount of fuel consumed. It is easily attached in a few minutes time and becomes a permanent part of the engine.



Manufactured by the American Automotive Accessories Co., Baltimore & Ohio Railroad and Blue Rock Street, Cincinnati, O. Prices, ready to attach, $6.

Ebonite is the trade name adopted for a line of lubricants stated to be specially adapted for use in passenger car, truck and tractor transmissions, timing gears and differentials. The manufacturer states that by its own private process there is retained in Ebonite every atom of lubricating value and quality found in petroleum, and that nothing, such as graphite, cork, filler or other foreign substance, is added to it in any form.

BAYERSON OIL WORKS
EBONITE
FOR TRANSMISSIONS
ERIE PENNSYLVANIA

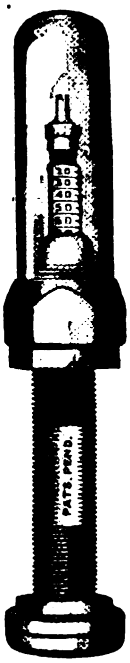
Ebonite is said to be a distillate residue of the highest grade petroleum pure oil; nothing more. Ebonite, it is further stated, spreads a film coating or resilient cushion over and between the gear mesh, which stays there and prevents metal to metal contact in a surprising degree, with corresponding reduction of noise and wear on the parts in play.

This lubricant is specially recommended for use in timing gears, transmissions and differentials of old cars where the parts have become worn and noisy. One filling of a tight transmission case, it is claimed, is sufficient for an entire season.

Ebonite is guaranteed to be exactly as represented. Instructions for its use accompany each barrel or container.

Manufactured by Bayson Oil Works, Erie, Pa. Prices and literature on request.

The Tirometer Valve Gauge is simply constructed, while the working parts are very few, consisting merely of an indicator mounted on a piano wire spring. A rubber valve passes through this spiral spring and connects with the valve itself. The pressure of the air in the tire expands this spring to the proper point on the gauge and is stated to be accurate up to within one pound Each gauge is tested and one pound variation is the maximum allowed.

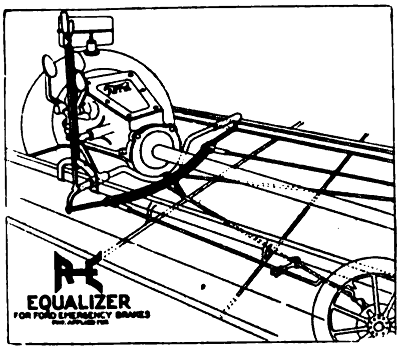


The gauge is covered by a transparent dust cap made of flint glass, which is tested at a pressure of 5000 pounds. The glass is especially thick and will, it is claimed, withstand all the shocks to which it may possibly be subjected. All metal parts are brass, nickel plated.

Manufactured by the Tirometer Corporation of America, Charleston, W. Va. Prices and literature on request.

The Roose Emergency Brake Equalizer for Ford Cars is an equalizing bar which fits across the frame side members and to which the emergency brake rods are attached.

The Emergency brake lever is attached to the equalizer at each end and causes, the manufacturer states, the brake to be applied to the rear wheels with equal pressure. Three highly tempered coiled springs prevent the equalizer from becoming noisy and also act to release instantly when pressure is removed from the lever.

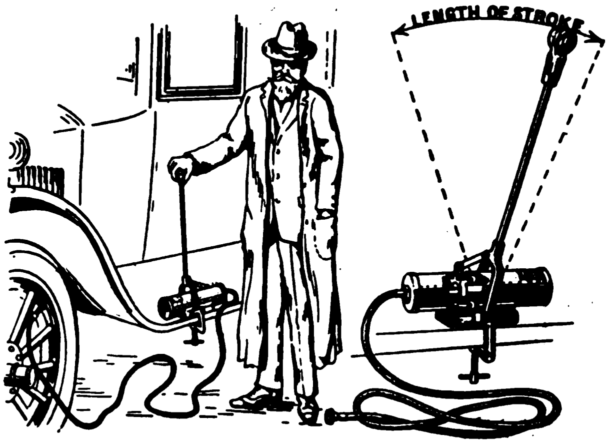


The R-E Equalizer is guaranteed by the manufacturer for the life of the car to which it is attached and, it is claimed, may be installed in 10 minutes time by any one without the use of tools.

Manufactured by the Roose Manufacturing Co., 827-33 West Main Street, Louisville, Ky. Price, $1.50.

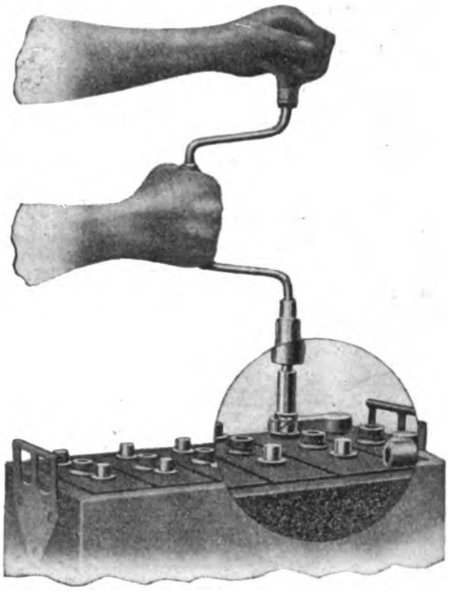
The Durabilt Roller Bearing Tire Pump is stated to be the result of more than two years of experimenting and testing under the most severe conditions and is designed for motorists who demand the best that money can buy.

The Durabilt roller bearing tire pump is attached to the running board of the car by clamps and is operated by a vertical handle, easily worked from a standing position and may be readily manipulated by a woman. The pump is double acting or duplex and works at all times, it is stated, against only half the pressure of the tire. It is small in size and can easily be stored in a tool box or under the car seat.



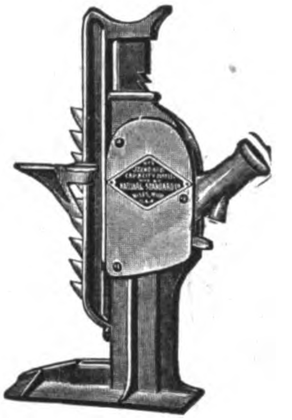
Manufactured by Winstead Hardware Manufacturing Co., Winstead, Conn. Price on request.

The Storage Battery Link Cutter is a device that may be used with an ordinary brace for cutting the lead from storage battery posts to facilitate the removal of the connecting straps or links. It is especially designed for this type of work and service stations catering to battery trade should find it very useful. It is patented and is so constructed as to remove just the proper amount of metal so that the link can be easily taken off without injuring the post or the surrounding metal of the link. The posts are left in practically the same condition in which they were when assembled by the manufacturer, it is stated. Links removed in this manner, it is claimed, allow the repairer enough space to remove the plates easily from the cells.

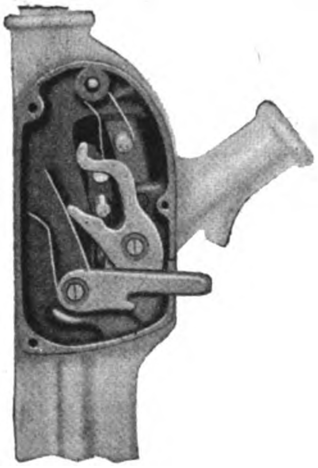


Manufactured by the Auto Electric Sales Co., 2540 Hennepin Avenue, Minneapolis, Minn. Price $5, shipped either C. O. D. or cash with order, as desired.

Standard Automobile and Truck Jacks are manufactured for a discriminating trade which wants the best regardless of price. The manufacturer of the Standard line of jacks states that they are made as simple as it is possible to build a reliable jack and that as few parts are employed as is consistent with good engineering principles.



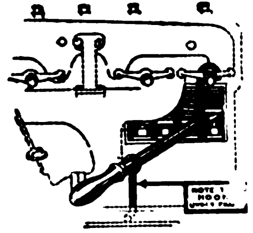
Flat springs are used to operate the levers instead of coil springs, and that one lever is used, instead of two or three, in the operating mechanism, which makes a construction which is not liable to get out of order easily.



All jacks are guaranteed against defective workmanship for a period of one year from date of purchase and will be repaired or replaced free of charge at the factory.

Manufactured by the National Standard Co., Niles, Mich. Prices on request. Jobber and dealer trade solicited.

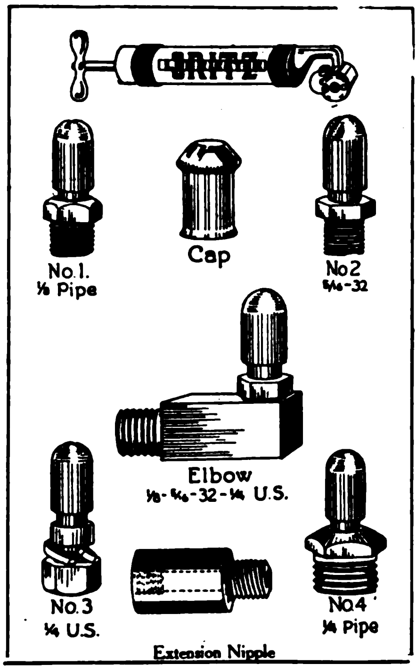
The King Valve Lifter for Ford Engine Valves consists of a special hook which fits over the manifold bolt, while the lifter proper is a rod provided with a forked end and a wooden handle. It is stated that with this device it is possible to remove all valve pins in one minute and replace them in 2½ minutes without removing the carburetor or hot air manifold. The exceptionally thin lifting end of the valve lifter provided with a special recess makes it easy to insert under the spring to replace pin without slipping.



Manufactured by the King Pressed Steel & Manufacturing Co., Newton, Mass. Price $1.

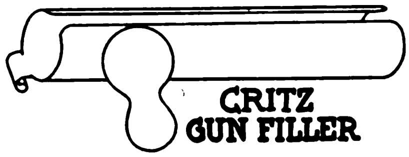
The Critz Lubricating System consists of a lubricator, the necessary nipples which take the place of the regular grease and oil cups, elbows, nipple extensions and spring metal dust cups.

It is stated that the lubricator used in this system is capable of producing a pressure of 500 pounds, which will be found sufficient to force the grease where needed; that 10 to 15 minutes is all the time required to thoroughly lubricate the car with this system, thus saving a considerable amount of time.



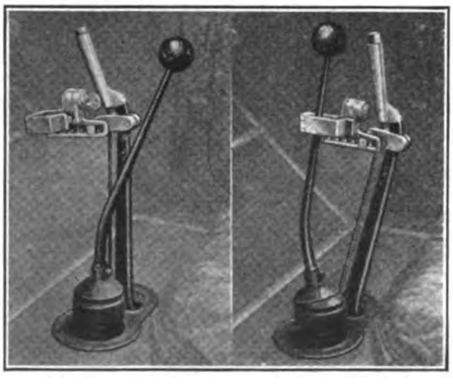
It is claimed that this lubricator will handle oil as well as grease and deliver it where needed without danger of having the oil spill out of the lubricator.

A special filler for the lubricator is provided which enables the operator to replenish the grease cup without inserting the lubricator in the grease. It is claimed that with this system the operator is saved from soiling his clothes or hands while greasing the car.



Manufactured by the Critz Manufacturing Co., Inc., Santa Maria, Cal. Prices and literature on request.

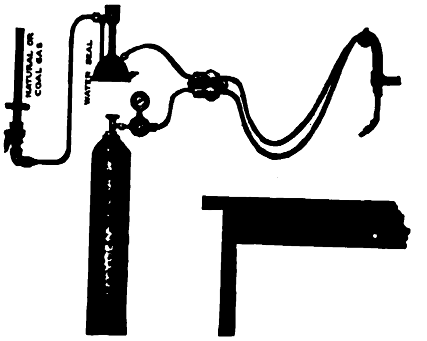
Lucia Gearshift and Emergency Brake Lock is a new device for cars equipped with a hand emergency brake and gearshift lever located in the center of the front compartment of the car. The lock is attached permanently to the emergency brake lever and is adjustable to fit the gearshift lever. In stopping the car the gearshift lever is simply thrown into reverse and the lock snapped shut. It is unlocked with a special Corbin key. The lock is said to conform with the usual fire regulations allowing the car to be parked and locked in neutral in fire zones.



It is stated that the lock cannot be easily sawed through, as it is constructed of case hardened metal, while the mechanism is four-tumbler Corbin.

Manufactured by the Lucia Manufacturing Co., Inc., 1123 Broadway, New York City. Price on request.

The No. 20 Imperial Lead Burning Outfit is designed for use with illuminating gas and oxygen and consists of one type F oxygen regulating valve with 15-pound pressure gauge; one Imperial hydraulic back pressure valve and purifier for coal gas or natural gas; 35 feet of 3/16-inch special rubber hose; one type "L" bench block with two needle valves; one type "L"-2 Imperial lead burning torch with tips No. 3, 4, 5 and 6; one wrench; all packed in an individual carton, including full instructions for use.

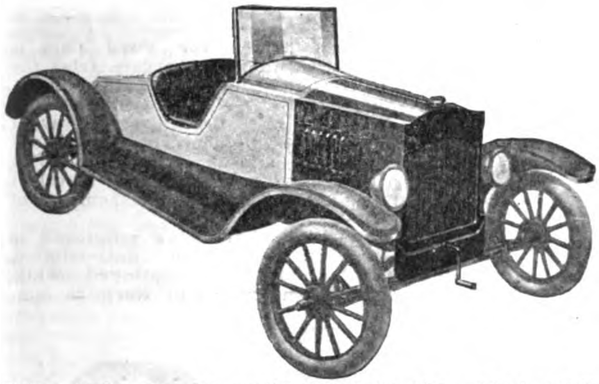


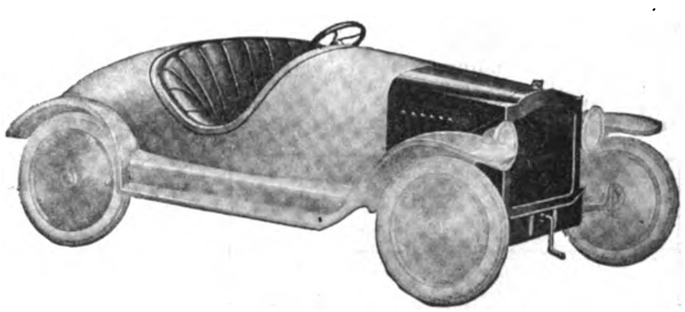
Manufactured by the Imperial Brass Manufacturing Co., 1200 Racine Avenue, Chicago, Ill. Prices and literature on request.

Duplex Foldables, with the side-stay feature, include many useful articles for the motorist in such a form that they are easily folded or collapsed and carried in small space in the car. The line includes such articles as water pail, folding wash basin, toilet kit and wall pocket lunch baskets, folding tunnels, water buckets, fishing creels and minnow buckets. All articles are made of heavy canvas, water proofed and fitted with metal parts of spring steel, which are guaranteed to be rust proof.

Manufactured by the Planet Co., Westfield, Mass. Prices and literature on application.

Dunham Speed Bodies for Fords are made in two styles, the Symphony, a sport roadster type, and the Aristocrat, a roadster type equipped with an aeroplane top.





Either body can be easily fitted to the Ford chassis and class and quality are added to each Ford so equipped.

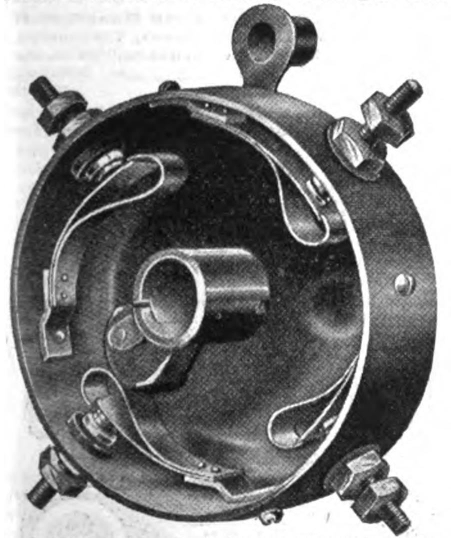
The body is constructed of steel, 22-gauge stock throughout, while the sills are two by six inches, with one-inch floor boards. All bodies are highly finished, painted standard red and striped with black, while the shell and hood are painted black to match the fenders and baked as a protection against engine heat.

The upholstery covering is Dupont's Fabrikoid, a pliable, handsome leather substitute, and done in French-pleat style. Cushions are the over-stuffed type of unusual thickness, with five rows of oil-tempered coiled springs. The outfit also includes a new shell for the radiator.

Manufactured by the Thomas Dunham Co., Aurora, Ill. Prices and literature on request.

The New Parker Timer for Ford Engines has recently been placed on the market after exhaustive tests covering many thousands of miles over all kinds of roads and under all sorts of conditions. The manufacturer states that this timer, once installed, will easily outlast the car; that on account of its construction dust and oil cannot enter and that the device is intended to operate without oil of any kind.

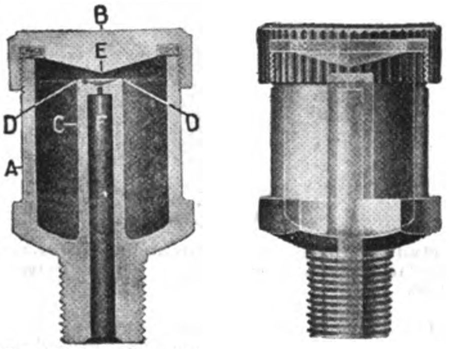
A sliding block of fiber is fitted to the camshaft collar which, in operation, strikes against the larger flat spring when making the contact. A shorter flat spring, equipped with a point, makes contact with that of the terminal post of the timer case. The manufacturer states that this construction gives an absolute positive contact at exactly the right time and that it is electrically correct in detail. The timer case is made from a one-piece stamping and the dust and oil proof collar fits the case at the rear.



Manufactured by the Automotive Specialty Sales Co., 212 Lane Street, Dallas, Tex., and 620 Consumers' building, Chicago, Ill. Price to the consumer, $3.75.

The Blooming Cup is a trade name given by the manufacturer to a new line of oil cups which, it is claimed, are being used quite extensively by the manufacturers of passenger cars and trucks.

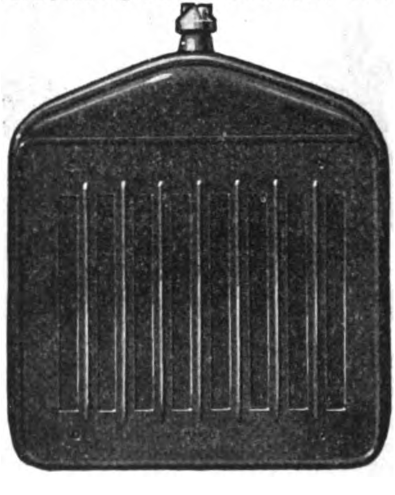
The action of the cups is stated to be quite different from those generally used, as the oil is conveyed into the bearing principally by the motion of the car. The cup is filled full of oil, the excess flowing through the tube which extends nearly to the top of the cup and is provided with a small opening in the upper end through which the oil passes. This serves to flush the bearing when the cup is filled, the excess oil seeking the level of the top of the tube. The cap is fitted and screwed down, and after this the action of the vehicle on the road causes the oil to move around, a portion catching on to the inverted cone on the under side of the cap from which it drips into the opening of the tube and passes to the bearings. It is stated that oil is supplied only when the vehicle is in motion.



Different styles of fittings are supplied which adapt the oiler to any part of the vehicle requiring lubrication.

Manufactured by Bloom Flusher Co., Tiffin, O. Prices and literature on request.

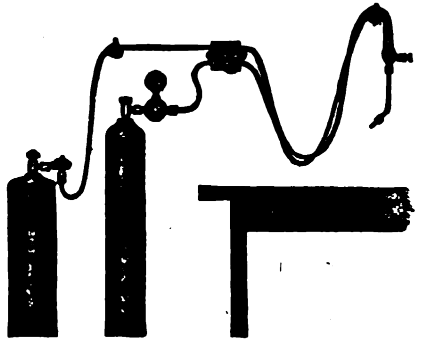
The New Amco Shutter for Ford Cars has been designed as an all-weather device, which can be applied to the radiator of Ford passenger cars and trucks. Twelve different adjustments are provided, which allow the front of the radiator to remain entirely closed or partially closed as desired, and, it is stated, the shutter can be adjusted to any degree of temperature. By the use of the Amco shutter heat is retained under the hood during cold weather and the engine, it is claimed, starts more easily and operates to better advantage. After a few moments driving the shutter can be partially opened, allowing the colder air to enter. It is made of the best of material throughout.

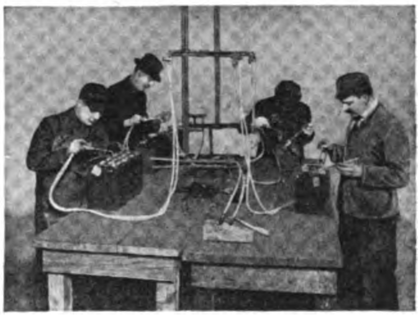


Manufactured by the American Metals Corporation, Indianapolis, Ind. Prices on request. Dealers and jobbers interested should write for special proposition.

Imperial Lead Burning Equipment is used principally for storage battery work, light brazing and welding, repairing radiators, melting platinum and other light work where an intense heat is not required.

With this equipment it is possible to get a wide range of flame from a needle point suitable for burning the smallest terminal to a large flare for finishing work, the manufacturer states. All the extra equipment required is a tank of compressed oxygen of a capacity of 100 cubic feet, dissolved acetylene gas in cylinders of 40 to 100 cubic feet capacity, and hydrogen gas in cylinders of 100 foot capacity, all of which can be obtained from supply stations located in various centers throughout the country.

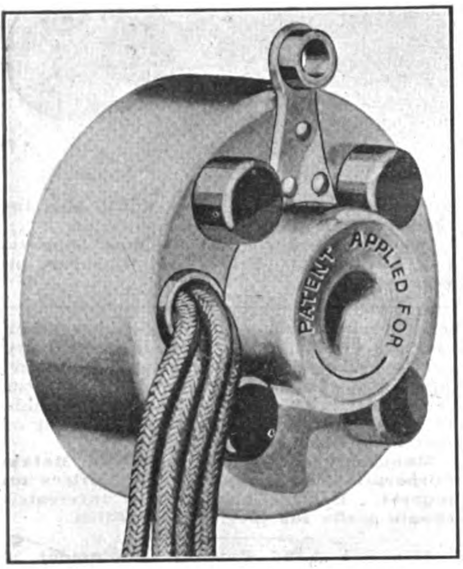




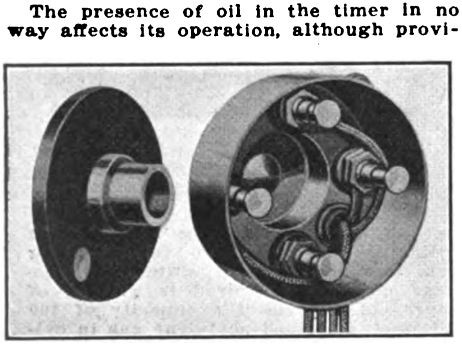
Manufactured by the Imperial Brass Manufacturing Co., 1200 Racine Avenue, Chicago, Ill. Prices and literature on request.

The Scofield Timer for Ford Cars. A distinguishing feature of this timer is the fact that all electrical connections are inside, no terminals being exposed, thus elminating any danger of short circuit by reason of accumulated oil and dirt, and removing the possibility of terminal connections working loose from vibration.

The terminal binding posts are of rigid and substantial construction and are provided with springs which keep the terminal in close contact with the rotating member. In fact, this timer provides for a quarter inch of end play in the camshaft and an eighth inch of side play. The rotating member carries an oversize, hardened steel contact, which is set into a fiber disc, and by this construction the effect of centrifugal force is entirely avoided, with wear reduced to the minimum, as the contact area "wipes" across the heads of the posts with only sufficient pressure to insure a perfect electrical contact.



The presence of oil in the timer in no way affects its operation, although provision is made for draining off excess oil that may accumulate. The rotating member, in fact every detail of construction, conforms to the standard employed in high grade magnetos.



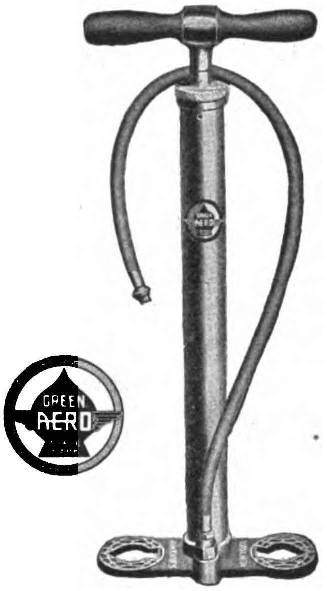
This timer can be easily and quickly installed. No special fittings are required and as wiring is furnished already connected, it is only necessary to bolt the rotator to the camshaft and attach the timer shell in the usual way.

Manufactured by the Schofield Manufacturing Co., Cleveland, O. Price, complete, with wires attached, $4. Usual discounts to the trade.

The "Green Aero" Tire Pump is manufactured especially for a discriminating trade which demands the best that money is able to purchase in hand pumps. The pump embodies many special features, it is stated, not found in the usual run of hand pumps.

The cylinder of the pump is made of the highest quality cold-rolled welded steel, while the cap and base are of brass and best quality pure gray iron respectively.

The hose is of tough durable rubber, duck pump tubing, five-ply, 27 inches in length, built for excessive abuse and pliability. Other parts of the pump are made of the best grades of material obtainable and are built in a workmanlike manner. The pump is finished in green enamel, while the handle forms a convenient grip for the hands and is finished with a high gloss enamel.



Manufactured by S. Blickman, 190 Lafayette Street, New York City. Price, $4.50.

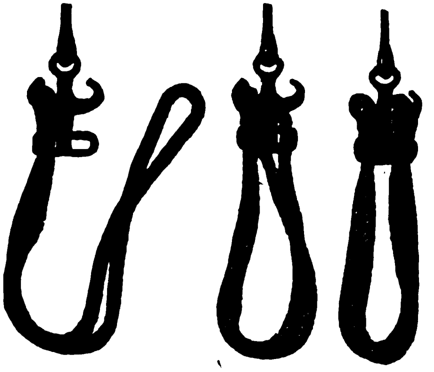
The Auto Towing Cable consists of a steel wire rope 25 feet long, provided with loops at the ends to which is attached a patented double hook fastener. Manila rope loops are provided for attaching to the car, which are held in position by a cast metal loop when attached to the hooks. When the rope ends wear out they can be easily removed. It is stated that the Auto Towing Cable is of sufficient size and strength to handle all operations in connection with towing passenger cars and medium weight trucks. The manufacturer issues a booklet which illustrates many suggestive uses for the Auto Towing Cable, and shows how the different hitches may be made to get the stalled car safely back on to the road again.

American Steel & Wire

Auto Towing Cable

FOR PASSENGER CAR SEREVIC

Patent applied for



Manila Loop attached. Always remains in Hook. Can be detached when loop wears out.

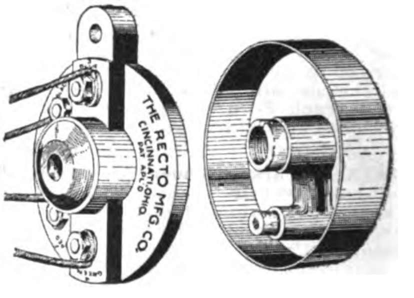
Other end being inserted. Large ring provided to easily insert loop, tho water and sand soaked.

End of Loop hooked—ready for towing. Quadruple strength — firmly attached. No loosening and dropping the tow.

Manufactured by the American Steel & Wire Co., 208 South La Salle Street, Chicago, Ill., and 30 Church Street, New York City. Prices and literature on application.

The Recto Timer for Ford Cars is stated to be a radical departure from the usual timer construction for this engine. The timer case is made of insulating material and has been designed to prevent the timer wires, which are held with lock washers, from coming in contact with each other, the fan belt, or any metal, it is stated, preventing short circuits and grounding.

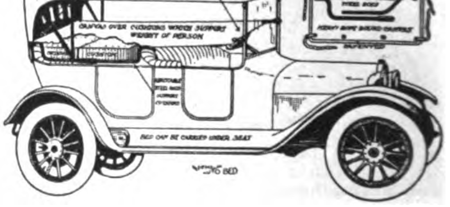
Instead of a roller being employed to make contact, a "Corban" anti-friction, non-sparking brush is employed, while the track is constructed of Formica laminated material. The body of the timer is made of Bakerlite and insulating material to which the wires are attached by suitable connectors.



It is stated that the timer needs no oil, and that the flat inside surface can be cleaned and smoothed off with sandpaper without removing the wires. The "Corban" brush, it is claimed, pushes grease and dirt before it, making positive contact and wipes away the spark, functioning similar to a brush on an electric generator.

Manufactured by the Recto Manufacturing Co., 23 West Third Street, Cincinnati, O. Price, $3.50; new brushes, 30 cents each.

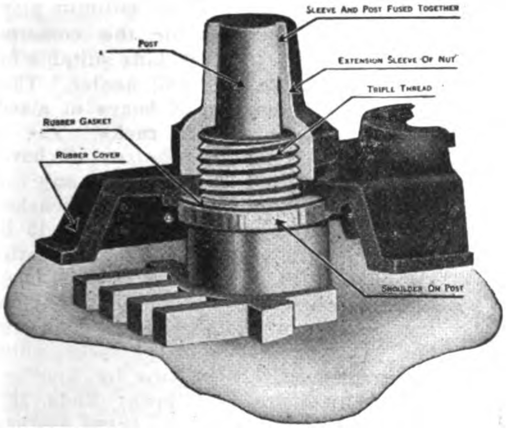
The McMillin Patent Auto Bed weighs only 16 pounds and folds into a compact bundle about four inches in diameter and two feet long, small enough to be carried under the back seat when not in use. As shown in the cut, the outfit consists of two adjustable iron rods or pipes, which fit between the backs of the front and rear seats, one at each side, supporting the cushions of the car. The heavy canvas, which forms the bed is rope bound and provided with brass eyes, fitted with short lengths of rope, which are fastened at the back to the top hangers and at the front to the windshield as shown or to the side lamp brackets. Ford and Chevrolet cars require a somewhat different arrangement as the seat cushions will not fit between the front and rear seats, but overhang the top of the front seat. In this case the head of the bed is supported by long straps from the rear bow of the car. It is stated that this form of bed is very much in demand by motorists who make long tours and find it desirable to camp by the wayside nights.


TOP MAY BE EITHER UP OR DOWN
NO BOLTS OR SCREWS - SIMPLY STRAP CANVAS TO SIDE BRACKETS AND WINDSHIELD
ALL THERE IS TO IT
CANVAS OVER CUSHIONS WHICH SUPPORT WEIGHT OF PERSON
BED CAN BE CARRIED UNDER SEAT

Manufactured by the MacKenzie-Waterhouse Co., Inc., 717 East Pike Street, Seattle, Wash. Price for Fords and other five-passenger cars, $20; seven-passenger cars, $22.50.

The Latest Improvement on Cincinnati Batteries consists of the locking nut, which is first screwed down on the post clamping the cover firmly against the rubber gasket inserted on the shoulder of the post. This type of fastening, it is stated, absolutely prevents the nut loosening from vibration, but at the same time is readily removable in case of repairs. Seepage of acid from the cells is thus prevented, while it still retains all the advantages of having the sleeve molded to the cell, without the disadvantages of this type of construction.

A process has also been perfected whereby dry separators can be used in assembling the cell plates which permits the manufacturer to send the batteries to his distributors in larger quantities, it is claimed, enabling the dealer to carry a larger stock on hand without fear of damage to the batteries. When the battery is finally delivered to the customer, it is claimed that it is in as freshly a charged state as though it had just been shipped from the factory, resulting in a much longer life to the battery and a more satisfied customer.



Manufactured by the Cincinnati Storage Battery Co., Morman Avenue, near Madison road, Cincinnati, O. Prices on request.

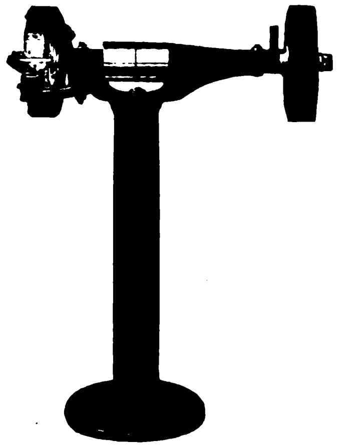
The United States Automobile Oil Gauges operate on the Bourdon tube principle and are made in two general types—one with a brass case and the other with a pressed steel case, with nickel plated ring. These gauges are equipped with independent, non-corrosive movements mounted direct on the gauge socket. It is stated that they cannot be thrown out of adjustment as the gauge is being screwed into position. The teeth in the segments and pinions are cut on special precision machinery.

PAT'D SEPT 1906
10
20
30
40
50
OIL
U.S. GAUGE CO N.Y.

United States gauges, on account of the care in their construction, are claimed to be extremely accurate and are being utilized by many of the larger users of this type of automotive equipment, as they are considered, after many severe tests, to be very reliable.

Manufactured by the United States Gauge Co., 37 Liberty Street, New York City. Prices and literature on request.

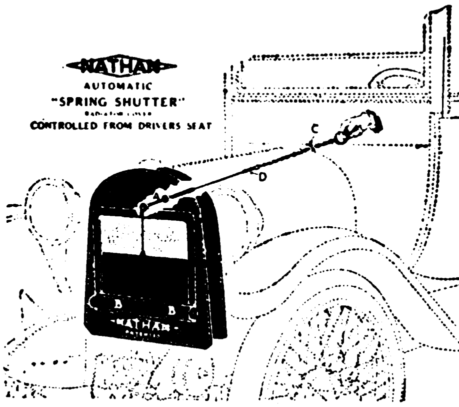
The Vulcanizers' Special Grinding and Buffing Machine, No. V-5, is a very practical machine of light weight and low price designed especially for tire repair and general repair work. The extended bearing, which is a part of the machine proper, supports the spindle so as to prevent vibration, and at the same time allows an unusually long distance between the wheels, a point which appeals to tire repairers, as it permits the cleaning and roughening of the larger size tires without coming in contact with the stand or wheel at the opposite end of the shafts. The machine is regularly furnished with tight and loose pulleys, but can be supplied with tight pulley if desired. It is equipped with guard and tool rest for grinding and includes guard for buffing if desired.



Manufactured by the Clisbe Brothers Manufacturing Co., Plymouth, Ind. Price on application.

The Nathan Automatic Spring Shutter Radiator Cover has been designed to be used on the radiator of any car during cold weather, and it is claimed that with them it is possible to positively regulate the temperature of the cooling medium automatically from the driver's seat.

The device consists of a Nathan cover which fits over the radiator shell at the sides and partially covers the front. In the open space at the front near the bottom, is fitted a roll curtain, which is fastened to the shell at the bottom. A cord passes upward from the center bar of the curtain, through a flexible tube between the radiator fins or sections, and over the top of engine to a hole in the dash. On the driver's side of the dash is a hook conveniently placed, over which the pull cord or chain is fastened after the curtain has been raised to the desired height. It is stated that the curtain can be adjusted equally as well by the driver, when the car is in motion, by simply loosening the chain from the hook and dropping the curtain to the desired point.



The shutter is guaranteed as to material and workmanship and should any part prove defective the company will replace it free of charge.

Manufactured by the Nathan Novelty Manufacturing Co., 55 Fifth Avenue, corner 12th Street, New York City. Priced according to the car for which it is wanted. Literature and prices on request.

The Williams "Agrippa" Adjustable Boring Tool Posts for Multiple Bars is furnished with either sleeve or plain bar, one each 45 degree and 90 degree cutter and hardened wrenches. Each post accommodates a wide range of bars; commercial sizes of bar steel are adaptable for either bars or cutters without machining, it is stated.

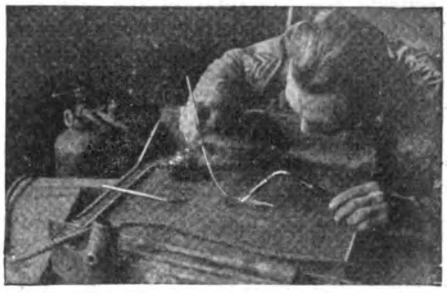
The height of the bar can be quickly and easily changed by means of the knurled ring at the bottom, which will raise or lower the base to suit the conditions. The posts, rings and swivels are made from a carefully selected grade of tough, strong steel. The posts are subjected, after forging, to a refining process, or heat treatment, which greatly increases their stiffness and strength, also reducing the liability of springing.

The screws, threaded United States standard, are made of a special grade of steel, hardened and tempered.

Manufactured by J. H. Williams & Co., Brooklyn and Buffalo, N. Y. Prices and literature on application.

The Washburn Torch has been designed for repairing storage batteries, in fitting terminals, repairing radiators, aluminum welding, brazing, soldering, etc. Other methods have been devised and patented for these purposes, but the Washburn torch manufacturer states that this device has many features that make it a decided improvement over other methods.

The Washburn torch consists of a compound burner and uses a very large proportion of compressed air in mixture with a small portion of acetylene gas (Prest-O-Lite), consuming about 11 times more air than gas by weight. The flame of the torch is very intense, is easily manipulated and, in appearance, is needlelike. This feature directs the heat at a well localized point and consequently protects the surrounding portions of the work. In lead burning operations this feature is very desirable as well, as when soldering in close quarters and where it is not desirable to heat the surrounding surfaces.



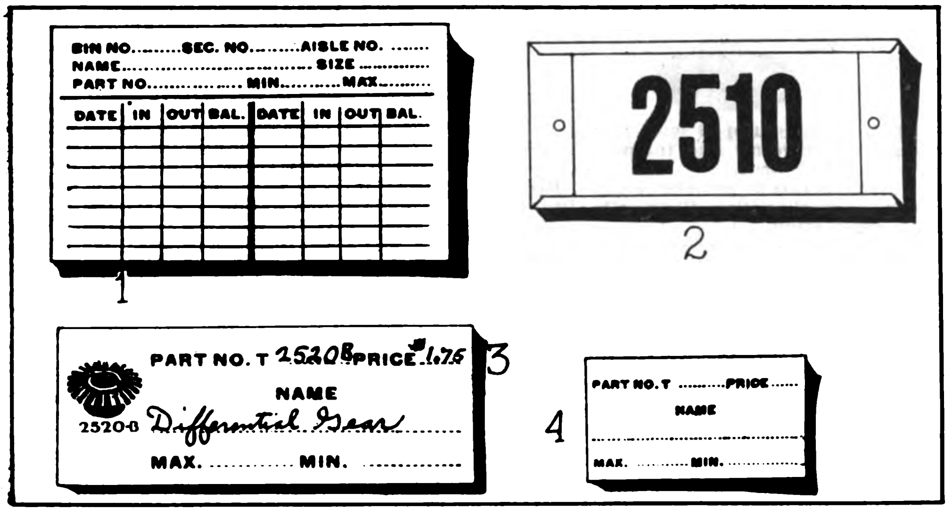
The Washburn torch has received specially favorable comment from Perdue university, upon which the manufacturer bases many claims.

Manufactured by the Washburn Burner Corporation, Kokomo, Ind. Prices and literature on request.

Desirability of Systematizing the Stock Room

MODERN good practise demands that all departments of a business be managed efficiently if the establishment as a whole is to operate with the least overhead expense and the greatest profit. Much has been said, and justly so, about the value of show rooms and how to develop business along that line, but not so much attention has been paid to the back end of the store or shop. This part of the business needs careful supervision, especially in these times when the items of expense for labor, materials and equipment are so large. Not only does the stock on hand itself represent money, but its proper arrangement, so that it is readily accessible to workmen or salesmen at a minute's notice when wanted, also means much in the saving of time and unnecessary work.

It is also a desirable factor that, while enough stock be carried to supply all ordinary demands with a proper surplus to guard against inconvenience in an emergency, no great amount of capital be tied up in "dead" stock or in overstocking in any particular line.


BIN NO.........SEC. NO.........AISLE NO. ....
NAME.............................SIZE ....
PART NO................MIN...........MAX..........

DATE	IN	OUT	BAL.	DATE	IN	OUT	BAL.

2510

PART NO. T 2520B PRICE $1.75
NAME
2520-B Differential Gear
MAX. .... MIN. ....

PART NO. T ....PRICE......
NAME
MAX. ....MIN. ....

Some Specimens of Labels Supplied by the Haddon Bin Label Co., Haddon Heights, N. J.: 1, Perpetual Inventory Label on Which Record Can Also Be Kept of Amount Used or Sold in a Given Time; 2, Metal Label Holder Containing Card with Number of Part; 3, Cut of Part May Be Cut Out of Catalogue and Pasted on Label; 4, Shows Card for Fastening on Edge of Shelf Directly Above or Below Article.

The place of business of the accessory dealer or repair man in some measure reflects the character of the owner. A well-arranged and well-planned store or shop, even if the equipment for taking care of the stock be simple and inexpensive, may be, generally speaking, considered a correct index of the business-like mind and habits of its owner. Proper provision for storage will enable the owner to carry a large variety of stock in small quantities and within a limited area, so that the total investment will be as small as possible, except when a dealer may find it advantageous to buy ahead in order to forestall a rise in price.

The building of racks and stock bins is a comparatively simple matter. While it is, of course, possible to obtain ready-made bins or units of metal, for the early stages of the stock room wooden bins are much to be preferred. They should be low enough, if space permits, so they can be easily reached without the need of a step ladder, and the arrangement should be of the unit or sectional type, whether of wood or other material, so as to admit of the addition of units or sections as need demands without the disarrangement of the existing system.

There should be a definite space, shelf, bin, box location or position for each kind of material, and they should be marked and indexed so that there will never be a moment's doubt as to just where an article is to be placed or found.

In equipping or furnishing a stock room, the bins can be built against the walls where only a small amount of stock is carried, but where the business has increased or the nature of the articles carried demands more space it may be necessary to have a number of sections and aisles between them, the bins being placed back to back, so that two sets of bins open in one aisle. As light is an important factor, it is a good plan, where partitions are necessary, to make these of wire screening.

The modern method, as stated before, is to build the bins in sectional units on the same plan as a sectional book case or filing cabinet, and they can be arranged in any convenient size, height or width to fit any particular location. Sectional bins are made in convenient sizes to suit any particular business. Some make the units three to four feet long, 12 inches deep and 10 inches high for one row of bins, or 20 inches high for two rows of bins in the one unit. Partitions are made six, eight, 10, 12 or 18 inches apart to accommodate each class of material.

For heavy fittings, seven-eighth inch planed material should be used, while for the lighter articles the sectional units can be made of strong half-inch lumber. As wide boards, such as 12-inch, are very expensive, it is more economical to use two pieces of lumber, each six inches wide, to make a 12-inch box. One of the most inexpensive materials recommended for this class of work is what is known as sheathing boards, which are one by eight-inch North Carolina pine, 14 feet long, and planed only on one side. Lumber planed on four sides costs about twice as much.

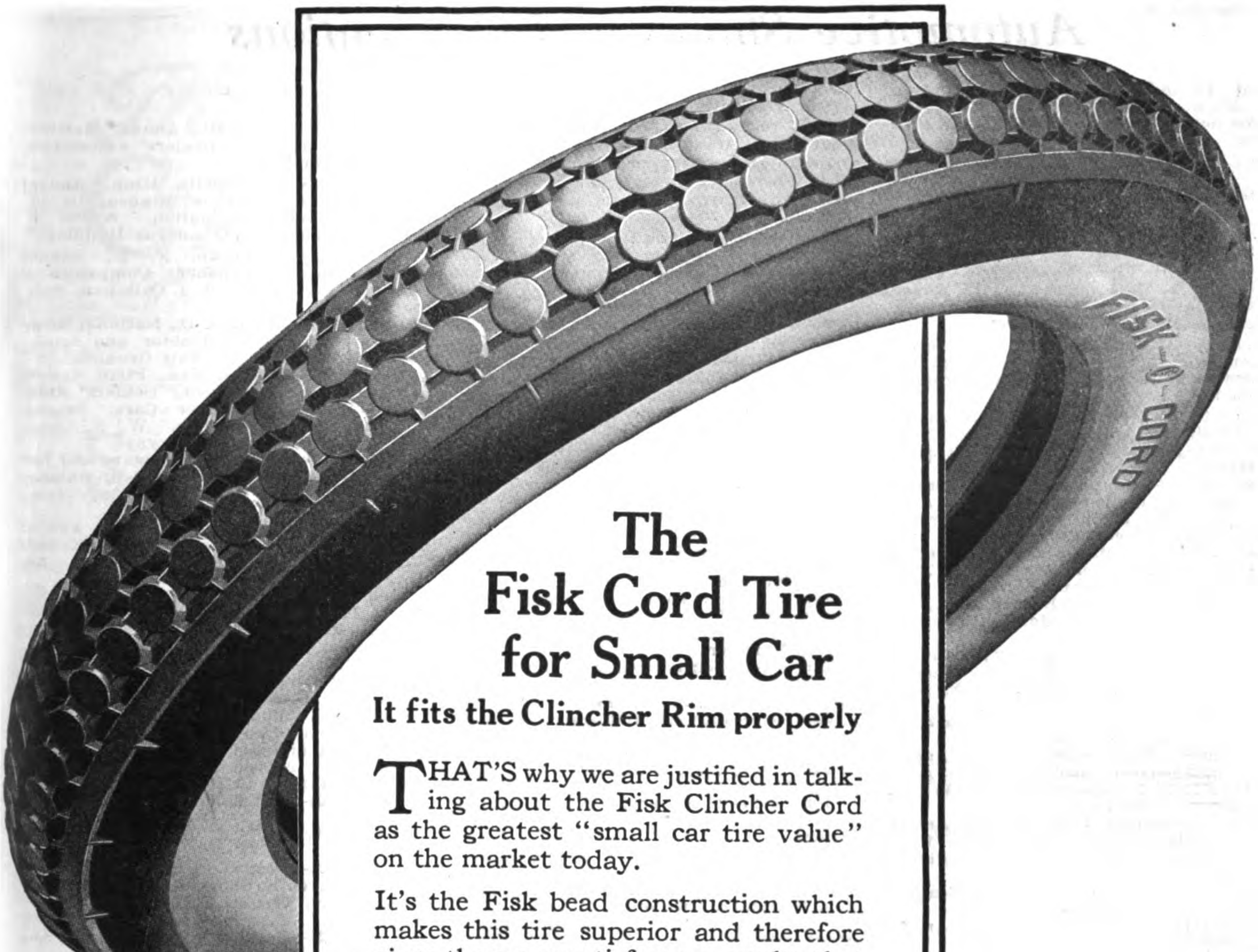
A recent Ford service bulletin gives detailed instructions for the construction of a series of stock bins suitable for either the large or small dealer. They consist of a number of boxes of standard sizes supported on racks. The dimensions of the three sizes of boxes permit them to be arranged in any convenient order. The outside dimensions of these boxes are: Large size, 13 by 26 inches; half size, 13 by 13; quarter size, 6½ by 13. The boxes may be made of half-inch wood, crating lumber, packing boxes or any other light strong lumber. The dimensions of the racks, which are made entirely of two by four-inch yellow pine, are as follows: Ends, 26¼ inches; sides, 111 inches—three sections of 52 inches each, with overhang of 7½ inches at each end to permit bracing for additional strength. Strips one-half by 2½ inches, are nailed around the racks at the bottom. The up and down space between the frame work is 13 inches.

This is a neat, compact, flexible system, and one that can be expanded or contracted at will. The stock in the bins or boxes being below the level of the eye, the full value of the light is obtained in all parts of the stock room.

In order to obtain the greatest efciency in any system of storing parts and other stock, each bin, box or compartment should be plainly and properly labelled. The old method of stencilling on the outside of the bin was expensive, inflexible and consumed a great deal of time. The more modern plan is to fasten lacquered tin card holders on the outside of the compartments and slide label cards with transparent celluloid covers into the holders.

The Haddon Bin Label Co., 206 West Atlantic avenue, or Box 449 Haddon Heights, N. J., makes a specialty of supplying these label holders and markers at a moderate price, and is prepared to meet all requirements in this line.

If the stock bins are properly labelled the goods can be stored away by anyone who can read the labels and numbers, and no expert help is necessary. The labels also simplify the matter of taking inventories at any time. Labels are also designed for fastening on the edge of shelves, which include the name of part, its number and price. The labels may be as simple or elaborate as desired, from a simple number or name to a stock inventory ticket to be used for keeping a perpetual inventory of stock on hand and also to keep a record of the exact amount of any articles used or sold in a given time. The principal requisite is that the bins be kept properly labelled in some suitable way.



The Fisk Cord Tire for Small Car

It fits the Clincher Rim properly

THAT'S why we are justified in talking about the Fisk Clincher Cord as the greatest "small car tire value" on the market today.

It's the Fisk bead construction which makes this tire superior and therefore gives the same satisfactory results that Fisk users are getting from the big Fisk Cord straight-side tire.

It is the ONE Clincher Cord you can sell with the same confidence you have when you put out the straight-side Cords. You know the bead construction must be right as well as the quality.

Next time—BUY FISK

Sold only by dealers

Trade Mark Reg U S Pat Off

Time to Re-tire?
(Buy Fisk)

FISK CORD TIRES

Automotive Shows and Conventions

Oct. 16-23—Pittsburgh, Pa., Passenger Car Show, Automotive Association, Inc., Motor Square Garden. John J. Bell, Manager.

Oct. 16-26—Atlanta, Ga., Southeastern Fair Association, Fifth Annual Fair. Atlanta Auto Association Managers of Show, 305 Connolly Building.

Oct. 18-23—Jackson, Miss., 17th Annual State Fair. Passenger Cars, Trucks, Tractors. Mabel L. Stire, Secretary.

Oct. 15-23—Raleigh, N. C., 59th Annual State Fair. Passenger Cars, Trucks, Tractors. Joseph E. Pogue, Secretary.

Oct. 19—Atlantic City, N. J., Meeting, Automobile Accessory Branch, National Hardware Association, Marlborough-Blenheim.

Oct. 19-24—Dallas, Tex., 34th Annual State Fair, Passenger Cars, Trucks, Tractors and Accessories. W. H. Stratton, Secretary.

Oct. 20-22—Atlantic City, N. J., Convention National Implement & Vehicle Association. E. W. McCullough, Secretary, 72 West Adams Street, Chicago, Ill.

Oct. 28-Nov. 6—Macon, Ga., 65th Annual State Fair. Passenger Cars, Trucks, Tractors. Harry C. Roberts, Secretary.

Oct. 30-Nov. 4—Long Branch, N. J., Annual Automobile Show, Monmouth County Dealers' Association.

Oct. 30-Nov. 14—Waco, Tex., 11th Annual Cotton Palace Exposition. Passenger Cars, Trucks, Tractors. S. N. Mayfield, Secretary.

November—London, England, Passenger Car Show, Olympia.

November—New York, N. Y., Annual Meeting American Road Builders' Association. E. L. Powers, Secretary, 150 Nassau Street, New York.

Nov. 1-6—Jersey City, N. J., Annual Show, Hudson County Automobile Dealers' Association, Fourth Regiment Armory.

Nov. 6-13—Christchurch, New Zealand, Olympia Motors Exhibition.

Nov. 7-12—Lewiston, Ida., 12th Annual Northwest Livestock Association Fair, Trucks and Tractors.

Nov. 8-13—Phoenix, Ariz., 16th Annual State Fair. Passenger Cars, Trucks and Tractors. Shirley Christy, Secretary.

Nov. 9-11—Cleveland, O., Service Managers' Convention, National Automobile Chamber of Commerce.

Nov. 14-21—New York City, Automobile Salon, Hotel Commodore.

Nov. 15-20—Jersey City, N. J., Annual Automobile Show, Hudson County Automobile Dealers' Association, Fourth Regiment Armory.

Nov. 15-20—Chicago, Ill., Automotive Equipment Show, auspices Automotive Equipment Association, Coliseum. A. B. Kaufman, Manager.

Nov. 17-18—Ohio Implement Dealers' Association, Columbus; Secretary, J. H. Goldcamp, Lancaster, O.

Nov. 18-19—Detroit, Mich., Annual Meeting, Motor Truck Sales Managers' Association.

Nov. 30-Dec. 3—St. Louis, Mo., Third Annual Meeting and Exhibition, Accessories Branch, National Hardware Association of the United States, Coliseum.

Dec. 1-3—Indiana Implement Dealers' Association, Indianapolis; Secretary, T. H. McGeorge, Covington, Ind.

Dec. 6-9—Iowa Implement Dealers' Association, Des Moines; Secretary, T. F. Wherry, Des Moines. Exhibit.

Dec. 7-10—Wisconsin Implement Dealers' Association, Milwaukee; Secretary, R. G. Nuss, Madison. Exhibit.

Dec. 7-10—Michigan Implement Dealers' Association at Grand Rapids; Secretary, L. F. Wolf, Mt. Clemens. Exhibit.

Dec. 8-10—Cincinnati, O., Convention, Ohio Automotive Trade Association. E. J. Shover, Secretary, 404 Central National Bank Building, Columbus, O.

Dec. 9-10—Cincinnati, O., Annual Convention, Ohio Automobile Jobbers' Association.

Dec. 9-10—Columbia, S. C., Annual Meeting, South Carolina Automotive Trade Association.

Dec. 10-18—New York, N. Y., Motor Boat Show, Grand Central Palace.

Dec. 10-19—Brussels, Belgium, First Post-War Show, Palais du Cinquantenaire, Chambre Syndicale de l'Automobile.

Dec. 13-18—Ottumwa, Ia., Second Annual Show, Passenger Cars and Accessories. F. T. Lynch, Manager, 211 East Main Street.

Dec. 14 16—Illinois Implement Dealers' Association, Peoria; Secretary, W. L. Derry, Vermont, Ill.

Jan., 1921—Little Rock, Ark., Annual Meeting, Arkansas Good Roads & Drainage Association. Robert O. Schaefer, Secretary, Masonic Temple, Little Rock.

January—Toledo, O., 13th Annual Show, Passenger Cars, Trucks, Tractors and Accessories. Terminal Auditorium. H. V. Buelow, Manager.

January—Seattle, Wash., Passenger Car, Truck and Accessories Show, Motor Car Dealers' Association.

January—Spokane, Wash., Passenger Car and Truck Show, Automobile Chamber of Commerce. E. M. Stock, Manager.

Jan. 3-8—New York, N. Y., Motor Truck Show, Motor Truck Association of America, 12th Regiment Armory. Theodore D. Pratt, Manager.

Jan. 4-7—South Dakota Implement Dealers' Association, Sioux Falls; Secretary, C. J. Bach, Sioux Falls.

Jan. 5-7—Midwest Implement Dealers' Association, Omaha; Secretary, James Wallace, Council Bluffs, Ia.

Jan. 7—Sydney, Australia, Australian Motor Show.

Jan. 8-15—New York City, National Passenger Car Show, Grand Central Palace.

Jan. 11-13—Minneapolis, Minn., Annual Convention, Minnesota Implement Dealers' Association, West Hotel. C. I. Buxton, Secretary, Owatonna, Minn.

Jan. 11-13—Mississippi Valley Implement Dealers' Association, at St. Louis; Secretary, F. E. Goodwin, Kirkwood, Mo.

Jan. 16-22—Milwaukee, Wis., Annual Passenger Car and Truck Show, Milwaukee Automotive Dealers' Association, Auditorium. Bart J. Ruddle, Manager.

Jan. 16-22—Schenectady, N. Y., Show, Company E, F and Machine Gun Company, State Armory. J. J. Callahan, Manager, Box 1186, Pittsfield, Mass.

Jan. 18-20—Pacific Northwest Hardware and Implement Association, Spokane, Wash.; Secretary, E. E. Lucas, Spokane, Wash.

Jan. 18-20—Western Retail Implement, Vehicle and Hardware Association, Kansas City; Secretary, H. J. Hodge, Abilene, Kan.

Jan. 18-20—Texas Hardware and Implement Association, Dallas; Secretary, A. M. Cox, Dallas.

Jan. 19—Milwaukee, Wis., First Annual Convention, Wisconsin Automobile Dealers' Association.

Jan. 22-29—Cleveland, O., Passenger Car Show, Cleveland Automobile Manufacturers' & Dealers' Association, Wigmore Coliseum. Fred H. Caley, Manager.

Jan. 22-31—Sydney, Australia, Second Annual M. T. A. Motor Show. N. Kingsley-Strack, Secretary, Challis House, Martin Place, Sydney.

Jan. 23-29—Amsterdam, N. Y., Annual Automobile Show, Benefit Company H, State Armory. J. J. Callahan, Manager.

Jan. 25-27—Kentucky Hardware and Implement Association, Louisville; Secretary, J. M. Stone, Sturgis, Ky. Exhibit.

Jan. 25-28—Oregon Retail Hardware & Implement Dealers' Association Convention, Portland. E. E. Lucas, Secretary, Hutton Building, Spokane, Wash.

Jan. 26-28—North Dakota Implement Dealers' Association, Fargo; Secretary, R. A. Lathrop, Hope, North Dakota. Exhibit.

Jan. 29-Feb. 4—Chicago, Ill., National Passenger Car Show, Coliseum, N. A. A. C.

Jan. 30-Feb. 5—Hudson, N. Y., Annual Automobile Show, Armory. J. J. Callahan, Manager.

Jan. 31—Chicago, Ill., Annual Meeting, National Automobile Dealers' Association, La Salle Hotel.

Feb. 5-12—Minneapolis, Minn., Annual Winter Automobile Show, Minneapolis Automobile Trade Association. Walter R. Wilmot, Manager, 709 Andrus Building.

Feb. 6-12—Newburgh, N. Y., Annual Automobile Show, Benefit Companies E and L, State Armory. J. J. Callahan, Manager.

Feb. 7-12—Columbus, O., National Tractor Show, Columbus Tractor and Implement Club, Ohio State Fair Grounds.

Feb. 7-12—Parsons, Kan., Fifth Annual Automobile and Accessory Dealers' Association Show, Passenger Cars, Trucks, Tractors and Accessories. W. N. Chapman, Secretary, 1818 Broadway.

Feb. 8-10—Oklahoma Hardware and Implement Association Convention, Oklahoma City. W. B. Porch, Secretary-Treasurer, Oklahoma City.

Feb. 12-19—Kansas City, Mo., Annual Passenger Car and Truck Show, Kansas City Motor Car Dealers' Association. Ed. E. Peake, Manager.

Feb. 14-19—St. Louis, Mo., 14th Annual Show, Passenger Cars, Trucks and Accessories. Robert E. Lee, Manager, 3124 Locust Street.

Feb. 18-28—San Bernardino, Cal., Show, Passenger Cars, Trucks, Tractors and Accessories. Fred M. Renfro, Manager, Chamber of Commerce Building.

Feb. 19-26—Newark, N. J., Passenger Car, Truck and Accessory Show, Newark Auto Trade Association, First Regiment Armory. Claude E. Holgate, Manager.

Feb. 20-26—Pittsfield, Mass., Annual Automobile Show, Benefit Company F, State Armory. J. J. Callahan, Manager.

Feb. 21-26—Deadwood, S. D., Eighth Annual Automobile Show, Auditorium, Passenger Cars, Trucks, Tractors and Accessories.

Feb. 21-26—Bethlehem, Pa., Seventh Annual Show, Passenger Cars and Accessories, Coliseum, Broadway and Montclair streets. J. L. Elliott, Manager, 1038 Norway Place.

Feb. 21-26—Elmira, N. Y., 11th Annual Passenger Car Show, Elmira Auto Club, State Armory. H. S. Bryan, Manager, 210 East Water Street.

Feb. 28-March 5—Bethlehem, Pa., Truck and Tractor Show, Coliseum, Broadway and Montclair Streets, J. L. Elliott, Manager, 1038 Norway Place.

March—Buenos Aires, Argentina, Exhibition of American Products.

March or April—New Orleans, La., Passenger Car Show, Automobile Dealers' Association of New Orleans.

March 7-12—Indianapolis, Ind., 22nd Semi-Annual Show, Passenger Cars, Trucks, Accessories and Farm Lighting Outfits. John B. Orman, Manager, 338 North Delaware Avenue.

March 7-12—Scranton, Pa., 11th Annual Show, Passenger Cars, Trucks, Tractors and Accessories. Hugh B. Anderson, Manager, Board of Trade Building.

March 12-19—Boston, Mass., 18th Annual Automobile Show, Boston Automobile Dealers' Association, Mechanics' Building. Chester I. Campbell, Manager, 5 Park Square.

March 14-19—Trenton, N. J., Sixth Annual Passenger Car and Truck Show, Trenton Automobile Trade Association, Second Regiment Armory. Frederick Perry, Jr., Manager, West, State and Willow Streets.

March 15—Fort Worth, Tex., 24th Annual Southwestern Exposition and Fat Stock Show. Passenger Cars, Trucks and Tractors. M. Sasson, Jr., Secretary.

March 20-26—Torrington, Conn., Show, Company M, State Armory. J. J. Callahan, Manager, Box 1186, Pittsfield, Mass.

April 8-9—Gloversville, N. Y., Annual Gloversville-Johnstown Automobile Show, State Armory. J. J. Callahan, Manager.

The ACCESSORY and GARAGE JOURNAL

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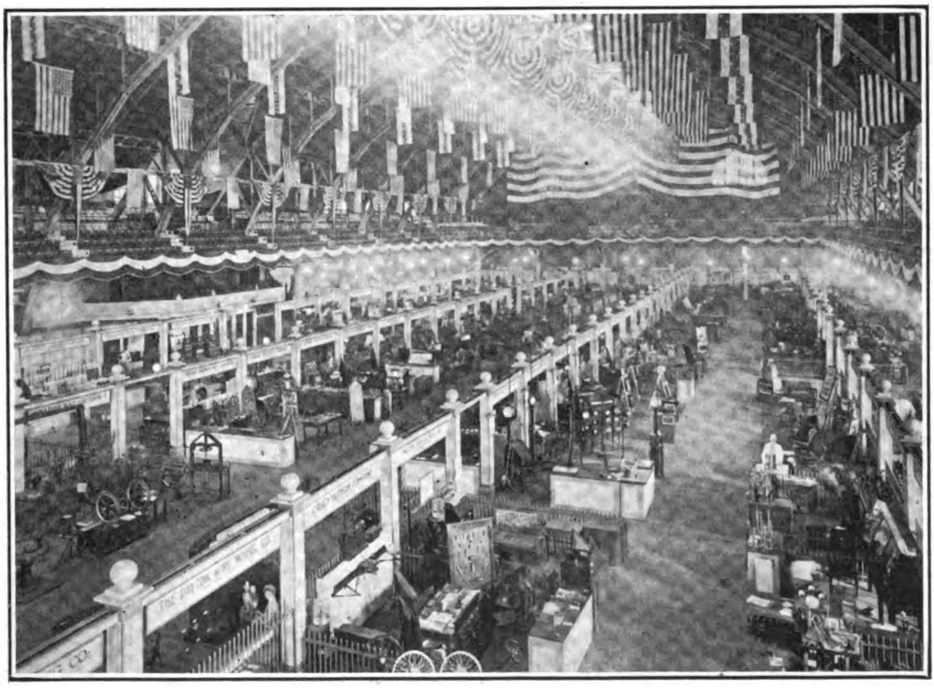
Spirit of Cooperation and Attitude of Optimism

Manifested by Jobbers and Manufacturers at Big Convention and Show of Automotive Equipment Association—Exhibits Unusual in Number and Comprehensiveness and Marked Interest Denoted by Large Attendance at Sessions.

ALTHOUGH on account of a combination of circumstances that have arisen in the business world during the past several months, some of which have had an especial deterrent effect on the automotive industry as on many other activities, it was not anticipated that the amount of business directly attendant on the big exhibition and convention of the Automotive Equipment association in the Chicago Coliseum, the week of Nov. 15, would equal in immediate volume that of last year, the meeting may be characterized as distinctly optimistic in tone, and a majority of the manufacturers and jobbers represented expressed themselves as well satisfied with the interest aroused and results achieved.

Surely, in point of comprehensiveness of exhibits and the spirit of cooperation manifested by the various important interests concerned in the manufacture and merchandising of automotive products, it may well be considered as a wonderful show. But it could not perhaps be truly characterized as a big buying show. But manufacturers seemed for the most part confident that with the opening of the spring season, trade conditions will again approach normal and may even be stimulated to a point beyond the most sanguine expectations.



General View of Accessory Exhibits at the Annual Exhibition of Automotive Equipment Association in Chicago Coliseum.

The bare statement that there were over 200 manufacturers of automotive products represented in the exhibits and that the convention opened with an attendance of fully 600 jobbers and manufacturers, emphasizes the scope and importance of the Automotive Equipment association as a powerful factor in furthering the mutual interests of automotive jobber and dealer.

The first speaker at the convention was Alfred Reeves, general manager of the National Automobile Chamber of Commerce. He commented on the readjustment situation and presented figures on the essentiality of the automobile. He saw a great future for the automotive equipment branch of the industry in the fact, as he stated it roughly, that only half the cars in use have all the equipment they should have to operate with full efficiency.

The principal speaker from outside the industry was the Hon. Medill

New Board of Directors and Officers

President......................R. A. Stranahan,
Champion Spark Plug Co.,
Toledo, O.

Vice President..............H. M. Dine,
Dine-DeWees Co.,
Canton, O.

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Weinstock-Nichols Co.,
San Francisco, Cal.
L. A. Cavanaugh,
Motor Car Supply Co., Ltd.,
Calagary, Can.
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Reinhard Brothers,
Minneapolis, Minn.

Fred Campbell,
Fred Campbell Auto Supply Co.,
St. Louis, Mo.
Earl Reynolds,
Reynolds & Reynolds,
Tacoma, Wash.
C. Robert Churchill,
Electric Appliance Co.,
New Orleans, La.
W. E. Wissler,
Herring Motor Co.,
Des Moines, Ia.
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Borderland Auto Supply Co.,
El Paso, Tex.

A. D. McMullen,
Motor Mercantile Co.,
Salt Lake City, Utah.

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George L. Brunner,
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E. A. Laboratories, Inc.
Brooklyn, N. Y.
C. L. Stebbins,
Double Fabric Tire Co.,
Auburn, Ind.
S. A. Fulton,
The Fulton Co.,
Milwaukee, Wis.

C. E. Stahl,
Connecticut Tel. & Elec. Co.
Meriden, Conn.
Ivan Goodrich,
Goodrich-Lenhart Mfg. Co.,
Hamburg, Pa.
Charles C. Gates,
Gates Rubber Co.,
Denver, Col.
W. H. Parker,
National Standard Co.,
Niles, Mich.

S. D. Black,
Black & Decker Co.,
Baltimore, Md.

McCormick. United States senator from Illinois. He expressed a hope for a readjustment of government activities and expenditures so that the excess profits tax could be repealed without substituting another burden on industry. He stated his opposition to the proposed merchandise tax and said that, if it developed that federal revenues would be insufficient with the full repeal of the excess profits tax, he would favor its gradual reduction to the point of elimination.

In his valedictory as retiring president, R. R. Engelhart advocated an appropriation for active propaganda to further a movement for better highways.

The association took two steps which may be considered as strengthening cooperation between the jobber and manufacturer members: First, the election of a manufacturing member as president for the first time, and by passing a measure limiting all future applications for membership to those included in the wholesale only classification. The election of President Stranahan lays further emphasis on the question of cooperation which was first recognized some time ago in the raising of manufacturers from associate to full membership.

There was little promise of any immediate decline in prices, the manufacturers pointing to high raw material costs as an obstacle, while several jobbers urged that the manufacturers find some way to meet the countrywide public demand for lower prices on everything. The manufacturers' division declined to attempt stimulation of sales by guaranteeing prices. It also refused to lengthen wholesale discounts. However, there was indication that some manufacturers, individually, may adopt the guarantee policy.

The manufacturers, in their separate session Thursday afternoon, could not see their way clear to meet the suggestions of the jobbers that freight charges be absorbed or price differentials established to remove the hardships placed upon jobbers far removed from the centers of manufacture.

The manufacturers asserted that the freight rate question was too complicated for adjustment in their offices. They felt that jobbers would have to work out their own problem of estimating increased freight costs under the new rates and passing the charges on to consumers.

Committees Appointed.

The association approved a recommendation of the directors for appointment of a committee to work for the interests of the organization on federal taxation and other legislative subjects.

The committee on assisting the trade, which was inactive last year, was reestablished to take a hand in inducing a more favorable attitude toward the industry on the part of the newspapers and to work generally for better trade conditions.

Following is the full personnel of the committees:

Legislative.

R. A. Stranahan, Chairman, Champion Spark Plug Co., Toledo, O.

FINANCIAL REPORT IN BRIEF.

Assets of the Association Nov. 1, 1920	$88,656.35
Exhibitors' Fund	48,790.50

Credit Department Report, July 1, 1916, to Oct. 15, 1920.

Total number of claims made through association	10,840
Total amount of claims	$703,788.15
Total amount of claims collected	$447,170.59
Total number of claims collected	5,952
Percentage of claims collected	55%
Percentage of total amount of claims collected	63%
Total amount of disputed claims reported	$69,565.96
Total amount of disputed claims collected	$33,827.80
Percentage of disputed claims collected	48½%

F. T. Chase, Vice Chairman, Frank Mossberg Co., Attleboro, Mass.

W. J. Dean, Nichols, Dean & Gregg, St. Paul, Minn.

D. H. McConnell, Klaxon Co., Newark, N. J.

R. R. Englehart, the Sieg Co., Davenport, Ia.

J. W. Perry, H. W. Johns-Manville Co., New York City.

S. F. Beach, Motor Car Supply Co., Chicago, Ill.

Standardization.

F. R. Hall, Chairman, Northwestern Chemical Co., Marietta, O.

L. Safford, Vice Chairman, McQuay-Norris Manufacturing Co., St. Louis, Mo.

W. F. Moncur, Cutten & Foster, Ltd., Toronto, Can.

S. W. Widney, Advance Felt Specialty & Cutting Co., Chicago, Ill.

E. R. Wiggins, Wiggins Co., Inc., Portland, Ore.

H. J. Reade, Wheeler-Schebler Carburetor Co., Indianapolis, Ind.

C. S. Owen, Chapin-Owen Co., Inc., Rochester.

R. B. Dunlap, C. A. Shaler Co., Waupun, Wis.

B. K. Sweeney, B. K. Sweeney Electrical Co., Denver, Col.

C. B. Jenkins, General Asbestos & Rubber Co., Charlestown, S. C.

W. G. Page, American Motor Equipment Co., Boston, Mass.

Ludger Gravel, Ludger Gravel & Fils, Montreal, Can.

Frank Anderson, Barcalo Manufacturing Co., Buffalo, N. Y.

C. J. Lamont, Lamont & Co., Fort Wayne, Ind.

J. W. Williams, Williams Hardware Co., Clarksburg. W. Va.

G. S. Cowan, Andrew Cowan & Co., Louisville, Ky.

C. H. Hodgson, Weaver Manufacturing Co., Springfield, Ill.

Labor.

W. C. Hecker, Chairman, Curtis Pneumatic Machinery Co., St. Louis, Mo.

H. D. McCandless, Vice Chairman, Westinghouse Lamp Co., New York City.

W. S. Noyes, Imperial Brass Manufacturing Co., Chicago, Ill.

Some Representative Exhibits

AMERICAN HAMMERED PISTON RING CO.
CURTIS PNEUMATIC MACHINERY CO.
ECTRIC CO.
L. H. GILMER CO.
TEMPLETON, KE
MONROE AUTO EQUIPM

Theo. Bass, National Electric & Auto Supply Co., Peoria, Ill.

C. M. Bunnell, Edison Lamp Works of General Electric Co., Harrison, N. J.

R. A. Picard, A. J. Picard & Co., Inc., New York City.

George L. Brown, Johnstown Automobile Co., Johnstown, Pa.

H. M. Cooper, Cooper Manufacturing Co., Marshalltown, Ia.

E. N. Cumings, Cumings Bros., Flint, Mich.

Thomas F. Wilson, Apco Manufacturing Co., Providence, R. I.

Membership.

Percival Stern, Chairman, Interstate Electric Co., New Orleans, La.

A. F. Durkee, Vice Chairman, Durkee-Atwood Co., Minneapolis, Minn.

Vigilance.

Noah Van Cleef, Chairman, Van Cleef Brothers, Chicago, Ill.

W. S. Isherwood, Vice Chairman, Champion Ignition Co., Flint, Mich.

F. M. Butts, Butts & Ordway Co., Boston, Mass.

C. D. Kimball, Midwest Manufacturing Co., Minneapolis, Minn.

Curtis Sohl, the Griswold-Sohl Co., Columbus, O.

Assisting the Trade.

F. H. Suter, Chairman, Shadboldt & Boyd Iron Co., Milwaukee, Wis.

H. H. Brenner, the I. J. Cooper Rubber Co., Cincinnati, O.

M. F. Judd, the Raybestos Co., Bridgeport, Conn.

Joseph G. Fitzsimmons, Carolinas Auto Supply House, Charlotte, N. C.

B. T. Covington, Continental Piston Ring Co., Memphis, Tenn.

H. H. Parker, MacBeth-Evans Glass Co., Pittsburgh, Pa.

M. D. Campbell, the Perkins Campbell Co., Cincinnati, O.

Smalley Daniels, New Era Spring & Specialty Co., Grand Rapids, Mich.

Railroad Classification.

W. Morris, Chairman, American Chain Co., Bridgeport, Conn.

Thomas F. Wilson, Vice Chairman, Apco Manufacturing Co., Providence, R. I.

A. B. Clark, Jr., Motor Supply Co., Phoenix, Ariz.

C. Albracht, K W Ignition Co., Cleveland, O.

R. B. Benton, Benton Bailey Co., Richmond, Va.

S. X. Newman, Automatic Safety Tire Valve Corporation, New York City.

G. Norman Baughman, G. Norman Baughman Co., Tampa, Fla.

Finance.

R. A. Stranahan, Chairman, Champion Spark Plug Co., Toledo, O.

G. M. MacWilliam, Hyslop Brothers, Ltd., Toronto, Can.

T. M. Williams, Peasley-Gaulbert Co., Louisville, Ky.

Good Roads and Highways.

H. G. Smith, Chairman, Pennsylvania Rubber & Supply Co., Cleveland, O.

G. H. Southard, Jr., Vice Chairman, J & B. Manufacturing Co., Pittsfield, Mass.

H. E. Tredway, John Ernsdorff Iron Co., Dubuque, Ia.

L. S. Upson, Kimbal & Upson Co., Sacramento, Cal.

H. D. Benner, Federal Rubber Co., Cudahy, Wis.

W. R. Weldon, Watson-Weldon Motor Supply Co., Salina, Kan.

R. E. Simpson, S. Frank Saddlery Co., San Antonio, Tex.

E. M. Cumings, Cumings Brothers, Flint, Mich.

A. P. Swoyer, Bridgeport Brass Co., Bridgeport, Conn.

H. J. Rowerdink, W. H. Rowerdink & Sons, Rochester, N. Y.

W. D. Alexander, Jr., Alexander Seewald Co., Atlanta, Ga.

N. N. Wellons, Wholesale Auto Supply House, Tampa, Fla.

C. J. Bailey, James Bailey Co., Portland, Me.

R. V. Smith, R. V. Smith Supply Co., Oklahoma City, Okla.

M. S. Livingston, Master Sales Co., Omaha, Neb.

Lamp.

W. W. Law, Chairman, Electric Appliance Co., Chicago, Ill.

R. A. Picard, Vice Chairman, A. J. Picard & Co., Inc., New York City.

P. H. Lyon, Chanslor & Lyon Co., San Francisco, Cal.

C. M. Bunnell, Edison Lamp Works of General Electric Co., Harrison, N. J.

A. J. Grimm, National Lamp Works of General Electric Co., Cleveland, O.

Activities of Various Committees.

Fred R. Hall, chairman of the standardization committee, urged members of group committees to devote themselves more actively to the task of preparing standards and recommended practises for merchandise in the 19 groups into which products of the industry have been divided. He stated that a great deal of work would have to be done before the committee could make a final report to the association. Standardization of packing, stamping and shipping is one of the problems of the committee and questions of standardization of sizes and elimination of some types and sizes of equipment also will be taken up. Where the manufacture of articles of vehicle equipment are concerned the committee will confer with the S. A. E. He also asked for cooperation on the part of manufacturers to aid the group chairmen in making the standardizations representative of the industry.

The vigilance committee reported that it had arranged to cooperate with the Advertising Clubs of the World in investigation of cases of unfair dealing which may come up.

The association having gone on record in favor of the open shop at Del Monte last June, the labor committee urged support of the open shop principle by association members whenever occasion arises.

State vice presidents who made reports told of rapidly gaining strength of state jobber and dealer associations. Acknowledgment was made of the cooperation of the National Automobile Dealers' association in building up dealer associations.

The association sent a telegram to President-elect Harding, congratulating him on his election and offering cooperation in constructive solution of business problems.

Unsanctioned Shows.

A recommendation of the board of directors that members be prohibited from exhibiting at shows not sanctioned by the association was recommitted to the board for further consideration after several jobbers had protested against being barred from local and sectional shows. There was a sentiment among manufacturers, however, that they should be given the support of the association in declining to spend money and time on many of these shows.

The manufacturers declared the airplane business had not yet reached a stage of development to warrant jobbers handling equipment.

The convention voted to send out a questionnaire to all jobber members to determine the average cost of doing business.

Association Prosperous.

A brief summary of the financial condition of the association, given elsewhere, shows it to be prosperous.

The summer meeting will be held at Mackinac island, at the northern end of Lake Michigan, July 4-9, and the next annual convention and business exhibit will be held in the Chicago Coliseum, Nov. 14-19, 1921. In order to allow more time for business talk on the exposition floor between manufacturers and jobbers, the next fall convention will begin Monday morning, the opening day of the show, instead of Wednesday, as was the case this year. This, it is expected, will induce jobbers to arrive in Chicago earlier and remain all the week, as the convention meetings will be cut down in length and spread over five days.

Enjoyable Social Function.

As to the more social side, the Chicago Association of Automotive Equipment Manufacturers entertained the delegates and ladies at Aryan Grotto with an amateur theatrical performance. Under the direction of Howard E. Patterson of the Warner-Patterson Co., the regeneration of a "gyp" jobber was shown in a playlet, "Going Right," enacted by members of the Chicago association.

New Members Elected.

The following new members were elected:

Jobbers—Clemons Auto Supply Co., Eau Claire, Wis.; Farrar-Brown Co., Inc., Portland, Me.; Hendrie & Bolthoff Manufacturing and Supply Co., Denver, Quinn & McGill Motor Supply Co., Denver.

Manufacturers—Clayton & Lambert Manufacturing Co., Detroit; Crawford Manufacturing Co., Richmond, Va.; Cincinnati Ball Crank Co., Cincinnati; Dover Stamping and Manufacturing Co., Cambridge, Mass.; Greb Co., Boston; Kennedy Manufacturing Co., Van Wert, O.; Miles Manufacturing Co., Newton, Ia.; Spencer-Smith Machine Co., Howell, Mich.; Storm Manufacturing Co., Minneapolis; Slaymaker Lock Co., Lancaster, Pa.

The only resignation received was that of the Northern Electric Co., Ltd., Montreal, Can., which concern is going out of the jobbing business.

Brief Descriptions of Displays

Anderson Co., South Bend, Ind.—Complete display of Anco products, in the Annex building, including such well known Ford accessories as Anco Triple-Duty ball thrust bearings, timers and Hot Spot manifold.

Indiana Lamp Co., Connersville, Ind.—Full line of Indiana lamps, also introducing the new Insert Reflector. W. F. Thoms, vice president, and W. E. Ray, assistant secretary and treasurer, were in attendance.

Cincinnati Auto Specialty Co., Cincinnati, O.—Featured the Stik-tite Frost King appliances and Stik-tite windows, as well as latest additions to the line, including seat protectors, lettering and trade marks for Casco tire covers, etc. The company was represented by A. W. Conner, president; G. L. Holmes, eastern representative, and E. R. Christense, western representative.

Boyle Manufacturing Co., Los Angeles and San Francisco, Cal.—A very attractive display of service units, adjustable luggage carrier, camp grates, various sizes of gasoline cans and canteens, etc., Vice President L. M. Boyle and wife, Los Angeles; T. M. Gardner, manager, and Frank James, San Francisco, demonstrated the line. A blue miniature canteen was given as a souvenir.

Wainwright Engineering Corporation, Connersville, Ind.—Had its display at the Congress hotel and showed a complete line of pistons. The new Essex piston met with favor. Dan V. Shaw, sales manager, reported very favorably upon the business accomplished at the show. Those present were H. A. Wainwright, vice president and general manager; R. S. Longstaff, P. G. Barnard, Verne Triddy and H. L. Hardwick, salesmen.

Cincinnati Ball Crank Co., Cincinnati, O.—A complete line of Ford accessories at the Congress hotel. V. A. Davison, general sales manager and J. K. Gilchrist, sales manager of automotive equipment, were in attendance and took particular interest in showing the new bumper bar and shock absorber. Both articles were given to the trade for the first time at the show. These will be added to the well established line. A. B. Breeze, general manager, and W. W. Peterson, district manager, and Clifford Green, president, were also in attendance.

Advance Felt & Cutting Co., Chicago, Ill.—A complete line of gaskets in felt, cork and leather. The booth was located at a point where visitors were sure to see it and they were made acquainted with the Advance line by several well informed attendants.

Madison Kipp Corporation, Milwaukee, Wis.—Madison Oil Kipps attracted considerable attention. The displays were designed to show by the most practical method what this type of lubrication could do for the man who had experienced trouble with spring lubrication. The booth was arranged on a business like basis and those who came went away thoroughly impressed.

New Light-Lite Spot Lamp.

Corcoran-Victor Co., Cincinnati, O.—Had an attractive exhibit of their various line of lamps. The new "Light-lite" spot lamp, as well as the new Ford tool box came in for an unusual amount of attention. The following gave every visitor their personal attention: J. A. Muir, vice president and sales manager; L. J. Habbell, service manager; W. E. Early, C. A. Bessonette, L. K. Cohn, salesmen: J. V. Wilson. New England representative; Paul Barnard, Ralph Longstaff and H. L. Hardwick, Pacific coast representatives.

F. H. Lawson Co., Cincinnati, O.—Had an unusual display and created considerable amount of attention by their white "skeleton" Ford, which allowed the display to advantage of the line of Ford fenders, hoods, running boards, etc. Additions to the line of garage specialties were seen, including filter cans, measurers, pails, etc. Those in attendance were J. A. Buhr, secretary and sales manager; H. L. Jillson, central representative; H. W. Babcock, special representative; J. A. Ryan, western representative, and F. J. Nudermiller, Detroit representative.

Continental Auto Parts Co., Columbus, O.—A fine display of garage equipment, including the new Universal straightening press and Ford assembling table. The display was in charge of J. H. Staley, president; J. B. Shelby, treasurer; D. V. Booher, sales manager; Bob Renner and V. E. Line, and J. W. Staff, sales agent for the Northwest.

H. & D. Co., Inc., Crawfordsville, Ind.—Booth created much attention on account of demonstration of the shock absorber in a rough road test. D. M. Peck president; G. H. Fostick, vice president; D. M. Kerr, manager; H. H. Walters, sales manager, and D. K. Vars from the sales department were explaining the new standard rear clip, as well as the pin lock and oilers, which are the new added features to the shock absorber.

Corcoran Manufacturing Co., Cincinnati. O.—Well known Peerless line of radiators, fenders and tool boxes for Ford cars. The new disc wheel for the Ford car was also introduced. Those in charge were W. R. Hughes, secretary and treasurer and sales manager; Martin Murray, B. C. Pittenger and W. R. Dorney.

Double Fabric Tire Co., Auburn, Ind.—Comprehensive display of tires, patches, reliners and tubes. Representatives present: W. H. Willennar, president; A. L. Murray, secretary; C. C. Marston, treasurer; C. L. Stebbins, sales manager; F. D. Higgins and S. G. Biddle.

K-D Lamp Novelties.

K-D Lamp Co., Cincinnati, O.—Novelties were seen in the way of spot, side-bullet, fender and parking lamps, in addition to the sterling regular line. E. W. Driemeyer, president; H. R. Kerans, secretary and sales manager; Ray Swinburn and Horace Eckhouse were in attendance. Match box holders were presented as souvenirs.

Thomas J. Corcoran Lamp Co., Cincinnati, O.—The 495 spot light, which is the latest addition to the well known Corcorlite line, was featured. In attendance were T. J. Corcoran, president; G. P. Doll, treasurer; C. J. Wuebler, secretary.

Northwestern Chemical Co., Marietta, O.—One of the most attractive booths in its particular field. An addition to the Norwesco products was presented, the kakhi mohair top dressing and lining dye. Officials present were: F. R. Hall, president and manager; I. D. Cross, western sales supervisor; V. V. Casey, eastern sales supervisor; L. D. Speed, central sales supervisor; S. E. Samuels, New England salesman; C. C. Mun, Chicago salesman.

Perkins-Campbell Co., Cincinnati, O.—Was featuring the new Buffalo hide fan belt and a new beaded tire cover, which have been added to the regular lines. Those stationed at the booth, assisting President Milton Campbell, were J. P. Mills, Herman Kemmell, C. A. Hampe, Fred Treffz, H. E. Witherspoon, Frank Lynn, T. E. Lynn and Frank Leboy.

Havwood Tire & Equipment Co., Indianapolis, Ind.—Displayed a full line of general tire repair equipment and has added the Giant truck mold. Some of the new underslung parts for Ford cars were also introduced. W. H. Haywood, vice president, and E. L. Baker, assistant to the president, were in charge.

New Reo Carburetor Demonstrated.

Wheeler-Schebler Carburetor Co., Indianapolis, Ind.—This booth was located in the main aisle just inside the main entrance. The new "A" Reo carburetor was demonstrated in addition to the regular line. H. J. Reade, acting general manager; E. A. Stone, sales manager, and P. H. Weer, assistant manager, received the visitors.

Auto Compressor Co., Wilmington, O—This exhibit attracted considerable interest from its resemblance to a jewelry shop. The new 15 cubic foot air compressor, especially designed for the large garage, and the three cubic foot compressor for the moderate sized garage were shown completely nickel plated and highly polished, these being simply additions to the well established Oro line. J. W. Lawhead, president, and E. S. Lee, sales manager, were ably assisted by E. J. McNerny and R. O'Keefe, western and eastern salesmen.

Van Briggle Motor Device Co., Indianapolis, Ind.—In charge of R. C. Haskett and was featuring a new model shock absorber.

Seasonable Steer-Warm Device.

Interstate Electric Co., New Orleans, La.—Specialized on Steer-Warm device with the slogan "Drive your car this winter in comfort." Those in attendance were S. B. Corby, manager; P. Stern, president, and A. R. Moulin and J. G. Garrigan, salesmen.

Continental Piston Ring Co., Memphis, Tenn.—This booth seemed to be imbued with the spirit of the trade name of its product, "Hi-Speed." Fine souvenirs in the form of telescopic pencils were distributed. B. G. Covington, president; M. E. McCadden, secretary and treasurer, and T. McCadden, field director of sales, as well as E. K. Stalons, A. J. Lindenberger and D. A. Hawley, were busy extolling the merits of the Hi-Speed Anti-Leak piston ring line.

Columbus Varnish Co., Columbus, O.—This booth was attractively decorated with a large number of sales helps, including large display cards, posters and other printed matter, explaining the slogan "Make old cars look like new." The Peerless line of automobile specialties includes mohair top dressing, leather top dressing, lining dye, cushion dressing, cylinder enamel, touch-up black, gasket shellac, friendly japan, liquid wax and rim paint. The attendants were S. W. Hanna, P. W. Williams, C. M. Simpson and W. S. Duckwall.

Raybestos Brake Lining.

Raybestos Co., Bridgeport, Conn.—An interesting feature at this booth was a moving picture exhibit which showed graphically the process of the manufacture of Raybestos brake lining, "The Brake Lining with the Silver Edge." Those present were M. F. Judge, sales manager; Frank Crook, Henry Irvin, H. F. Reid, Harry Dishman, A. C. Stamin, W. E. Washburn, Jr., Ed Elliott, William Huber and Irwin Bennet.

New Era Spring & Specialty Co., Grand Rapids, Mich.—The well known line of New Era bumpers and springs was shown, and particular attention was given to a new finish on bumpers, consisting of a combination black and enamel. The ever genial Smalley Daniels was assisted by George Daniels, L. D. Kent and Herbert Reid.

Culver-Stearns Manufacturing Co., Worcester, Mass.—A very striking silent salesman for the dealer and garage man was a feature at this booth. It was in the form of a cabinet displaying, in an attractive manner, a large assortment of plugs, receptacles, sockets, caps, etc. The merits of the Culver-Stearns line of lamps, fittings and switches were explained by Fred Culver, J. H. Faw of New York and M. A. Bryte, Chicago distributor.

The Metal Stamping Co., Long Island, N. Y.—Showed the Lyon spring bumper as well as automobile top hardware, curtain fasteners and lights and other accessories. A new line of easy, handy bolt cutters were exhibited for the first time. To meet the trade were John F. Galvin, president; John F. Galvin, Jr., vice president; G. Albert Lyon and William R. Noyes.

New Asbestos Clutch Facing.

Russell Manufacturing Co., Middletown, Conn.—Line of hood and radiator lacing, anti-squeak webbing, brake lining, belting, transmission, etc. A new clutch facing of compressed asbestos fiber, which is claimed to materially reduce the cost of this kind of product, was shown for the first time. Representatives present were Edward Merritt, John Mollam, C. C. Conner and L. J. Marley.

Waldon-Worcester, Inc., Worcester, Mass.—This was one of the largest exhibits at the show and the display of Walden-Worcester wrenches was made in well arranged cases and dealers' show boards. Assisting W. S. Bellows, general manager, on the reception committee, were L. H. Bellows, John Craig, H. H. Seward, T. R. Stenberg, L. H. Craig, S. C. Barnes, L. A. Raasch, R. K. Flanagan, E. L. Edwards, H. A. Adams and George R. Williams.

Hastings Manufacturing Co., Hastings, Mich.—The established line of Hastings rear curtain lights, and single and double-expansion rear tire carriers for Fords, heavy duty truck tire carriers, cradle type tire carriers and Ford spring bumpers was shown. Those in attendance were H. J. Ford, sales manager; F. V. Coolahan, A. Crothers and C. P. Matter.

Fitzgerald Manufacturing Co., Torrington, Conn.—Full representation of "Bound Edge" and "Never Leak" copper asbestos cylinder head gaskets was made, with F. M. Rowan, factory representative, and W. A. Kilmartin, in charge.

Champion Ignition Co., Flint, Mich.—Champion spark plugs, represented by W. S. Isherwood, sales manager, and A. G. Newbauer.

Kales Stamping Co., Detroit, Mich.—Kales Hindview mirrors and Kales timer for Fords, the latter being seen for the first time. The company was represented by R. M. Pierce and W. J. Lithuser.

Tiltlok Steering Wheel Co., Detroit, Mich.—Full line of products shown at 1256 Michigan avenue, under the supervision of B. F. Nickerson, R. L. Hanrahan and I. J. Monohan.

Globe Manufacturing Co., Battle Creek, Mich.—New Globe Super Two-Stage compressor shown at 1537 South Michigan avenue, with J. G. Phillips in charge.

Lockwood-Ash Motor Co., Jackson, Mich.—Sterling spark plugs. The attendants were William Drake, A. L. Lockwood and W. L. Ash.

Thermoid Rubber Co., Trenton, N. J.—Thermoid brake lining, clutch facing, radiator hose, universal joints and universal discs for automobiles, motor trucks and tractors. The company was represented by H. J. Campbell and T. W. Cramer.

Apco Manufacturing Co., Providence, R. I.—Fine line of Apco trade marked goods in charge of a competent corps of representatives.

Monroe Auto Equipment Manufacturing Co., Monroe, Mich.—Monroe Self-Oiling tire pumps and sedan spot light brackets, among other equipment. General Manager C. S. McIntyre was in charge.

Spencer Smith Manufacturing Co., Howell, Mich.—Showed at the Congress hotel a full line of light weight semi-steel pistons for all models of cars. The representatives were W. M. Smith, vice president, and A. W. Lines, sales manager.

Coryell Jack Co., Pontiac, Mich.—Heavy duty jacks, shown at New Southern hotel, with Ray R. Larnard in charge.

Klaxon Horn Equipment.

Klaxon Co., Newark, N. J.—Showed Klaxon horn equipment in a particularly attractive booth. The merits of the product were explained by D. A. McConnell, president; R. L. Wilkinson, sales manager; C. E. Vaughn, assistant sales manager; E. A. Tate and Ross Hopkins.

Clover Manufacturing Co., Norwalk, Conn.—Featured Clover valve grinding and lapping compound, and Clover cylinder lapping tool. President E. B. Gallagher was assisted by E. B. Mix and G. A. Fish.

No-Leak-O Piston Ring Co., Baltimore, Md.—A special business touch was given at this booth by the presence of a stenographer for the accommodation of the company and its guests. A large number of sales helps were shown dealers, among which was an automatic "Beloplican," an electric device for show window displays, holding seven pictures, which are automatically changed every few seconds. The corps of salesmen was headed by President J. E. Norwood, and consisted of the following: F. J. Holmes, L. G. Matthews, L. E. Malicon and John E. Norwood, Jr.

Davis-Young Soap Co., Dayton, O.—Banked around this booth, arranged in a very effective way, were cans of Buckeye cleanser, a well-known product of this concern. Visitors were greeted by C. F. Young, president; H. H. Heidbrink, sales manager, and J. E. Gill

Motor Specialties Co., Waltham, Mass.—The goods featured by this company were demonstrated by A. Fraser, sales manager; G. N. Jordan, W. M. Reynold and A. E. Gorman.

Service Products Co., Springfield, Mass.—Line of electrical and mechanical automotive service station equipment in charge of R. B. Miller, general manager; C. A. Cable, sales manager; C. Ringwald, chief engineer, and R. C. Heron, superintendent.

Curtis Two-Stage Compressor.

Curtis Pneumatic Machinery Co., St. Louis, Mo.—Had on display a full line of air compressors, and showed for the first time the new Two-Stage Model B Compressor, some of the equipment being in actual operation. W. C. Hecker, vice president; J. Macksey, advertising manager; L. C. Blake and C. C. Main were in attendance. Dealers' helps of various kinds were shown.

Bonney Vice and Tool Works, Allentown, Pa.—A special exhibit of complete Ford body irons in one package, which contained every screw, bolt, nut and washer needed by an owner for building a Ford body at home. A full line of drop forged wrenches, pliers for pulling out lead plates in batteries, and a fine twister for straightening fins on a Ford radiator were also shown. Visitors were greeted by S. F. Durham, vice president; C. E. Wood, sales manager, and J. C. Greagon.

Central Brass and Fixture Co., Springfield, O.—Showed its line of "Buckeye" automobile accessories, which includes bumpers, Ford tire holders, shock absorbers, spark plug wrenches and spring repairers. R. T. Patterson and James Turner welcomed the trade.

Universal Reboring Tool.

Universal Tool Co., Detroit, Mich.—Demonstration of the new power attachment for Universal reboring tools, which permits of reboring the cylinders without removing block from chassis. This attachment takes power from any source by means of a flexible shaft. This company also had on display a full line of reboring tools, including Ford and Fordson main bearing replacement equipment shown in a beautiful case. Visitors were greeted by R. E. Roseberry, president; E. H. Herman, assistant general manager; J. F. Nebrick and W. J. Sparling.

Accesso Manufacturing Co., Boston, Mass.—First showing of the "Accesso" line, which includes safety steering control for Fords, a trouble lamp magnetized by current from the car battery, which permits of having light at any part of the car. A designed license and registration certificate of novel design, as well as a motor driven oilless gear pump for Fords. H. G. Coyles, sales manufacturer, was in attendance.

Frank Mossberg Co., Attleboro, Mass.—Had on display the well known Mossberg wrench and was showing for the first time some new Ford and Fordson tractor wrenches. This booth was very attractive with its display cases. To greet the trade here were F. P. Chase, treasurer; E. W. Scott, H. E. Ring, R. W. Jones, Frank Lynn, Louis Lewis, J. E. Colley, W. E. Minnich.

Black & Decker Manufacturing Co., Baltimore, Md.—Complete line of portable electric drills. A new bench drilling stand which takes any Black & Decker drill from ⅜ inch to ⅞ inch inclusive, also made its debut. The booth was made attractive by a large number of dealers' helps and included in this showing was a complete window display. This had a three-panel background, cut out and figures; also window display stands. This window trim is given free to stock jobbers. The trade was taken care of by S. D. Black, president; R. W. Proctor, sales manager; G. W. Brogan, advertising manager; R. G. Ames, G. A. Dodge, C. D. O'Dell and H. C. Slinglull.

Statements from Manufacturers on Trade Outlook

Business Approximately Normal.

From my observations and what I have heard others say, I have come to the conclusion that conditions today are as good as any other year at this season. The present so-called depression is somewhat psychological and is due to a form of hysteria on the part of buyers of merchandise.

The public is buying and will continue to buy those things in normal demand. Jobbers and dealers, if they will analyze the situation, will find this to be a fact, but their fear of being caught with an overstock on which they might suffer a loss is holding back what could be made a most satisfactory business.

The idea of depression in accessory lines originated largely in the mind of the trade itself and has caused many to withhold orders of goods actually needed and in demand. Naturally this idea has been absorbed to some extent by the public and its reflection has resulted in strengthening the idea.

Business in the automotive industry with few exceptions is approximately normal if we would let it be. What cannot be found or purchased at regular dealers or jobbers is sought and can be secured through cut-rate and get-rich-quick channels. It is this type of retailers who are reaping our harvest because they are the real students of human nature.

For those in the trade who are recognized as legitimate business men and for the jobber the following will result unless a change of attitude is taken:

The opening of the season will find depleted stocks and, in many cases, empty shelves. Demand for 1921 will be the normal plus the restocking demand. This may cause a rush of orders, swamping manufacturers as well as jobbers. The same condition we passed through in recent years may result. In order that this may not occur, manufacturers as well as jobbers and dealers should proceed without undue conservation so that when the demand breaks there will be no delay in getting under way.

The A. E. A. convention has done much to put this thought over and with the support of the individual, as well as the trade press, I am sure we will be able to get back on a safe and sane basis in time to prevent any real trouble.—**Jno. W. Anderson, The Anderson Co., South Bend, Ind.**

Expects Good Spring Trade.

I honestly believe that the spring business will open up in full swing and conditions will be back to normal within a short period.

The jobbers' shelves are pretty well cleaned and it is reasonable to assume they will have to be replenished.—**E. I. Secor, Ashland Products Co., Ashland, O.**

Big Year for Equipment Industry.

We believe that the year of 1921 will be the biggest year we have ever had in the garage equipment business. Great interest was shown by the dealers and jobbers in new equipment and dealers in particular are realizing the importance of giving efficient service and are laying their plans to purchase proper tools at the earliest possible moment as conditions justify. There is no doubt the distributor of equipment who has his stock on hand for the spring rush will realize on this demand.

The attendance at this show surpassed our expectations. We have met many new dealers and jobbers and have renewed our acquaintance with the old ones. It seems they all are very optimistic and I believe, since this attitude was manifested, it will go a long way in stimulating the spring buying.—**J. H. Staley, President, Continental Auto Parts Co., Columbus, Ind.**

An Optimistic View.

We have just had report from our force of salesmen in attendance at the A. E. A. show, the substance of which causes us to assume an optimistic view in regard to the future.

Everyone is familiar with conditions that have existed during the last few months. However, we have received during the present show more inquiries and more indications of future orders than at any previous show. Old accounts assure us that they will do a larger volume of business on a more substantial basis with dealers that survived the present crisis.

Prospects are exceedingly favorable for the future distribution of substantial automobile accessories.—**B. G. Covington, President, Continental Piston Ring Co., Memphis, Tenn.**

Bright Prospects for Coming Season.

The prospects for early spring business look exceedingly bright and encouraging. The dealers and jobbers that called upon us gave us their undivided attention and seemed very much interested. I noted that this spirit was not only manifested with us, but with all other exhibitors. Naturally, being stimulated with this spirit, we are more than optimistic. We have endeavored to pass this feeling along.

We all know that business has been somewhat depressed for the past few months and I believe that all members of this association that have exhibits at this show arrived here with a feeling that but a very small business would be done and very little accomplished in an endeavor to market any new proposition. However, it seems that we all had something new "up our sleeve" and awaited the opening of the show to spring it on the trade. Our efforts along this line have been more than repaid by the interest our good friends, the dealers and jobbers, have given us.—**G. P. Doll, Treasurer and General Sales Manager, the Thos. J. Corcoran Lamp Co.**

Everything Is Fine.

At the show we met jobbers and dealers from the Atlantic to the Pacific coast and from the Gulf to Canada, and they all manifested a feeling that everything was fine. The western dealers and jobbers seem to have escaped the general depression of business that has been with us for the past 90 days. The eastern buyers told us that, although business conditions in general had been very poor in the past few months, they have taken a change and they believe that the show has verified their opinion that the peak of poor business in the East, as far as the dealers and jobbers are concerned, has passed.

The central and middle western dealers and jobbers who have, no doubt, felt this business depression more than either the eastern or western members, have left this show with a feeling that the spring business will more than offset the loss they have sustained during the past six months, although not looking forward to the same volume of business that was had at the early part of this year. With this feeling of optimism on the part of our friends from all parts of the country, we naturally look forward to the spring buying with great anticipation.—**D. M. Peck, President, H. & D. Co., Inc., Crawfordsville, Ind.**

Business Coming Back.

In my opinion business is coming back, for the trade is compelled to buy inasmuch as they have allowed their stock to run down awaiting the outcome of new prices. This show has verified my convictions that the jobbers and dealers are anxious to stock their shelves with the new lines. I therefore, look forward to the spring buying, which I believe will be very good.

Our success at the show has been very satisfactory and we will look forward to the show of 1921 when we can again renew acquaintance with both our dealer and jobber friends.—**E. W. Driemeyer, President, K. D. Lamp Co., Cincinnati, O.**

Conditions Are Going to Improve.

The general consensus of opinion is a pretty accurate way to judge conditions and this is that conditions are going to improve from now on and by January they will be back to normal.

It is true that the demand for standardized equipment will not be as great as the previous year, but this difference will be made up by the increased call for equipment already in use.

The economic readjustment we are going through now will automatically eliminate the inflation and finally pull the automotive industry out of the stagnant condition it has been in for the past few months.—**Mr. Bohackett, Kellogg Manufacturing Co., Rochester, N. Y.**

A Question of Readjustment.

I believe business will be good. It is just a question of readjustment. Without an exception every jobber I have talked to is very optimistic. It is true they are trying to reduce their stocks for inventory and, in a few instances, for capital, but on the whole they are all financially capable of stocking up for the coming season.

We have not received many orders, but

about one-third of the trade have called at our booth and have given assurance they will come back and see us after they look around the field.—**C. A. Albrecht, General Manager, K. W. Ignition Co., Cleveland, O.**

Believe Business Will Pick Up.

In my opinion our line will be stocked more heavily by the dealers and jobbers, which will stimulate business from now on. Those who called at our exhibit were all very optimistic, due to the fact that material and prices have been somewhat reduced, which allowed manufacturers to reduce their prices. The prices on our line, I believe, will prevail the next quarter, thereby safeguarding the jobber and dealer to the extent that they can now buy with a feeling that they will not stand to lose on their stock that is bought in the early spring market. This is the feeling that we have endeavored to create and it seems as if our efforts have been accomplished to the extent that our many friends have given us their undivided attention at the show. They have placed their confidence in us relative to the prices that will prevail during the spring buying.

With this feeling prevailing general business conditions should have a decided change within the next 30 days.—**J. Arthur Buhr, Secretary and Sales Manager, F. H. Lawson Co., Cincinnati, O.**

Prospects Good for 1921.

I can best answer your question regarding the business outlook for 1921 by referring to the fact that we went to considerable expense to have an attractive exhibit at the Automotive Equipment Show. We had our salesmen all on the job, and we see nothing in the present situation to warrant us in slackening our endeavors. To be sure at the present moment the volume of business is not as heavy as it has been during the past few months; the jobbers seem to be quite generally reducing their stocks, and from the conversations which I have had with jobbers from various parts of the country, I gather that the jobber is enjoying quite a normal turnover. If this be true, it will only be a very short time before their orders to the manufacturer will reach normal volume.

Fundamentally, I believe we are in a very sound position and prospects for a good volume of business in 1921 are very bright.—**F. R. Hall, President, the Northwestern Chemical Co., Marietta, O.**

Obtained Good Orders.

We have obtained enough business at the show to keep our plant busy on these orders for several months.

The replacement of parts will be greater than ever. This is due to the tremendous changing of owners and second hand car market. The general tendency of the jobber is toward a moderate priced merchandise.—**Ira Saks, Pennsylvania Piston Ring Co., Cleveland, O.**

1921 Will Be a Real Year.

The prospects for the year 1921 are brighter than any of our expectations and I look for a real year after the spring buying opens. We are naturally very optimistic inasmuch as during the entire show we did not come in contact with a dealer or jobber who had the least discouraging outlook for the business conditions of the coming year.

It has been generally agreed that an adjustment in general buying conditions were necessary and our dealer and jobber friends, as well as the manufacturers, are more than pleased that this depression, which was inevitable, came about when it did during the dull season in the automotive field. In a way the public will be benefited by this condition inasmuch as the jobber and dealer have had the opportunity and time to take inventory and they are eliminating their old stock which they were unable to move, and the spring will find them with a new line of stock on their shelves.

The show has proved a great success in every respect and the renewing of old friendships and meeting of new friends have brought about a closer relationship between the manufacturers, jobbers and dealers. I believe that 1921 will verify my opinion that it will be a real year.—**M. D. Campbell. Sales Manager, Perkins-Campbell Co., Cincinnati, O.**

Buying Public Has Called Off Strike.

It is certainly a temporary readjustment. It is obvious that cars are in operation and parts must be replaced. I believe the buying public were on strike due to the inflated prices and now that they are on a downward grade they have declared that the strike is off.—**E. T. Morrby, Vice President and Treasurer, Polson Rubber Co., Cleveland, O.**

Additions to Dort Motor Car Factory

During 1920 additions to the Dort Motor Car Co. at Flint, Mich., and the Gray-Dort Motor Co. at Chatham will amount to more than 500,000 square feet. The first unit of the new Dort plant at Flint is practically completed. This is on the 70-acre tract in the new industrial center. One mile of industrial track penetrates the property, which also is served by the Grand Trunk railway and soon will have the Pere Marquette as well. This first unit is reinforced concrete, three stories high, and consists of two wings, each 96 feet wide by 312 feet long, the ultimate length to be 516 feet. The two wings are connected by a glass covered court 60 feet wide, giving a first floor space at present of 252 by 312 feet.

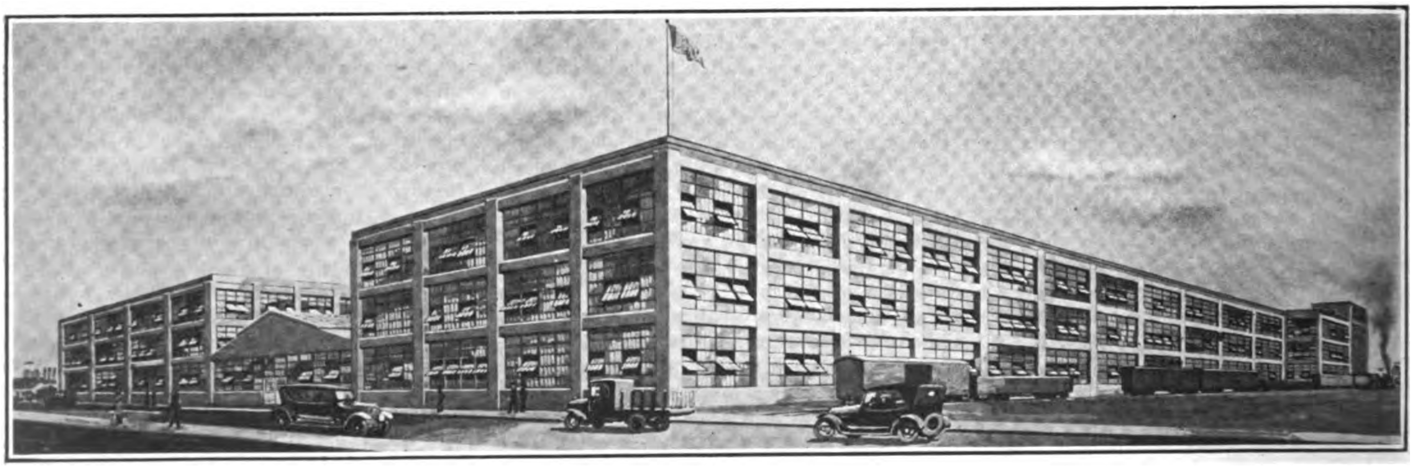
The structure is strictly modern, steel sah, sprinkler system, the latest type of lighting, heating and ventilating, and has four high-speed elevators. The latest type of machinery and equipment is being installed.

Also at Flint are the new service building, for the parts and service departments, four stories high, 40,000 square feet; a steel structure for final inspection, 7000 square feet; another steel structure for heat treating and riveting, 5000 square feet, and an additional warehouse, 30,000 square feet.

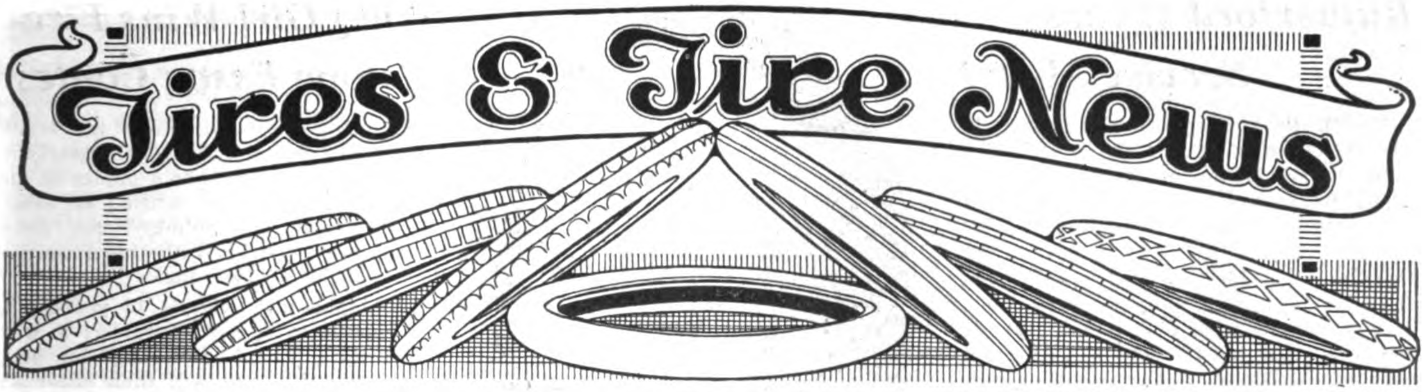
Many improvements have been made to the Lull Carriage Co.'s plant at Kalamazoo, Mich., taken over for the building of Dort bodies. A new power house, six dry kilns and a storehouse for dry lumber bring the working floor space up to 150,000 square feet.

Of importance to the trade is the announcement that William A. Henderson is manager of the body factory. Mr. Henderson is recognized as a leading body designer, was with Holbrook & Co. of New York and has designed bodies for the royalty of Europe and notable citizens of this country.

The Gray-Dort Motor Co. of Chatham, has added 275,000 square feet to the plant in that city, absorbing a vehicle company and erecting a number of units which make this one of the principal plants in Canada.



First Unit of New Dort Motor Car Plant at Flint, Mich.



Prices of Tires Drop 7½ to 15 Per Cent.

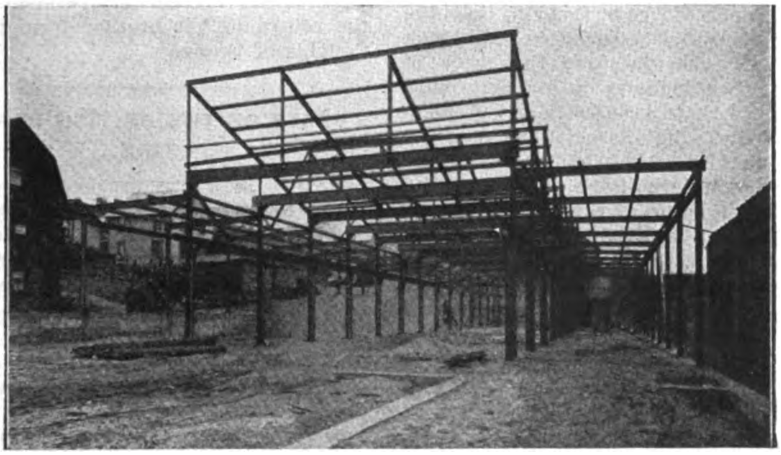
In line with many other products, tires have started to decrease in price. Cuts which range from five to 15 per cent. are announced by many concerns, and rumors are heard of factories that are planning to drop from 17½ to 20 per cent. before the first of the year. General market conditions, new low-price rubber and fabric and an enormous stock on hand are advanced as reasons for the changed prices, most of which go into immediate effect.

Goodyear prices have been cut from 7½ to 15 per cent. according to report, and the factory has started operating on a five-day basis of 52,000 tires weekly. The plant has recently been operating on a four-day schedule and has been shut down for a week while inventories were completed. It will also close during Christmas week, according to report.

Reduction in tire prices announced by the United States Rubber Co. range from 10 per cent. on large sized fabrics to 12½ for small tires. Tubes are cut 15 per cent. and solid tires 10. Cord tires have not lowered to any great extent. The company announces that its position in regard to crude rubber and other supplies is such that it can make the concessions. Goodrich tire prices have also showed substantial recession. Mason tires have made a general cut of 12½ per cent. and Fisk has reduced prices on fabric casings, ranging from 10 to 12½ per cent., while a smaller cut has been made on cords. The Miller Rubber Co. has made a substantial cut and Ajax has dropped from 7½ to 15 per cent., and it is generally understood that practically all other factories will follow suit.

CRUDE RUBBER SELLS AT NEW LOW FIGURE.

Crude rubber is selling at a new low price of 20 cents a pound. The price last year for the same quality was 50 cents a pound, and in 1913, a year of normal prices in practically every line, the same grade sold at $1 a pound. As a matter of fact the new price is stated as not especially attractive to the trade, as large stocks are carried by manufacturers, speculators, importers and jobbers, about all of which was bought at a higher market. It is reported that the new crop will be much smaller in size. Qualities will be held up to the present standard, but it is apparent that effort is being made by the planters to establish a new high price level within the year.


Addition to Plant of Akron Mold and Machine Co. in Process of Erection.

ADDITION TO AKRON RUBBER MOLD CO. WILL DOUBLE OUTPUT.

The accompanying illustration shows the addition to the plant of the Akron Rubber Mold & Machine Co., Akron, O., now in process of erection. Work is being hastened on this extension in order to provide needed additional production facility, the company being busy beyond its present capacity meeting the demands of the tire repair trade from export and domestic markets, as well as the requirements of tire factories for giant cord truck tire mold equipment. This addition, with new machinery, some of which has already been installed temporarily in the plant, will approximately double the present output of the company.

HAYWOOD TIRE SURGERY HAS INCORPORATED.

Miner Haywood, originator of "Haywood Tire Surgery," has just incorporated his business under the name of the Haywood Tire & Equipment Co. Mr. Haywood is president of the new concern, which is capitalized at $400,000. He started in the tire business 12 years ago with a poorly equipped repair shop and $1000.

Soon after launching this enterprise he realized that there was big room for improvement in vulcanizing machinery. Being of an inventive nature he began to design and experiment with machines especially adapted for individual tire repair shops. His idea was to perfect equipment capable of doing all kinds of ordinary repair work with the elimination of bulk and massive weight which characterized machines in general use in tire factories.

He finally succeeded in producing a machine that was light in weight, economical to install and capable of doing high class work. His next step involved manufacturing and marketing these new Haywood vulcanizers and tire repair accessories.

Miner Haywood.

That the machine was an unqualified success and his marketing plans sound, is best attested by the fact that from an original investment of $1000 the present Haywood plant has increased to its present proportions.

The main building covers two acres of ground and comprises floor space approximating 20,000 square feet. Housed in this edifice are the general offices, complete machine shops and a fully equipped tire repair school.

Rutherford Wears Service Medal

W. O. Rutherford, vice president in charge of sales of the B. F. Goodrich Rubber Co., is one of the youngest officials in the automotive industry and at the same time one of the oldest in point of service.

As proof of his extended work in the industry he now proudly wears a Goodrich 20-year service pin. He completed his 20th year this fall and was initiated into the Goodrich 20-Year-Service-Order with 38 other "new" 20-year veterans.

Mr. Rutherford worked up to his present position from the ranks, winning each promotion through sheer ability. He entered the Goodrich employ in 1900 in a minor position in the sales department. Later he was sent to Detroit to look after the company's interest in that city, and a year later was promoted to the position of manager of the company's Denver branch.

From the West Mr. Rutherford was called back to the central states and sent to Buffalo, where he had charge of affairs for eight years. In 1910 he was transferred to the home office at Akron, where he was made assistant to Vice President H. E. Raymond. By successive steps he advanced from that position to vice president in charge of sales.

Despite this long service record, Mr. Rutherford is still a young man. He registered in the last draft during the war and is still on the "near-side" of the 50 year mark.

W. O. Rutherford, Vice President in Charge of Sales, B. F. Goodrich Rubber Co.

RACINE TIRE HAS NEW SALES LOCATION.

The Racine Rubber Co. of New England has taken possession of its new sales and service station at 186 Brookline avenue, Boston, in the very heart of the motor district. The expansion of Racine tire interests in this territory in the past 12 months demanded a removal from the former location at 51 Chardon street, and in securing the new building President James S. Waddell provided for future expansion as well as present needs. A full and complete stock of fabric and cord tires as well as an abundance of inner tubes will be kept on hand.

HOOD CHANGES COMMON STOCK.

Stockholders of the Hood Rubber Co. have voted to change the common stock from $100 par value to shares of no par value. There is $5,000,000 common stock now outstanding and it is understood to be the intention of directors to declare a 100 per cent. stock dividend by issuing two shares of new stock. of no par value, for each existing $100 share. Last spring Hood Rubber paid a 66 2/3 per cent. common stock dividend. increasing the issued common stock from $3,000,000 to $5,000,000. The dividend rate was thereupon reduced from a $12 to an $8 annual basis. On the same comparative basis the new common stock would pay $4 a year.

GROWERS TO RAISE PRICE OF RUBBER.

It is reported from London that the Rubber Growers' association will take drastic steps to increase the price of rubber. The industry at present cultivates more than 3,000,000 acres of plantations, and the association controls about one-third of the holdings. Propaganda is being circulated in an effort to reduce the tapping of rubber trees by 25 per cent., and it is understood that the situation may assume an aspect of grave importance.

Victor Rubber Co., Springfield, O., has made 12½ to 15 per cent. price cut.

Miss Katherine F. Butterfield, Weiser, Ida., Winner of Firestone Ship-by-Truck Prize Essay.

Idaho Girl Wins Firestone Essay Contest

The Harvey S. Firestone university scholarship contest, in which nearly a quarter of a million school pupils of the nation participated, by writing an essay on the topic of "Ship-by-Truck Good Roads," was won by Katherine Flournoy Butterfield of Weiser, Ida.

The Idaho girl, who is 16 years old, has chosen to spend a year at a well known girls' school on the Hudson, near New York city, and will then enter an eastern university for a three-year course.

The more than 200,000 essays were winnowed down until but one from each state was placed before the final judges for decision. Members of the committee which made the awards of national prizes were Dr. C. D. Davis, United States Bureau of Education, chairman; Dr. Walton C. John, United States Bureau of Education; H. S. Fairbanks, United States Bureau of Public Roads, and Pyke Johnson, secretary of the highways committee of the National Automobile Chamber of Commerce.

Miss Butterfield is not without honor in her own home. During the war she won first prize for the best Liberty Loan essay and wrote a play which was produced—with the aid of 20 cousins—upon the return of her brother from the battlefields of France.

TESTS OF THE BRITISH RAPSON TIRE.

The following tests of the Rapson tire, manufactured by Rapson Automobile Patents, Ltd ., London, England, recently conducted under competent supervision, are of interest in this country.

The first test consisted of the reading of the temperatures taken after one lap at an average rate of 58¼ miles an hour, a comparison being made of the Rapson and an American tire. The respective temperature readings were 101 degrees. Fahrenheit, for the Rapson, and 124 degrees for the American.

Second test—After five laps at an average of just over 50 miles an hour, the thermometers showed, after a lapse of one minute, that the Rapson tire was 20 degrees cooler than the American. The final reading, taken some minutes later, was 144 degrees for the Rapson and 146 for the American.

Third test—The American tire was exchanged for a British tire taken off a spare wheel, consequently stone cold. The Rapson was still hot from previous tests, registering 140 degrees at the beginning of the five laps at an average speed of 55 miles an hour, which made up this test. The result was 147 degrees for the Rapson and 157 for the British tire.

At the completion of the run back to town the tests read 85 degrees for the Rapson and 98 for the American.

NEW SALES ORGANIZATION TO MARKET WELL KNOWN PRODUCTS.

Sales and selling organizations of the Sterling Tire Corporation and the Empire Rubber & Tire Co. have been taken over by the Rubber Corporation of America, which has been formed by New York banking interests. There have been no changes in the controlling interests of either of the companies, and all manufacturing remains separate and distinct as before.

The object in forming the new sales company was to increase efficiency and secure economy in branch operation; to maintain larger stocks of goods in centrally located warehouses; to consolidate advertising effort and to relieve the heads of the manufacturing departments of all details of selling and financing.

The general offices of the Rubber Corporation of America will be at 240 West 55th street, New York. Branches will be established in Boston, Philadelphia, Pittsburgh, Buffalo, Chicago, Kansas City, Atlanta and San Francisco. Sterling branches in most cities will become distributors for the new corporation.

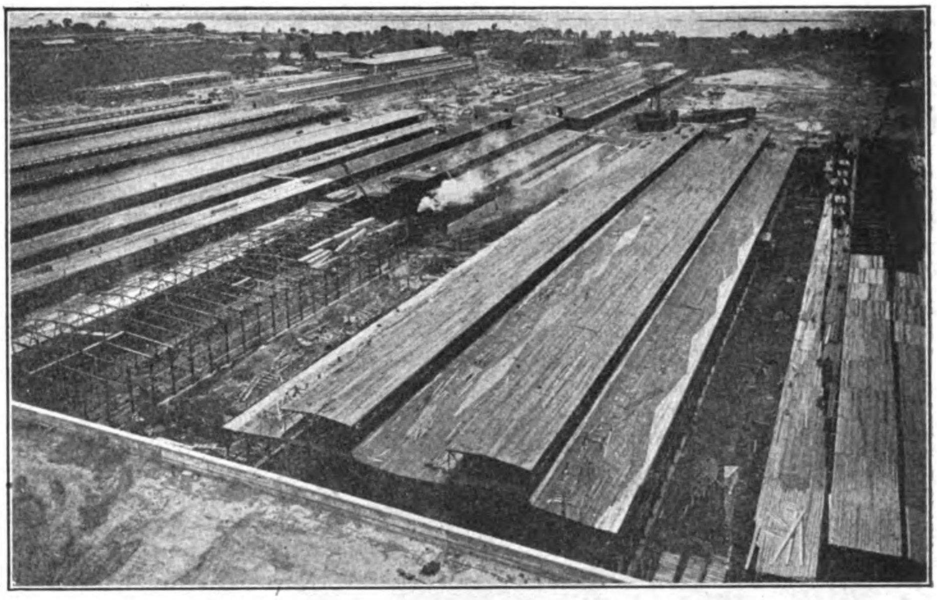
NEW ENGLAND TIRE AND RUBBER CO. STARTS PRODUCTION.

The Holyoke cord tire, a product of the recently organized New England Tire & Rubber Co., Holyoke, Mass., is now being manufactured in an outside factory, under the direction of John Kearns, president of the new company, and will be removed to the new plant as soon as that structure is completed. This company is capitalized at $3,000,000, half common and half preferred stock, and a large amount of the stock has already been subscribed for, it being said that present stockholders number more than 2000, who hold varying amounts.

The president, Mr. Kearns, was formerly vice president of the Fisk Rubber Co., has been connected with the Dunlop Rubber Co. of Australasia, Ltd., and at the present time is vice president and general manager of the Lee Tire and Rubber Co. Associated with him as vice president of the company is a son, E. J. Kearns, formerly with the same companies. C. S. Huntley, treasurer and general manager, was organizer of the Delion Tire & Rubber Co., and at the present time is president of the Midco Tire Co.

The board of directors is as follows, in addition to the foregoing:

W. C. Van Brunt, secretary, formerly a New York exporter and with the Hurlbert Motor Truck Co.; Joseph F. Ranger, treasurer Casper Ranger Co., Holyoke, Mass.; George K. Culp, who has been seven years with the United States Rubber Co., with the Mid-Continent Tire Manufacturing Co. and other concerns; T. F. Morris, formerly with the American Sugar Refining Co. and Keystone Watch Co.; F. W. Callahan, Springfield, Mass., ex-vice president of the Springfield Junior Chamber of Commerce and formerly manager of Weeks & Co.; J. Sidney Bernstein, attorney, New York.



General View of Factory Buildings Under Construction for Dunlop Tire & Rubber Corporation of America at Buffalo. Two Miles of Standard Track and Nine Miles of Narrow Gauge Railway Are in Use to Distribute Materials of All Kinds to Various Sections of the Site.

Immense Plant of Dunlop Tire Co. To Be Run by Niagara Falls

The stupendous job being performed by the nation's greatest hydroelectric plant, at Niagara Falls, is given new emphasis every time another great industrial enterprise is harnessed to it. One of the latest is the plant of the Dunlop Tire & Rubber Corporation of America, a $15,000,000 factory located a mile north of Buffalo. The manufacture of tires requires a great deal of power in any case—and claim is made that this particular company will soon be one of the largest in the field, with a production capacity which will compare favorably with that of the other large manufacturers in the industry.

A part of the power will come from Niagara Falls direct, the balance being furnished by the steam plant of the Buffalo General Electric Co.

The factory units cover 35 acres of actual floor space. The initial installation at the Dunlap plant will require a total of 253 electric motors in all sizes, having an aggregate rating of 16,500 horsepower. In addition there are 15 motor generator sets with a total capacity of 1260 horsepower, and nine synchronous converters of a total capacity of 990 kilowatts. Most of these will be constant speed alternating current motors, among them being 12 500-horsepower synchronous motors driving lines of masticating and mixing mills and 18 250-horsepower synchronous motors driving warming mills. The variable speed motors are driven by direct current, which is supplied from synchronous converters located in the distributing stations, of which there are eight, in the factory. The largest of the direct current motors are of 100-horsepower and 60-horsepower, driving rubber strip and tread calendars respectively The current comes to the plant at a tension of 12,000 volts and is received at a central sub-station of two stories, 85 by 110 feet in extent of ground plan, where it is reduced by the transformers to 2300 volts and then distributed through an underground cable system through seven sub-stations, each of which is 17 by 72 feet in extent and two stories high. Where alternating current is used, of course, there is merely a reduction of voltage through additional transformers, but in some of the sub-stations there will be converters to make the change to direct current.

Electric power is used to drive the air compressors furnishing the compressed air in the plant. Electric power is used in the operation of magneto clutches and brakes with which all the large lines of mills and rolls are equipped as a safety-first feature. Electricity further is responsible for the modern electric fire alarm system, telephone system and automatic call system by which superintendents and foremen can be located.

GOODLUCK CLOSES DEAL WITH CLIMAX.

The Goodluck Rubber Co., Buffalo, N. Y., has closed a deal with the Climax Rubber Co., Delaware, O., whereby the Goodluck company purchased for $2,500,000 the rights to manufacture Climax and Maxotires in New York state.

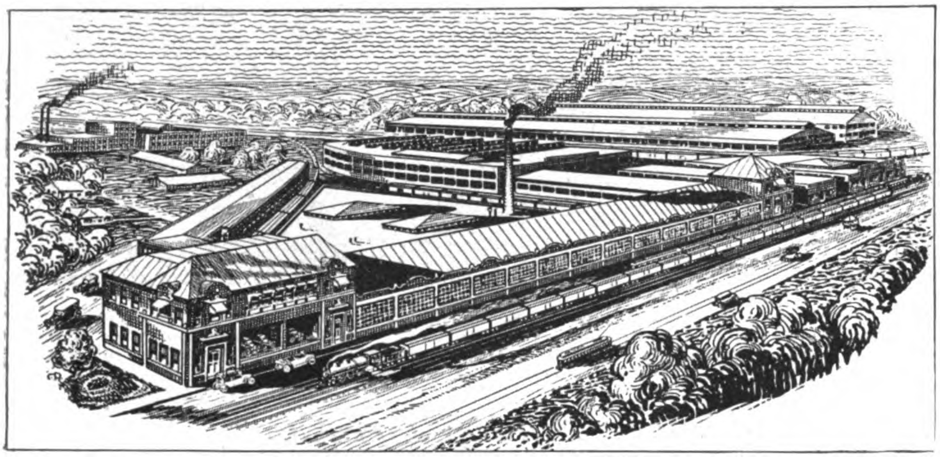
The Climax factory, recently acquired at Delaware, O., is to be expanded in the near future, it is announced by officials of the Climax company, and although the general offices will be at Delaware, Frank B. Wilson, publicity director, will maintain headquarters at Columbus.

It is understood that rights to manufacture Climax products in other sections of the country may also be allotted.

NOTES OF TRADE AND INDUSTRY

Lexington Holding Co. Formed

To keep pace with the rapid development of the automotive industry, Frank B. Ansted, president of the Lexington Motor Co., Connersville, Ind., and his associates, have organized the United States Automotive Corporation, a holding company, incorporated under the laws of Delaware.



New Plant of Hanson Motor Co. at Atlanta, Ga.

The new corporation has an authorized capital of $10,000,000 of preferred stock and 300,000 shares of no par value common stock, of which 100,000 shares are class A and 200,000 class B. The alliance will place under a single control and management several of the parts making plants which have contributed in the past to Lexington success as individual units allied with Lexington. Under the new plan these parts making plants are working with Lexington as a unit, and the movement is designed to guarantee to Lexington a control of sources of supplies and to make possible manufacturing economies.

Frank B. Ansted is the president of the United States Automotive Corporation; George W. Ansted, also president of the Ansted & Bush Milling Co. at Springfield, O.; Fred I. Barrows, also president of the Teetor-Hartley Motor Corporation at Hagerstown, Ind., and Emery Huston, vice president of Lexington Motor Co., are vice presidents. LeRoy A. Hanson, secretary and treasurer of the Lexington Motor Co., is secretary and assistant treasurer, and James M. Heron, secretary and treasurer of the Rex Manufacturing Co., is the treasurer of the new company.

The board of directors includes William B. Ansted, president of the Central Manufacturing Co.; John C. Moore, chief engineer of the Lexington; Charles C. Hull, president of the Rex Manufacturing Co.; Arthur A. Ansted, president of the Indiana Lamp Co.; Elmer J. Hess, former president of the Western Spring & Axle Co., and O. A. Eberhart, former governor of Minnesota and general coun-

LOCOMOBILE BOARD OF DIRECTORS ENLARGED.

At a meeting of the board of directors of the Locomobile Co. recently held the board was increased to 15 members by the addition of five men prominent in financial and industrial circles. The new directors are:

Capt. Marion McMillin, first vice president, Emerson, McMillin & Co., 120 Broadway, New York; A. P. Lathrop, president, American Light & Traction Co., 120 Broadway, New York; Charles Willard Young, counselor, Emerson, McMillin & Co., 120 Broadway, New York; R. L. Kinne, Utica, N. Y.; Herbert L. Dillon, Eastman, Dillon & Co., 71 Broadway, New York.

SPARKS-WITHINGTON ENLARGES.

Completion of two brick and concrete buildings at the Sparks-Withington plant, Jackson, Mich., enlarges the floor space 85 per cent.

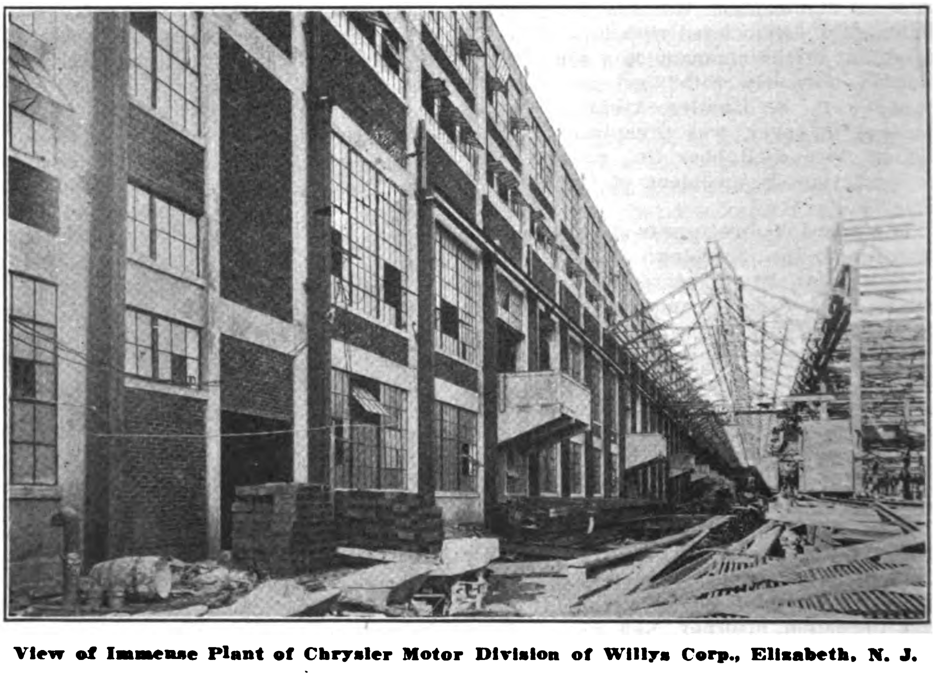
Chrysler Motor Plant at Elizabeth, N. J.

Owing to John N. Willys' interest in both companies, some confusion seems to exist in the trade concerning the operations of Willys-Overland and the Willys Corporation. These are two separate and distinct companies. The Willys-Overland Co., as heretofore, manufactures Overland and Willys-Knight cars at the company's plants at Toledo, O. The new plant, now rapidly nearing completion at Elizabeth, N. J., is the property of the Willys Corporation and will be known as the Chrysler Motor Co. Division of Willys Corporation. This will be devoted exclusively to the manufacture of the new Chrysler Six and production of these cars is scheduled for next spring.

Building operations at the Elizabeth plant are progressingly steadily and have reached huge proportions. The main assembly building, a four-story structure 1440 feet in length, is practically completed and ready for the installation of machinery. Structural iron work is up for other factory units and concrete work on the great shipping and receiving sheds was recently completed. It is claimed that the new plant will set aside all previous ideas in modern automotive manufacture and establish new standards in the handling of material and finished product.

BEAR-CAT'S NEW BRANCH.

Announcement is made that the Bear-Cat Products Co. of Oklahoma City, Okla., has just opened a city branch on North Robinson avenue. A. L. Lockhart is in charge, which is the fifth to be added to the chain, the others being located at New York, Chicago, Philadelphia and Houston, Tex.



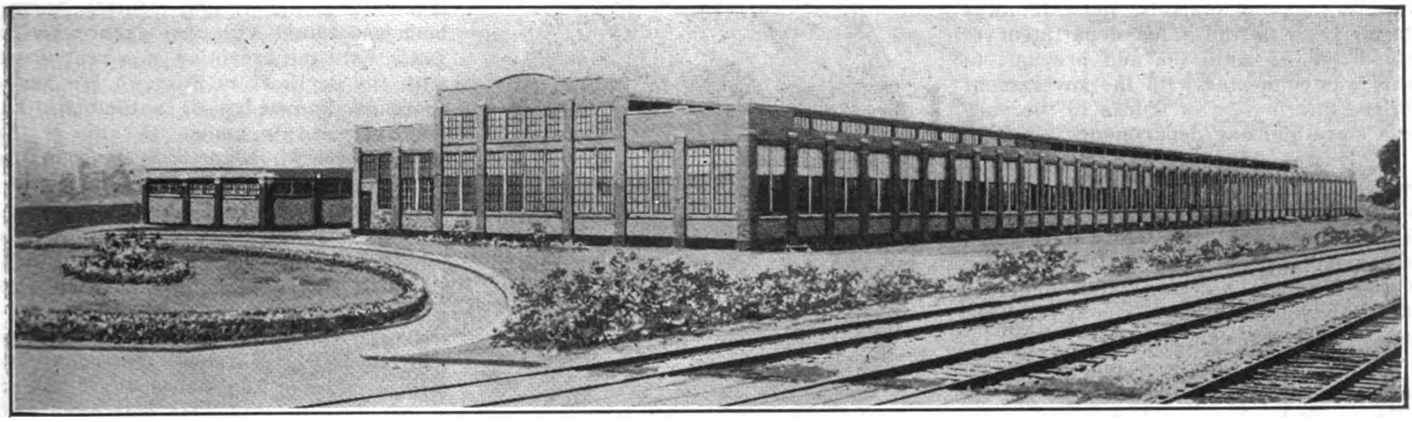
View of Immense Plant of Chrysler Motor Division of Willys Corp., Elizabeth, N. J.

Clark Equipment Co's New Axle Factory

The accompanying illustration shows the magnificent new plant which the Clark Equipment Co., Buchanan, Mich., is erecting at Battle Creek, Mich. This concern makes a complete line of internal gear drive truck axles, ranging in size from three-quarters of a ton to five-ton, and all sizes of steel disc wheels for solid and pneumatic truck tires.

Work on the new plant began March 1 and it will be entirely given over to the making of Clark motor axles and is designed to care for the anticipated increasing demand for this product for some time to come.

All sales, engineering, purchasing and general administration will be handled as before through the general offices at Buchanan. There will also be put into force at the Battle Creek plant the same progressive policies of plant management and profit sharing which have proved so valuable at Buchanan.



The Fine New Plant of the Clark Equipment Co., at Battle Creek, Mich., Which Is Nearing Completion and Will Be Used Exclusively for the Production of Truck Axles.

The plant's site comprises 23 acres, with a 4600-foot frontage on the main line of the Michigan Central railroad and a smaller frontage along the Grand Rapids and Interurban railroad. It is located on the extreme western side of the city. The manufacturing building is 99 feet by 440 feet and a warehouse parallel to it is 50 feet by 144 feet. The two buildings are connected by two closed passageways. A third building houses the power plant.

PISTON RING CO. APPOINTS NEW OFFICERS.

At a meeting of the board of directors of the American Hammered Piston Ring Co., held at Baltimore, Md., recently, announcement was made of the appointment of C. F. Hockley as president. Howard Bruce, chairman of the board of directors, and A. C. Bruce as vice president.

A. C. Bruce is assistant to the president of the Bartlett-Hayward Co., of which the American Hammered Piston Ring Co. is a subsidiary, and comes to his new position with an unusual successful record in the manufacturing field.

INSTALLS HEATERS AND SELLS OPEN CARS FOR WINTER.

The West can always be depended on to get around a difficulty and this fact is exemplified by the manner in which a Kansas City car distributor disposed of his entire stock of open cars during October. Prices were dropping in many lines, and automobile manufacturers had joined the procession to a great extent, but the dealer in question had no reason to expect a cut in the product handled by him, and was somewhat concerned as to just what the outcome would be. He had tied up a large sum of money in stock on hand, which consisted practically entirely of open cars. Selling conditions demanded closed models as well as lowered prices, and he was in a quandery. As a last resort he decided to install heaters in all the open cars on hand. He felt that this would end the bug-a-boo of cold weather for all time, and he was right. The heater-equipped cars sold well, and the last one was disposed of three days before the price was lowered. He intends to stock the heater, as he feels that it is a sales puller of merit, and from now on he will equip all cars with it.

OREGON DISTRIBUTORS FOR HARE'S.

C. R. Norton, Pacific coast manager for Hare's Motors, has announced that the distribution of all Hare's Motors products for the State of Oregon will be controlled by the Willemette Motors Co. of Portland. This is another step in establishing the distribution and service for the Locomobile, Mercer and Simplex cars and Riker truck in Northwest.

The Willemette Motors Co. has subscribed to the Hares' Motors service policy and owners of any of the company's products will receive the same service through the new dealer that they would get at any Hare's Motors organization in the country.

The net earnings of the Stewart-Warner Speedometer Corporation, Chicago, Ill., for the third quarter of the fiscal year, before taxes and dividends, were $801,278, the best showing for any quarter of this year.

Willys-Overland Features Time Payment

Through arrangements which the Willys-Overland Co., Toledo. O., has been fortunate enough to make, its dealers in all parts of the country will be able to finance the sale of its Overland and Willys-Knight cars on the time payment plan.

Statistics show that throughout the country 60 per cent. of all cars are sold on time. On the Pacific coast the percentage of cars sold on time runs as high as 90.

Surveys made by the great banking institutions, which have been organized to finance automobile sales exclusively, show that the motor car, especially the smaller, standard types of cars, have long since passed the luxury class and must now be considered a necessary part of every progressive community.

One survey made in 1919, from April to September, gives an idea of the class of buyers who are purchasing cars through the time payment plan. The average age of the purchaser was 35.9 years. His average monthly income was $277.81. The average monthly payment on his car was $60.16, and the average down payment 43.8 per cent.

The average real estate equity owned by purchasers was $7805, an indication that most of these buyers own their own homes and other property as well. The survey covered nearly 8000 purchasers in all parts of the country.

LINK BELT WATER SCREENS.

The Link-Belt Co., 910 South Michigan avenue, Chicago, Ill., recently published an illustrated and very attractive 24-page book covering its traveling water screens, which will be sent to anyone interested in the effective and economical screening of condensing water.

Surface condensers are easily clogged up by impurities contained in the water supply and very hard to clean. Clogged condenser tubes mean reduced efficiency of operation and other disadvantages that can be forestalled by the use of traveling screens.

Personal News of Industry and Trade

Blaha Available's Sales Manager

William F. Blaha has recently been promoted to the position of acting sales manager of the Available Truck Co., Chicago, Ill. Prior to this promotion he was manager of the Available Truck Co.'s advertising and sales promotion departments, which he will continue to supervise. Previous to his association with the Available Truck Co. he was chief of the copy department of the Coolidge Advertising Co., Des Moines, Ia. Mr. Blaha had been identified previous to his advertising agency connection with the automotive trade for a number of years as manager of the advertising and sales promotion departments of the Master Truck Co.

J. H. Kelly of the Parker Motor Truck Co. has resigned and will make his headquarters in Indianapolis, Ind. He was formerly with the sales department of the F. W. D. Auto Co. and previous to this was connected with the government in the distribution of trucks to the various state highway departments.

A. C. Russel is meeting with substantial success in developing the wholesale department of the Philadelphia branch of the Locomobile Co. He was carriage sales manager for Packard-Detroit when Oscar Coolican, now general manager of the Philadelphia branch, was at the head of that organization.

H. R. Rhodes has been appointed manager of the Wayne Bumper Co., Fort Wayne, Ind. He has had many years experience in advertising and selling, and was formerly connected with the Howe Lamp Manufacturing Co., Chicago, and the New Era Spring and Specialty Co., Grand Rapids, Mich.

Joseph G. Goldring, former director of purchasing for the King Tire Co. of New York, has resigned from that position and is doing business as a manufacturers' agent, being located at 250 West 54th street, New York. Mr. Goldring has had many years experience in the automotive business.

H. G. Kratzer has been appointed superintendent of the Kemp Machine Works, Muncie, Ind. He was recently released from government work, having served as special radio experimenter in the United States naval gun factory at Washington.

S. G. Doench, formerly publicity man for the Wainwright Engineering Co., Connersville, Ind., has purchased a factory in Cincinnati, O., which will be devoted to the manufacture of pistons, rings and pins. The business will be operated as the Engine Service Co.

F. Y. Spencer has been appointed advertising manager of the Corcoran Manufacturing Co., Cincinnati, O. Mr. Spencer was formerly with the Garvey-Anderson Advertising Agency of Cincinnati.

C. A. Taylor, formerly general sales manager of the Van Briggle Motor Device Co. of Indianapolis, Ind., has been appointed general sales manager of the Tractor Train Co. of Indiana. He has assumed his new duties at Connersville, Ind., where the main plant of the company is located, and has already outlined a prospective campaign for future business. Mr. Taylor is well known in automotive manufacturing and selling circles.

A. A. Brevaire, formerly technical engineer for the service department of the Pierce-Arrow Motor Car Co., has been appointed chief maintenance engineer of Hare's Motors, Inc. He brings a wealth of experience to his new position as he has been associated with some prominent manufacturers in the industry.

J. A. Young, Vice President and General Manager, Empire Axle Co., Maker of Worm-Drive Axles, Dunkirk, N. Y.

A. G. Maney has recently been appointed director of distribution of the Franklin Automobile Co., Syracuse, N. Y. This is a position which has just been created. Mr. Maney has been serving for some time as assistant to the president in connection with the merchandising end of the business over which he now has direct supervision. He had previously been associated with the Belleville Chemical Co., the Shaw Insulator Co. and the Wright-Martin Aircraft Corporation. He is a graduate of New York university.

Earle E. Devlin, formerly special representative and more recently assistant to the general sales manager of Hare's Motors, Inc., has been chosen to fill the position of office sales manager. He has been connected with the automotive industry since 1912, when he joined the Buick Motor Co., being located at the Philadelphia branch. Later he became general manager for the Bigelow-Willey Co. of Philadelphia, distributor for Paige motor cars, in that territory.

Brower at Boston as Bearings Manager

R. C. Brower has been appointed branch manager of the Boston office of the Bearings Service Co. He was formerly with this company and takes the place of L. H. Dodd. Prior to the organization of the Bearings Service Co. Mr. Brower was with the Hyatt Roller Bearing Co. He served as branch manager at Detroit, was later associated with the New York branch and was finally promoted to be eastern district manager. He then joined the forces of the Harrison Radiator Co. and was later assistant sales manager of the Clark Truck-Tractor Co.

W. J. Mattimore has been appointed advertising manager of the Maxwell-Chalmers Co. of Boston. He goes to the Maxwell-Chalmers interests from MacManus, Inc., advertising counsel, having been associated with that agency for 11 years, with the exception of a year spent with the A. E. F. in France. He has a thorough knowledge of automotive advertising and is known as one of the most successful advertising men in the western field.

W. O. Browne has been appointed general sales manager of the Southern Motor Manufacturing association, Houston, Tex. He comes to his new position with a wide experience in motor sales, having been connected in a prominent way with several of the larger concerns. He is a veteran of the World War, having volunteered in 1917. He will have general supervision of all sales of Ranger passenger cars, trucks, tractor-cultivators, trailers and commercial bodies.

Claude C. Smith has been made vice president of the Seelye-Brown advertising agency, according to recent announcement. It is said that few men in the country have a more accurate knowledge of publications than Mr. Smith. In addition to general supervision of the space buying department, Mr. Smith has charge of several of the more important accounts handled by the company.

Walter S. Bingham was recently appointed by the Arvac Manufacturing Co., Anderson, Ind., to represent it in Michigan, Wisconsin, Minnesota, Iowa, Illinois and Missouri. Mr. Bingham has been connected with the tractor industry in the northwest and has been in touch with the Arvac concern for a number of years.

N. D. Beaver has taken over the business of the Standard Motor Sales Co., Denver, Col., distributor of Standard trucks. Mr. Beaver will distribute Standard trucks in the states of New Mexico, Nebraska, Wyoming and Colorado.

C. C. Secrist, for nine years connected with the advertising department of the Universal Portland Cement Co., has been appointed sales manager of the Victor Manufacturing & Gasket Co.

Polhamus Heads Visible Pump Co.

Announcement has just been made that A. Z. Polhamus, former general manager of the S. F. Bowser Oil Tank and Pump Works, and for more than 30 years a well known figure in Fort Wayne manufacturing circles, has been named as president and general manager of the Visible Pump Works, a newly organized company with headquarters at New Haven, Ind.

Mr. Polhamus became associated with the S. F. Bowser Co. in February, 1891, and during his 25 years' career with that company served successively as superintendent of salesmen, sales manager, chairman of the executive board, general manager and secretary of the company. He has been closely identified with the oil tank and pump manufacturing industry, in which he has been eminently successful.

Since he severed connections with the Bowser company Mr. Polhamus has been president and general manager of the Polhamus company, which he organized for the manufacture of oil burners for use in connection with newspaper plant machinery. Mr. Polhamus was a close friend of the late August Bowser, whose genius just a short time before his death created the visible measuring pump. It is the late Mr. Bowser's patent which is being manufactured by the Visible Pump Co.

To Build Immediately.

The Visible Pump Works is now receiving bids for the construction work on the first unit of its big plant to be built at New Haven. This first machine shop unit will be under roof within the next 60 to 90 days.

Besides self-measuring pumps the Visible Pump Co. will also manufacture oil distributing systems. It has opened offices on the fourth floor of the Central building at Wayne and Harrison streets, but will eventually have its main office at its plant at New Haven.

The site for the new factory comprises eight acres just west of the interurban station at New Haven, between the interurban tracks and the Wabash and Nickel Plate tracks. In addition it will also be within easy access of the proposed industrial "belt line" which it is proposed to have connect various plants in the Fort Wayne factory district.

ROLLS-ROYCE MANUFACTURING CHASSIS.

With a personnel of 700 men, the Rolls-Royce Co. of America, located at Springfield, Mass., is turning out completed chassis, following plans announced some time ago. The price of the chassis has been fixed at $11,750 and, with body, the car will cost from $15,000 to $17,000, depending, of course, on the type of job furnished. The outlook for capacity production is said to be very good.

A. Z. Polhamus, President and General Manager, Visible Pump Works, New Haven, Ind.

UNIVERSAL PRODUCTS WILL INCREASE CAPITALIZATION.

Announcement is made of plans for an increase in capitalization of the Universal Products Co. of Sandusky, O., and Oshkosh, Wis., to $500,000. The plans include the purchase of the H. C. Doman Co. of Oshkosh, Wis., and the removal of the main offices from Sandusky to Oshkosh.

The new company will continue to manufacture the Universal Products electric lighting and power plants and the Doman marine engines, and will immediately go on an increased production schedule, made necessary by the large field organization developed during the last year.

The officers of the new company will be: President, L. E. Willson; vice president, R. K. Schriber; secretary, Charles H. Eichinger; treasurer, Louis Schriber.

NEW CONTINENTAL BRANCH AT SAN FRANCISCO.

Adding to its large chain of branch plants, the Continental Motor Auto Parts Co. has recently opened an office at San Francisco, of which Bruce Daniels, for some time connected with the Russell Seeds Advertising Co. of Indianapolis, has been appointed manager. Two car loads of shop machinery have been forwarded to the territory for local distribution.

PACKARD REAL ESTATE SALE.

The Packard Motor Car sales and service building, located at the junction of Flatbush and Eighth avenues and St. John's Place, and facing the main entrance to Prospect Park, Brooklyn, has been purchased by C. T. Silver, a well known automobile distributor.

Wheeler-Schebler Co. Enlarges Plant

In the face of what would seem to be general adverse business conditions, the Wheeler-Schebler Carburetor Co. reports its output as well above normal and has recently erected two new buildings and renovated the original plant. The largest of the new structures is a three-story building, which will be used to house the executive offices, tool room, shipping department, mill wright and stock room, and a large assembly room. The engineering department has been given added space and the laboratory has also undergone extensive alterations, all with a view to increasing the general efficiency. A new service building has been built to take care of the large business along this line and it is felt that the company is prepared to take care of any future increase in an efficient manner.

BOYCE MOTO-METERS TO BE BUILT ABROAD.

George H. Townsend, president, and E. V. Hennecke, sales manager, of the Moto-Meter Co., Inc., sailed recently for Southampton, England. They will visit England and France for the purpose of establishing branch factories which will produce Boyce Moto-Meters for the European market and will also make a survey of the general conditions affecting the future of the automobile trade in Great Britain and on the continent.

According to report there has for several years been a rapidly growing demand for Boyce Moto-Meters in every country where automobiles are used extensively, and this demand has now reached a point where it can hardly be supplied by the American company which, since its establishment in 1914, has outgrown two factories and is crowding the third. The plant at Long Island city has a production of 8000 Boyce Moto-Meters a day. There are already more than 3,000,000 in use upon passenger cars, trucks, tractors, aeroplanes and motor boats.

JOSEPH SCHWARTZ CO., INC., HAS NEW HOME.

The Joseph Schwartz Co., Inc., one of the oldest automobile agencies in New Orleans, has recently moved into its up-to-date show rooms in the remodeled Washington Artillery building. For many years the business was located on Baronne street, where a varied assortment of transportation units was handled, but increased activities and lack of floor space made a change necessary.

The interior finish and general plan of the structure makes it ideal for a show room, and the Schwartz Co. may well feel proud of its new home, which is one of the best in the South. The lines handled by the company at the present time are the Moon and Oakland cars and Selden truck.

EXPORT DEPARTMENT
W.

Touring Alliance Formed in Paris

An international alliance of motoring bodies, which is expected to do much to benefit tourists in foreign countries, is the outgrowth of a recent conference of touring organizations held in Paris. Organizations already connected with the movement are the Automobile Association and Motor union, the American Automobile association, the Touring Club of France, the Touring Club of Belgium, le Union Velocipedique de France, the Cyclist's Touring club and the Touring Club of Italy.

The work of the alliance will include the study and solution of questions relating to customs, international travel, international touring propaganda, international geography of touring, the publication in all allied countries of guide books, and reciprocal advantages to be enjoyed by the individual members of all the organizations in the alliance.

The headquarters will be at Brussels, the general secretary being M. Seaut, president of the Touring Club of Belgium.

LIBERTY EXPORTS REACH DISTANT PORTS.

The Liberty Motor Car Co. is one of those American manufacturers which report great gains in the export of automobiles during the last several months.

Liberty Six cars have been shipped, during the last few weeks, to a great many countries, including some of the most distant ports. The list includes shipments to Sweden, Holland, India, Brazil, the Argentine Republic, France, China, England, Italy and many parts of Latin America. Even mountainous Switzerland has just taken a shipment.

AUTOMOBILE EXPORTS MORE THAN DOUBLED.

Automobile exports for the first eight months of 1920 totaled $233.420.183, compared with $110,318,741 during the same period of 1919, and $74.882.901 in 1918. Since 1918 they have risen from 11th place to seventh, passing the unprecedented outgo of flour, leaf tobacco and leather.

SELLS AMERICAN CARS IN HANKOW, CHINA.

A recent communication from Vice Consul Richard R. Smith of Nanking, China, tells of the demonstration and sale of an American car which covered a total of more than 500 miles and was finally sold in Hankow. The car was demonstrated chiefly to the local officials and native gentry, who were greatly interested in its operation and price, and the salesman took several orders after making the sale. At Kaifengfu, the military governor of Honan not only opened negotiations for the purchase of a car, but announced that a road would be built from the north gate of Kaifengfu to the Yellow river, a distance of about 15 miles, to a good cart road which follows the river to Tsinanfu, the capital of Shantung. The governor proposes to establish a 'bus line between the two cities.

The representative who demonstrated the car expressed the opinion that motor cars and trucks can be operated at a substantial profit in China, and can successfully compete with native cars in carrying passengers and produce. Though the territory covered in the demonstration is not supplied with roads in the modern sense, and though the surface of the ancient cart roads is very rough, the demonstrator was convinced that the road beds were in fair condition, and that not much work would be required to adjust these highways to motor car traffic.

LONDON USES RUBBER FOR PAVING.

Heavy traffic conditions in London, with consequent wear on street surfaces has led to the experiment of using rubber covered paving blocks in different parts of the city. While tests are by no means completed, evidence is offered to show that its use is practical in certain sections of the city where traffic is not especially heavy.

AUTOMOBILES IN INDIA.

According to officials of the Goodyear Tire & Rubber Co.'s export department, a recent census showed that there are 6000 automobiles and 1300 motorcycles in the Bombay territory and an equal number in the Calcutta territory, India.

Industry Has Great Field Abroad

Alfred Reeves, general manager of the National Automobile Chamber of Commerce, is authority for the statement that America has one car to each 14 inhabitants, while the average for foreign countries is one to every 2840 persons. This fact, he said, indicates that the automobile industry's greatest future lies in foreign countries, where people are just beginning to realize the advantage of motor vehicles.

Our exports of cars and trucks, which represented eight per cent. of the value of all completely manufactured products shipped abroad, amounted to 139,875 vehicles, valued at $166,961,709; whereas those of all automotive products exceeded $220,000 during the past 12 months. Automobiles are now exported to more than 90 different countries of the world. Shipments are by no means limited to older European countries. Uruguay and China have been better purchasers of cars than France, while Argentina ranks higher than any of the older Scandinavian countries.

The intensive development of resources of most foreign countries depends primarily on transportation. South America, Asia, Africa, Australia and immense stretches of European Russia will require considerably increased transportation facilities if the products available in the inland sections are to be profitably marketed in parts distant from place of production.

TURKEY TO TRY TAXICABS.

A British automobile company, with a capital of $2.000.000, has been formed to operate in Turkey. Trucks, taxicabs and omnibuses will be used, and plans are already formed for a service station and repair shop to be located at Constantinople.

CAR MARKET IN GREECE.

Trade Commissioner George Wythe in a recent communication said that there is a market in Greece for high priced motor cars. There is no market, however, for trucks at present because of the surplus army trucks recently placed on sale.

New Policy Advocated for Foreign Trade

A new policy in foreign trade was advocated by automobile manufacturers in a recent conference held in New York. Although the export trade is said to show large gains since the signing of the armistice, it is felt that there should be a reduction in tariff schedules applying to American made cars. Treaty agreements as existing are declared to be unsatisfactory, and the conference drew up resolutions to present to Congress which, if acted on, will tend to make trade conditions more advantageous for increased car export.

J. F. Barry, press representative of the New York Commercial, said that in his opinion Mexico has settled down for an era of prosperity. He believes that the present government is pro-United States, and thinks that Mexico will eventually be a wealthy country through the exploitation of its barely touched oil supply.

Franklin Johnston, publisher of "The American Exporter," back from a recent trip to Europe, said that Great Britain is nearly back to normal on her exports and is reducing her indebtedness 3½ times as fast as the United States. He predicted great prosperity for France, and stated that this year's farm yield was exceptionally large, that the railroads were in splendid condition and that business in general showed decided permanent gains over any year since 1914.

South America will be a strong market for American trade in the opinion of T. S. Barbier, representative of the General Motors Export Co., and Brazil offers an exceptionally good field according to C. P. Lucas of the Motor and Accessory Manufacturers' association.

Mistakes made by American manufacturers in the past were discussed and methods were suggested to remedy them. The advantages of the Jones bill in guaranteeing fair treatment to American shippers and exporters was pointed out by R. A. Dean of the United States shipping board. The bill provides that the goods handled in American ships shall have preferential rail rates as against those handled in foreign bottoms. The shipping board has power to say when this shall go into effect, although there has not yet been any attempt to enforce the provision, and it is felt that such action may not be necessary as there seems to be a disposition on the part of foreign countries to recognize the United States as a power in the shipping world, and fair treatment appears to be assured. The general impression of future foreign business, as outlined by the different speakers, seemed to indicate good future foreign business, and manufacturers' representatives present at the conference were of the opinion that exports would continue to increase in no small volume.

Seventy-five to 90% of motors cars imported into China are American made.

FARMERS OWN 86 PER CENT. OF AUTOS IN MANITOBA.

Nearly 7000 more automobiles are owned in Manitoba this year than last. The number of licenses issued in the first six months was 34,596, against 27,862 last year. Forty-seven thousand, or 86 per cent., are owned by farmers.

A group of Americans being driven through Saskatchewan recently on an inspection of the Hudson Bay Co.'s lands, which are being closed out to farm settlers, passed 85 machines on a 25-mile stretch of road and not a single team of horses.

"Horses," explained a farmer paradoxically, "are one of the reasons for all of these automobiles. Profits from horse breeding give the farmers the money to purchase cars. Towns and cities buy the horses and farmers do their work with tractors, automobile trucks and machinery. The day of horseless agriculture seems not far distant."

CEYLON TO HAVE AUTO SHOW.

United States Consul Robert L. Keiser, stationed at Colombo, Ceylon, says that the people of that country have an impression that the highest grade American cars are those retailing at less than $2300, and suggests that manufacturers of the better class exhibit their cars at the Ceylon show, which will be held in January. It is his opinion that many of tne wealthy class in Ceylon would be glad to purchase expensive American-made cars, as automotive products from this country are received very favorably.

JAVA PROMISES GOOD BUSINESS.

While in 1918 there were but 36 automobiles imported into Java, it is estimated that the figures for the current year will total more than 4000, the greater number of which have been manufactured in America. Imports of trucks, accessories, parts has kept pace with cars.

Trade Opportunities in Foreign Field

Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce and its district and co-operative offices upon written request by opportunity number.

33,969—The representative of a firm in Australia is in the United States and desires to secure an agency for the sale of glass ware for electrical lighting, insulating switchboard material and automobile accessories. References.

33,843—The representative of a merchant in Haiti is in the United States and desires to secure an agency for the sale of electrical supplies, second-hand automobile tires and automobiles. References.

33,874—A commercial agent in Australia, with representative in America, desires to purchase motor cars, cut glass ware, furniture, silks for shirtings, silk hosiery and novelties. References.

33,965—A commercial agent in Serbia proposes to organize a trade bureau for the Balkans and to later open branches in Zagreb, Sofia, Bucharest and Piraeus, and maintain industrial exhibits and a warehouse for the promotion of the sale of American products, particularly agricultural implements, railroad equipment, industrial machinery, metal household utensils, electric motors and accessories, automobiles, food products, mining machinery, chemical products, oils and fats, leather and rubber goods, paper, textiles, fancy goods, etc. Reference.

33,966—A commercial representative in Australia desires to purchase or secure an agency for the sale of good quality hardware, enamel ware, cutlery, electro plate, electrical household devices, shoe factory and tanners' requisites and motor accessories. Quotations should be given f. o. b. New York, San Francisco or Vancouver. Payment to be cash against documents on arrival of shipment. References.

33,971—A commercial agency firm in Germany desires to be placed in communication with exporters with a view to securing their representation and import copper and other metals, fertilizers, paraffin, lubricating oils and greases, petrolatum, turpentine, illuminating oil, food stuffs, leaf and cut tobacco, rubber goods, pneumatic tubes and covers for automobiles, vulcanized fiber, shoes, cheap boots for working people, cheap working clothes, belting, mackintoshes, typewriters and supplies, sewing machines, automobile supplies, office supplies, dental supplies, building accessories and novelties, patented articles, etc.

33,847—A manufacturers' representative desires to secure an agency from manufacturers for the sale in Australian and New Zealand cities of hardware of all descriptions, automobile supplies and accessories, bath room fixtures, bright wire goods, builders' hardware, cutlery, watches and clocks, lawn mowers, mechanics' tools, scales, silver plated ware and wire cloth. References.

33,867—A commercial agent in Brazil is in the market for automobiles, trucks and rubber goods. Quotations should be given c. i. f. Brazilian port or f. o. b. American ports. Terms, 60 and 90 days drafts. Correspondence may be in English. References.

33,868—A commercial agent in Argentina desires to act as sole representative of firms distributing toys and first class small automobiles, one to three passengers. Correspondence may be in English, and references are offered.

33,838—An import and export agent in Jugoslavia desires to establish commercial relations with firms handling agricultural implements, railroad equipment, industrial machinery, metal household articles, electric motors and accessories, automobiles, food products, mining machinery, chemical products, oils, fats, leather and rubber goods, paper, textiles and fancy goods. Correspondence may be in English.

33,924—An importer in France desires an agency for metal goods, mechanical articles and automobile accessories. Correspondence should be in French. References.

33,926—A commercial agency in India desires to import various American products such as hardware and building materials, metals in plates and sheets, machinery, electrical goods, automobiles and motorcycles and accessories, house furnishing goods, piece goods, wearing apparel, watches and clocks and general merchandise. References.

33,935—An agency for Diesel and semi-Diesel motors, automobile tires and accessories is desired by a firm in France. References.

33,915—A commercial agent in France desires to represent firms trading in automobiles and automobile equipment and accessories.

33,888—A commercial agent in Brazil desires to represent American exporters of textiles, hardware, chemical and pharmaceutical preparations, electrical goods, automobiles and lubricating oils. Correspondence should be in Portuguese.

Objects and Benefits of Automotive Trade Associations

IN CONNECTION with the annual convention and show of the Automotive Equipment association in Chicago, the Accessory and Garage Journal obtained statements from a number of representative state and sectional organizations allied to the automotive industry and trade covering the benefits to be derived from affiliation with such bodies, business outlook and touching on the value of the national exhibition and convention as a stimulative to business.

The following are selected as typical of various sections of the country:

From Dale Brown, Secretary of the Automotive Association of the Cleveland, O., Chamber of Commerce.

Among the many benefits to be derived by our members are the following:

(a) Mutual acquaintance and understanding.

(b) Concerted action on local legislation.

(c) We carry a membership in the Ohio Automotive association for each of our members. This entitles us to participate in the activities of this organization, and particularly the use of the legislative service at our state capitol.

(d) The organization is divided into four divisions as follows: Electrical, truck, equipment and garage. These divisions meet periodically as the occasion requires to discuss those problems peculiar to their particular groups.

It is almost impossible at this time to express an opinion as to business conditions in this territory. But, in general, I believe that the outlook is optimistic, and that buying is fair. Conservatively, I would say that business conditions in the future will gradually become unrestricted, that money will become less tight and that as soon as the period of careful buying on the part of both the consumer and the retail dealer is past the manufacturer can once again increase his production to normal in cases where it is now below normal, which, of course, is especially true in our neighboring labor center, Akron.

I think the convention and exhibition at Chicago will be of great value to the business man because he will be thrown in contact with the business men in similar lines and over the entire assembly will pervade an atmosphere of mutual confidence and understanding which will tend to do away with the present straightened condition.

The Automotive Association of the Cleveland Chamber of Commerce has 125 members, and the scope of its operations territorially includes only Cuyahoga county in which Cleveland is situated. The officers of the association follow:

Chamber of Commerce: President, Alva Bradley; first vice president, Alexander C. Brown; second vice president, F. W. Ramsey; treasurer, Allard Smith; secretary, Munson Havens.

Automotive Association: President, J. L. Huston; first vice president, R. B. Clark; second vice president. B. F. Turner; treasurer, V. D. Atwood; secretary, Dale Brown.

From John C. O'Brien, General Manager Baltimore, Md., Automobile Dealers' Association.

The practical benefits of membership are numerous. During the past two years we have had hundreds of questions relative to excise taxes which have been a burden upon the various dealers and for which it seemed there was no intelligent method of determining what was and what was not taxable. Through our attorney and other organizations we have been able to straighten out a great many of these difficulties, not only saving the dealers considerable money, but getting rulings so that they would not be subject to penalties later on.

Our association was instrumental in having some very urgent legislation passed at our last session of the Legislature and at the same time our influence was felt very strongly when some unfavorable bill was reported. We can safely say that if it had not been for our efforts there would have been some legislation passed during the spring of 1920 which would have made it almost impossible for a great many of the dealers to continue in business.

Our association holds the automobile show and only those who are members of this organization can participate.

There are numerous other problems that are handled by us for the dealers, but the foregoing are simply examples of the scope of our activities.

There has been a noticeable slowing up in sales, both wholesale and retail, in this territory during the past few weeks. Some of the dealers report better business last month than for the preceding month, but others do not notice any material difference. However, they are optimistic of the future. The numerous price reductions in cars has not been the stimulant it was thought it would be; however, this may be attributed to the expected announcements of further reductions from time to time. It is the universal opinion of the dealers that business in general will be better during that period after election to Jan. 1, and beginning with Jan. 1, business should be on a good substantial basis.

The numerical strength of the Baltimore Automobile Dealers' association is 240, made up of three classes of membership: Active, which is composed entirely of automobile distributors and dealers; passive, which is composed of tire distributors, accessory dealers and those firms allied with the automobile industry. The third class of membership, associate, is made up of other executives, salesmen and other employees of the various firms comprising the first two classes of membership

The organization covers the city of Baltimore and immediate vicinity. However, it is the intention to get out into the state and ultimately bring the dealers in under one state organization.

From R. E. Lee, Secretary-Manager, Motor Trade Association of St. Louis.

The St. Louis association has been in existence 14 years and has brought the accessory dealers of St. Louis into close friendly cooperation.

Business conditions have improved materially beginning Oct. 1, and feeling in this part of the West is that we will be back to normal by or before Jan. 1. It is believed that the coming season will be active from a business standpoint, on the theory that buying of all kinds has been delayed and that needs of consumers and dealers will be urgent next season.

I strongly believe in the value of the convention and exhibition of the Automotive Equipment association in Chicago, and can predict a large attendance from the St. Louis territory.

The operations of the Motor Accessory Trade Association of St. Louis are confined to St. Louis and St. Louis county.

Officers: President, Phil H. Brockman, De Luxe Automobile Co.; vice president, George Weber, Weber Implement & Auto Co.; treasurer, W. L. Johnson, Johnson Automobile Co.; secretary, Robert E. Lee, editor of the Auto Review.

From A. J. Knapp, Secretary of the Iowa Motor Trades Bureau, Inc.

The bureau promotes harmony and better business relations between motor trades men, through county unit organizations which affiliate with the state bureau; promotes the study of costs and accountancy; surveys the credit situation, one result being the adoption of a strictly cash basis by several units; promotes power farming and motor truck demonstrations; introduces just measures before the state legislature and prevents the passage of adverse legislation; promotes hard surface road building.

In the writer's opinion, general business conditions in Iowa have improved; the crop production, state-wide, in the principal crops, this year far exceeds the 10-year average; the credit situation, except in isolated sections, seems better, in fact has been getting better in the last 30 days. Passenger car and motor truck sales took a decided slump generally in June, with little change noticeable until September. Announcement of decreased prices by some manufacturers of automobiles has a tendency to slow up sales in all lines. General reports in other lines of merchandising indicate that the public expects lower prices and are not generally purchasing in excess of absolute need. The American public is noted for buying generously on a rising or top market, as it is also noted for sitting tight on a declining market.

The writer believes that the sale of motor cars and trucks will not be especially good or will not reach normal, at least in Iowa, until the early spring of 1921. If the factories producing automobiles and trucks make such reductions within the next few months, as they anticipate making for the first six months of 1921, and assure the public that no further reduction will be made, or that if it is made during that period, the buyers will be protected, we see no reason why buying should not return to normal or a little better. We feel justified in making this forecast, basing our belief on the fact that the farmer's inability to market his 1919 crops made it necessary for the banks to extend credit to him. Railway transportation apparently is better and the tremendous 1920 crop, plus the unmarketed 1919 crops, will bring back to Iowa a sufficient amount of money to repay the loans, leaving a fine balance, which should speed up general buying. From every possible angle, we see no cause for alarm, although it is not the time for men with wishbones in place of backbones to start in the motor trades business. The past six months and the coming winter will act like an X ray on many of the men now in the business, because it will show how many of them have more wishbone than backbone. The automotive industry is the greatest business on earth. The motor truck and the motor car are absolutely necessary to the economical well being of the nation; real men of the business realize this and as a consequence have been and are laying a foundation for a future stable business of real merchandising.

Basing his estimate on the caliper of the business men affiliated with the Automotive Equipment association with whom he has come in contact, as typical of the rank and file of the membership of that organization, the writer believes that the convention and exhibition are certainly worth while.

The Iowa Motor Trades Bureau is only a year and a half old and is the only organization of motor trades in the state. Its numerical strength is 1450 concerns, not individuals, and its scope is state wide.

The officials are as follows: President, G. V. Orr, Waterloo; vice president, F. D. Farmer, Council Bluffs; treasurer, George W. Jones, Des Moines; secretary, A. J. Knapp, Shops building, Des Moines.

From E. F. Taylor, Secretary of the Richmond, Va., Automotive Trade Association.

This association, while organized primarily for the benefit of local dealers, is affiliated with both state and national organizations. Some of the benefits derived from membership are for handling uniform license and proper traffic laws, business efficiency, cooperation between dealers, protection against unjust taxation and strict attention to upbuilding the business of automotive dealers.

Conditions in this line for the past 60 days locally, as well as over Virginia and North Carolina, have been unfavorable. Are reliably informed that many dealers are considerably overstocked with cars and trucks and tightness of money, presidential election, also several crops being held for higher prices, are considered the principle reasons. The trade, to a large extent, is optimistic and is anticipating considerable improvement probably within at least 30 days. The reason for this prognostication is that election will be over, these few crops will probably be marketed and dealers' stocks, particularly accessories and supplies, will be depleted to such a point that will necessitate their replenishing. As far as we can observe there are as many automobiles, in fact more operating, but owing to reduction in price of cars, consumers are inclined towards the belief that everything will drop; hence, are waiting until something develops.

The numerical strength of the Richmond Automotive Trade Association, Inc., is 75. The officials are as follows:

President, J. A. Kline; vice president, W. C. Wells; secretary, E. F. Taylor; treasurer, W. B. Bayliss.

From Charles S. Backes, Secretary and Manager of the Intermountain Trades Association.

The practical benefits from membership covered several different departments of service. Our legal department is constantly securing rulings on tax matters before the Internal Revenue Department. We have carried a case to the Supreme court, which has definitely settled the tax on solvent credits and have also secured a ruling with reference to the taxing of automotive vehicles in the hands of the dealers as well as the purchasers. We are constantly taking up trade matters covering the entire automotive trade field with the idea that our membership must maintain clean and attractive places of business and that, as an organization, our members must give the public a square deal.

Business conditions generally throughout the territory have been quiet for the last six months. Recent reports from distributors indicate a better feeling and that there will be some activity in all lines for the balance of this year..

As to a forecast of the business for the coming season will say that we do not look for a very large increase. This is due to the fact that a very large portion of our territory is devoted to the raising of dry land grains. Crop failures among these people for the past two or three years have not given them any surplus and it will take at least another year before they can liquidate the losses caused by crop failures. The irrigated sections of our territory are producing a splendid crop and there will be considerable activity and an increase in business in these districts each year.

A convention of this type of the Automotive Equipment association and an exhibition of the merchandise involved always produces splendid results. It gives an opportunity for an exchange of ideas and a discussion of basic policies which will benefit the trade as a whole.

The name of the Intermountain Automotive Trades association has just been changed from "Intermountain Automotive Dealers' Association." The present membership is 125 and this is expected to be increased to 250 within the next two months. The association covers the states of Idaho, Utah, Western Wyoming and Eastern Nevada. It is affiliated with the National Automobile Dealers' association. The officials are as follows:

President, Russel Richards, Salt Lake City, Utah; vice president, R. G. Bills, Blackfoot, Ida.; treasurer, Archie Browning, Salt Lake City, Utah; secretary and manager, Charles C. Backes, Salt Lake City, Utah; director, W. J. Witherspoon, Kemmerer, Wyo.; counsel, Hamilton Gardner and S. J. Quinney, Salt Lake City, Utah.

From President Hirsig of the Nashville Automobile Trade Association.

Our association has successfully put on four automobile shows, in which only members could participate. Through the efforts of our association a great deal of constructive legislation has been passed, and objectionable legislation has been defeated. During the four or five years that our association has been in existence the ethics of the trade has gradually improved. There exists today a friendly and cooperative spirit among the members of the association that never existed before, the forming of the association, and could not possibly exist at this time were it not for the association that has brought it about.

The automobile business in Nashville, as in practically every other center, during the past 60 days, passed through a period of light sales, and comparatively little business, but it is the general opinion of the dealers that for the past week or two conditions have started to improve, and we are all looking forward to an easing up in the money market, and a gradual increase in business, which will soon bring it back to normal. In the meantime it is the writer's opinion that buying will be rather conservative, but that all dealers will buy a sufficient amount to meet their needs, and take care of their trade as usual. Regardless of what effect the convention has, it is the writer's opinion that after the presidential election, business will gradually improve and will soon be back to normal.

The Nashville Automobile Trade association has a membership of 86 automobile dealers, tire dealers, garage men, accessory jobbers and other allied trades doing business in the city of Nashville.

AUTO THIEF PLAYS NEW TRICK.

The automobile thief has little chance against the new locking devices that have been developed to safeguard the car, but there is a taxi driver who operates in New York who is willnig to admit that the modern thief is versatile. The thief who so ably demonstrated this ability came into a service station near the Bronx one night and asked to hire a limousine to be used at a wedding. He was provided with one of the more expensive sort, which was driven by a chauffeur in livery. The first stop was at a home in the residential section, where a young woman joined the party. The driver began to have suspicions that the wedding was a runaway affair, but he was much too well trained to betray any curiosity. The next place at which he was ordered to stop was at an exclusive apartment house near 88th street. Here he was ordered to go and help a porter with a trunk. Suspecting nothing he obeyed. After arguing with an East Indian elevator man who could speak little English, he came back for more explicit instructions. The big limousine, the man and the maid were gone.

AUTOS DISPLACING JINRICKSHAS.

The jinricksha has always been the jitney 'bus of China. For years beyond reckoning the native coolie has trudged along with his two-wheeled carryall, never dreaming of competition. And now comes the inevitable change. The automobile threatens to entirely displace the picturesque native conveyance for all time.

Rice is scarce among the coolies in China. Clothing is skimpy, but high in price, but the 'ricksha operator has been able to get them from the small profits made with his little cart, and as a result has been happy.

Now all this is changing. Rattling, rushing, "fire-devils" on four wheels are efficiently putting the native conveyances out of the running. A wail from those who see their means of livelihood being taken away is ascending to Confucious.

But even he, traditionally all powerful, cannot help the situation. The jitney 'bus is daily getting a better hold on the traffic, and bids fair to crowd the 'ricksha entirely out of business in a few years.

MODERN SEDAN MAKES LUXURIOUS BUSINESS OFFICE.

Since the manufacture of the automobile became practical, there have been many and various uses to which the machine has been put. That it has taken the place of the horse is generally conceded. The household supplies are delivered by the strong, rugged truck, the tired business man gets relaxation from the smooth running touring car, and life is one long, sweet dream for the farmer who uses his machine to churn butter, harvest grain, saw wood and even to milk the cows. Many a life has been saved by the auto dashing along at railroad speed to carry the doctor on his errand of mercy, and of late years he who died was not considered properly buried unless he had an automobile funeral.

Now comes the report that sedans are being utilized for offices, the idea first being suggested by brokers who could not get office space in the crowded market district of New York. It is solemnly avowed that a great many sedans are bought to be used as offices, the purely motoring element not entering wholly into consideration at the time of purchase. It certainly seems as though the sedan, with its silent running motor, luxuriant upholstery and wind, rain and storm proof qualities, would make an ideal office in certain lines of business, and one can readily believe the enthusiastic statement of a broker who said that he had more business in his sedan than he had ever transacted in an office.

Accessory and Parts Exhibitors at National Shows

JUDGING from present indications, all records for the number of parts and accessory makers exhibiting at the coming national automobile shows at New York City, Jan. 8-15, and Chicago, Jan. 29-Feb. 4, are scheduled to be broken. Figures made public by the Motor and Accessory Manufacturers' association indicate that a larger number of parts and unit makers than ever before will take space. Applications have been received by the association from 120 manufacturers for the New York passenger car show, and from 102 manufacturers for the Chicago passenger car show. Altogether, 129 members of the association are scheduled to exhibit.

The following members of the association have been assigned space:

AT BOTH SHOWS.

Able Mfg. Co., Inc., San Francisco, Cal., able combination locks.

Acme Die-Casting Corp., Brooklyn, N. Y., die castings.

American Bosch Magneto Corp., Springfield, Mass., Bosch magnetos, lighting, starting and ignition systems.

American Chain Co., Inc., Bridgeport, Conn., tire chains, jacks, cotter pins, tire lock chains, etc.

American Hammered Piston Ring Co., The, Baltimore, Md., American hammered piston rings.

The Anchor Top & Body Co., Cincinnati, O., automobile tops.

Anderson Electric & Equipment Co., Chicago, Ill., "Autoreelite" windshield spotlight, garage lighting portables.

Apollo Magneto Corp., Kingston, N. Y., high-tension magnetos.

Armstrong Cork Co., Pittsburgh, Pa., cork gaskets and washers, linoleum and cork carpet.

Asch & Co., Inc., New York city, flower vases, belt hinges, locking devices.

Atlas Crucible Steel Co., Dunkirk, N. Y., alloy steel and tool steels used in automobile parts.

Becker Bros., Chicago, Ill., brushes for automobile starting motors, lighting generators and magnetos.

Black & Decker Mfg. Co., The, Baltimore, Md., electric air compressors, electric valve grinders, portable electric drills.

Blackledge Mfg. Co., Chicago, Ill., shock absorbers.

Brown-Lipe Gear Co., Syracuse, N. Y., automobile transmissions, clutches and controls.

Bunting Brass & Bronze Co., The, Toledo, O., bronzed backed babbitt lined bearings and finished bronze bushings and bearings.

Byrne Kingston & Co., Kokomo, Ind., carburetors.

Champion Ignition Co., Flint, Mich., A C spark plugs.

Champion Mfg. Co., Chicago, Ill., gasoline gauge, oil cups, velograph, screws and radiator caps.

Clark Equipment Co., Buchanan, Mich., axles and steel wheels.

Continental Motor Corp., Detroit, Mich., gasoline engines.

Corcoran Mfg. Co., The, Cincinnati, O., automobile radiators and fenders.

C. Cowles & Co., New Haven, Conn., auto hardware accessories, trimmings, etc.

The Wm. Cramp & Sons Ship & Engine Bldg., Co., Philadelphia, Pa., brass and bronze castings, ingots, welding rods, etc.

Derf Mfg. Co., Inc., The, New York city, Derf spark plugs.

Detroit Pressed Steel Co., Detroit, Mich., disteel wheels.

Doehler Die Casting Co., Brooklyn, N. Y., die castings and bearings.

Duplex Rim Device Co., Chicago, Ill., Duplex rim devices (rim tools).

E. A. Laboratories, Inc., Brooklyn, N. Y., warning signals.

Eclipse Machine Co., Elmira, N. Y., Eclipse Bendix drive parts.

Eisemann Magneto Corp., Brooklyn, N. Y., Eisemann magnetos.

Electric Storage Battery Co., The, Chicago, Ill., storage batteries and accessories.

Essenkay Products Co., Chicago, Ill., "Essenkay Tire Filler" and "Auto Mayer Visors."

Fulton Co., The, Knoxville, Tenn., thermostats, regulators and accessories.

Gabriel Manufacturing Co., Cleveland, O., Gabriel rebound snubbers and windshield cleaners.

Gemco Mfg. Co., Milwaukee, Wis., automobile bumpers and accessories.

General Electric Co., Schenectady, N. Y., rectifiers, lamps, Fabroil gears.

Giant Grip Mfg. Co., Oshkosh, Wis., Giant grip traction equipment.

Gould Storage Battery Co., New York city, storage batteries and parts.

Gray & Davis, Inc., Boston, Mass., lighting and starting systems.

Edward V. Hartford, Inc., New York city, Hartford shock absorbers, Hartford jacks, Hartford bumpers.

Robert H. Hassler, Inc., Indianapolis, Ind., Hassler shock absorbers.

Indiana Lamp Co., Connersville, Ind., automobile lamps.

Iron City Products Co., Pittsburgh, Pa., Rees automobile jacks.

Johnson Automobile Lock Co., Chicago, Ill., Johnson automobile locks.

Wm. R. Johnston Mfg. Co., Chicago, Ill., accessories.

The K. P. Products Co., Inc., New York city, rim tools, heaters, governors, pumps, carburetors, etc.

Kokomo Electric Co., Kokomo, Ind., magnetos, coil plugs, etc.

Lane Bros. Co., Poughkeepsie, N. Y., automobile jacks.

L. Lawrence & Co., New York city, piston rings, pins and scored cylinder process.

Longdin-Brugger Co., Fond du Lac, Wis., "Close-Tite" top for Ford cars.

McAvoy Mfg. Co., Chicago, Ill., aluminum curtain lights and other die-cast specialties.

McQuay-Norris Mfg. Co., St. Louis, Mo., piston rings.

Macbeth-Evans Glass Co., Pittsburgh, Pa., automobile headlight lenses.

Merchant & Evans Co., Philadelphia, Pa., automobile clutches, universal joints, oiling systems, grease cups.

Metal Stamping Co., Long Island City, N. Y., automobile accessories.

Midwest Engine Co., Indianapolis, Ind., engines.

National Carbon Co., Inc., Cleveland, O., accessories.

National Seal Co., Inc., Brooklyn, N. Y., automobile door locks.

New York Coil Co., New York city, automobile ignition devices.

No-Leak-O Piston Ring Co., Baltimore, Md., No-Leak-O piston rings.

The Pantasote Co., New York city, automobile top, upholstery and slip cover materials.

The Perfection Heater & Mfg. Co., Cleveland, O., perfection motor car heaters.

William E. Pratt Mfg. Co., Chicago, Ill., automobile truck and garage jacks, pumps, malleable iron castings and accessories.

The Prest-O-Lite Co., Inc., New York city, electric storage batteries for starting and lighting.

Rajah Auto Supply Co., Bloomfield, N. J., Rajah spark plugs, terminals, etc.

Rex Manufacturing Co., Connersville, Ind., Rex all-seasons tops for passenger automobiles

A. Schrader's Son, Inc., Brooklyn, N. Y., tire valves and accessories and tire pressure gauges.

Sewell Cushion Wheel Co., Detroit, Mich., Sewell cushion wheels.

The Simms Magneto Co., East Orange, N. J., Simms magnetos, dynamos, starting motors.

The Sparks-Withington Co., Jackson, Mich., Sparton horns, fans, radiators and fuel feeders.

Splitdorf Electrical Co., Newark, N. J., ignition accessories, etc.

The Stemco Engineering Co., Dayton, O., Cole visible gasoline gauges.

Stewart-Warner Speedometer Corp., Chicago, Ill., speedometers, vacuum tanks, warning signals, auto guards, searchlights, carburetors.

Stromberg Motor Deviees Co., Chicago, Ill., carburetors.

Tonneau Shield Co., Inc., New York city, J. H. tonneau or rear seat shields.

Trexler Co., The, Philadelphia, Pa., rim tools, jacks, valve compressors.

The United States Air Compressor Co., Cleveland, O., garage air compressors and accessories.

U. S. Light & Heat Corp., Niagara Falls, N. Y., U. S. L. storage batteries.

U. S. E. Corp., New York city, U. S. E. shock absorbers, spring bumpers, radiator shutters.

Vacuum Oil Co., New York city, lubricating oils and greases.

Van Sicklen Speedometer Co., Elgin, Ill., speedometers, truck odometers, tachometers.

Veeder Mfg. Co., Hartford, Conn., hub odometers, counters, tachometers, fine die castings.

Waltham Watch Co., Waltham, Mass., automotive speedometers, clocks and timepieces.

Waukesha Motor Co., Waukesha, Wis., motors.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., battery charging outfit, etc.

Westinghouse Union Battery Co., Swissvale, Pa., Westinghouse storage batteries.

Wheeler-Schebler Carburetor Co., Indianapolis, Ind., Schebler carburetors.

The S. S. White Dental Mfg. Co., New York city, flexible shafting and casing.

Willard Storage Battery Co., Cleveland, O., electric storage batteries.

Wire Wheel Corp. of America, Buffalo, N. Y., wire wheels.

Woodworth Mfg. Corp. Div. of Consolidated Utilities Corp., Niagara Falls, N. Y., automobile accessories.

Zenith Carburetor Co., Detroit, Mich., carburetors and carburetor parts.

NEW YORK SHOW ONLY.

Atwater Kent Mfg. Co., Philadelphia, Pa., starting, lighting and ignition equipment.

Breeze Mfg. Co., Newark, N. J., flexible metal hose tubing and accessories.

Brown-Lipe-Chapin Co., Syracuse, N. Y., differentials, drive gears and pinions.

Edward G. Budd Mfg. Co., Philadelphia, Pa., automobile bodies and stamping.

Budd Wheel Corp., Philadelphia, Pa., wire wheels and steel disc wheels.

The English & Mersick Co., New Haven, Conn., body hardware and automobile accessories.

Kales Stamping Co., Detroit, Mich., "Hindview" auto mirrors and automobile stampings.

Kelso Mfg. Co., Trenton, N. J., asbestos friction fabrics, brake lining, clutch lining.

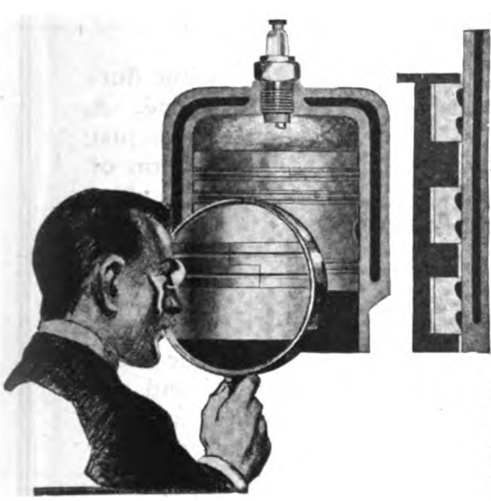
Klaxon Co., Newark, N. J., Klaxon warning signals.

Lauraine Magneto Co., Inc., Long Island City, N. Y., magnetos, generators, starters, ignition, lighting and starting apparatus.

Light Mfg. & Foundry Co., Pottstown, Pa., aluminum, brass and bronze castings, die castings, automobile motors and transmissions.

"PEP-CO" PISTON RING ANNOUNCED IN UNIQUE WAY.

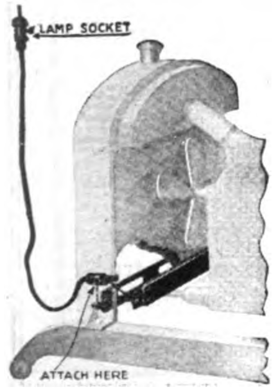
"Instant Pep-Co," a piston ring for which various refinements are claimed, was recently presented to the trade in a novel manner. Regulation birth cards, of the type frequently sent out by proud parents, were mailed to the trade, and occasioned a favorable amount of notice. The cards are of three-part design, handsomely finished in blue and white, and are tied at the top with a knot of "baby-blue" ribbon. The reader is told that the piston ring has been in preparation for eight months and the date of delivery is also noted.



The ring is a step cut type and it has two grooves cut in it that are shaped to have a wiping effect and prevent lubricant passing to compression chamber, yet thoroughly distribute it on cylinder wall.

SHARPE ELECTRIC RADIATOR HEATER.

The Sharpe electric radiator heater is a practical electrical device which attaches to the bottom of the radiator on the inside just above the sediment tank. It is connected by a heavy duplex cord to a standard attachment plug, which is rigdly clamped to the outside of the radiator shell. Current is furnished through a lamp cord which is attached to an ordinary house wiring socket. When the car is standing the current is snapped on as though one were lighting a lamp, and the water is thus kept hot, regardless of the temperature of the garage. It is obvious that automobiles equipped with this device start easily at all times without priming or warming up, and users are recommending it highly. It is manufactured by Sharpe Electric Appliance Co., Detroit, Mich. Price, $12.



Car Exhibitors at New York and Chicago Shows

Firm	Address	N. Y. C.	Chicago
Allen Motor Co	Columbus, O	B—30	Anx M—1
American Motors Corp	Plainfield, N. J.	C—9	
Anderson Motor Co	Rock Hill, S. C.	B—13	Anx Q—2
Apperson Bros. Automobile Co	Kokomo, Ind.	B—5	Col J—1
Auburn Automobile Co	Auburn, Ind.	A—28	Col F—1
Barley Motor Car Co	Kalamazoo, Mich.	B—6	Arm B—4
Briscoe Motor Corp	Jackson, Mich.	B—25	Col B—1
Buick Motor Co	Flint, Mich.	A—19	Col C—5
Cadillac Motor Car Co	Detroit, Mich.	A—17	Col D—5
Case, J. I., Threshing Machine Co	Racine, Wis.	B—18	Arm A—3
Chalmers Motor Car Co	Detroit, Mich.	A—7	Col A—3
Chandler Motor Car Co	Cleveland, O.	A—16	Col B—4
Chevrolet Motor Co	New York City	A—12	Col B—6
Cleveland Automobile Co	Cleveland, O.	A—24	Col A—5
Cole Motor Car Co	Indianapolis, Ind.	A—21	Col C—2
Columbia Motors Co	Detroit, Mich.	A—1	Col E—4
Commonwealth Motor Co	Chicago, Ill.	C—16	Arm E—2
Crow-Elkhart Motor Corp	Elkhart, Ind.	B—14	Arm E—1
Davis, Geo. W., Motor Car Co	Richmond, Ind.	B—22	Arm A—6
Detroit Electric Car Co	Detroit, Mich.	C—12	Arm E—6
Dodge Bros	Detroit, Mich.	A—11	Col D—1
Dorris Motor Car Co	St. Louis, Mo.	C—4	Arm C—1
Dort Motor Car Co	Flint, Mich.	A—10	Col A—1
Elgin Motor Car Corp	Argo, Ill.	B—28	Col H—1
Elkhart Carriage and Motor Car Co	Elkhart, Ind.	B—15	Col F—2
Fergus Motors of America, Inc	Newark, N. J.	C—6	
F. I. A. T.	New York City	C—10	Arm C—3
Franklin Mfg. Co., H. H	Syracuse, N. Y.	A—4	Col C—3
Friend Motors Corp	Pontiac, Mich.	D—4-6	
Gardner Motor Co., Inc	St. Louis, Mo.		Arm C—5
Grant Motor Car Corp	Cleveland, O.	B—12	Col Anx O—1
Hanson Motor Co., Inc	Atlanta, Ga.	C—22	Anx Q—4
Haynes Automobile Co	Kokomo, Ind.	A—29	Col G—1
Holmes Automobile Co	Canton, O.	C—20	Arm A—5
Hudson Motor Car Co	Detroit, Mich.	A—13	Col D—3
Hupp Motor Car Corp	Detroit, Mich.	A—27	Col D—4
Jackson Motors Corp	Jackson, Mich.	B—5	Arm B—8
Jordan Motor Car Co., Inc	Cleveland, O.	A—6	Col E—1
Kentucky Wagon Mfg. Co	Louisville, Ky.	C—11	Arm D—2
King Motor Car Co	Detroit, Mich.	B—4	Arm A—8
Kissel Motor Car Co	Hartford, Wis.	B—16	Col Anx M—2
Kline Car Corp	Richmond, Va.	C—18	
La Fayette Motors Co	Indianapolis, Ind.	C—1	Arm D—1
Lexington Motor Co	Connersville, Ind.	A—18	Col F—3
Liberty Motor Car Co	Detroit, Mich.	B—29	Col G—2
Lincoln Motor Co	Detroit, Mich.	C—2	Arm A—7
Locomobile Co	New York City	B—1	Arm B—1
Lorraine Motors Corp	Grand Rapids, Mich.	C—13	Arm E—4
McFarlan Motor Corp	Connersville, Ind.	C—5	Col L—1
Maibohm Motors Co	Sandusky, O.	B—20	Anx Q—1
Maxwell Motor Sales Corp	Detroit, Mich.	A—14	Col A—2
Mercer Motors Co	New York City	B—7	Arm B—2
Milburn Wagon Co	Toledo, O.	B—21	Arm B—6
Mitchell Motors Co., Inc	Racine, Wis.	A—25	Col K—1
Moon Motor Car Co	St. Louis, Mo.	B—9	Arm B—7
Nash Motors Co	Kenosha, Wis.	A—26	Col A—4
National Motor Car & Vehicle Corp	Indianapolis, Ind.	B—2	Anx N—1
Noma Motor Corp	New York City	C—17	
Nordyke & Marmon Co	Indianapolis, Ind.	A—23	Col B—3
Oakland Motor Car Co	Pontiac, Mich.	A—30	Col C—6
Olds Motor Works	Lansing, Mich.	A—3	Col D—6
Packard Motor Car Co	Detroit, Mich.	A—5	Col D—2
Paige-Detroit Car Co	Detroit, Mich.	A—31	Col C—1
Pan-American Motors Corp	Decatur, Ill.	C—8	
Paterson, W. A., Co	Flint, Mich.	B—19	Anx Q—A
Peerless Motor Car Co	Cleveland, O.	A—2	Col E—2
Piedmont Motor Car Co., Inc	Lynchburg, Va.	D—7-11	
Pierce-Arrow Motor Car Co	Buffalo, N. Y.	A—32	Col C—4
Pilot Motor Car Co	Richmond, Ind.	C—19	Arm C—6
Premier Motor Corp	Indianapolis, Ind.	B—3	Arm A—2
Rauch & Lang, Inc	Chicopee Falls, Mass.	D—1-3	
Reo Motor Car Co	Lansing, Mich.	A—22	Col B—5
Root & Van Dervoort Engineering Co	East Moline, Ill.	C—3	Arm A—1
Saxon Motor Car Corp	Detroit, Mich.	C—15	Arm E—3
Sayers & Scovil Co	Cincinnati, O.	C—14	Arm E—5
Scripps-Booth Corp	Detroit, Mich.	A—8	Col F—5
Small, William, Co	Indianapolis, Ind.	B—31	Arm B—5
Standard Steel Car Co	Pittsburgh, Pa.	B—17	Arm A—4
Stanley Motor Carriage Co	Newton, Mass.	C—7	Arm C—2
Stearns, F. B., Co	Cleveland, O.	B—24	Anx P—1
Stephens Motor Works of Moline Plow Co	Freeport, Ill.	B—27	Col H—2
Stevens-Duryea, Inc	Chicopee Falls, Mass.	C—21	Arm C—4
Studebaker Corp	South Bend, Ind.	A—15	Col B—2
Stutz Motor Car Co. of America, Inc	Indianapolis, Ind.	B—26	Anx O—2
Templar Motors Co	Lakewood, Cleve., O.	B—10	Arm B—3
Velie Motors Corp	Moline, Ill.	A—9	Col F—4
Westcott Motor Car Co	Springfield, O.	B—23	Col E—3
Willys-Overland Co	Toledo, O.	A—20	Col A—6

PLATE XXXVI

SERVICE STATION WITH MODERN FACILITIES

One-Story Structure Which Would Accommodate Both Passenger Cars and Motor Trucks—Ample Provision Has Been Made for Storage Purposes.

IN PRESENTING the accompanying lay out an endeavor is made to illustrate how closely connected are the garage (or storage compartment) and the service division. The service station must be so established that it will have every facility essential to serving customers efficiently and there must be means for economical administration. Ever increasing progress demands that service stations be modern in every respect, as well as being ample in size for storage purposes, so that owners of cars may have their repairs done in the shortest time possible and afforded expert attention and high grade workmanship and supplied the best qualities of material. Therefore, it is absolutely necessary that a place be fully equipped to meet these demands if the term "service" is to be used. A judicious expenditure of money will usually provide many splendid facilities that will make the service station much more valuable to the management.

Building Dimensions.

The size of the building shown here is 80 by 180 feet, designed to face on a main street. The elevation has been treated to a degree where it would add greatly to the general appearance of any locality. It is of the one-story type, the entire structure being devoted to automobile vehicles and their accessories.

In the center is found an office for the transaction of general business, with doors leading to the garage department and show room; also an entrance door from the street. Adjoining the office is the show room, which is large enough in size to hold two or three cars and permit the installation of cases for the display of accessories.

Repair Department.

Directly to the rear will be found the general repair department, with large work benches and a pit for working underneath large cars; also a tool closet in one corner. Close to the repair shop is entrance into the machine shop, the heart of a service station. This department should be equipped to handle everything that is to be expected of an automobile repair shop. On either side of the forging department are storage areas, one for pleasure cars, the other for motor trucks. The motor truck storage will be found on the right, while opposite on the left and covering an equal area, is located the passenger car space.

The few columns that have been used are so spaced as to allow the greatest ease possible during inside manouvering for a position in line. A boiler room is reached by a flight of stairs just outside of the machine shop, as the location of the boiler would be underneath the machine shop and toilet. A toilet and a wash room have been provided, suitable to the needs of a shop of this size.

General Construction.

General construction would be of the slow burning mill type, which has been found extremely satisfactory for buildings such as this, where there is always a great fire hazard. The foundation would be of concrete, sufficient in size and depth to carry all loads placed upon it. Provision can be made at the beginning for future expansion, and, at a very small cost over the original figure, a foundation can be laid for two or three stories, if so desired.

Brick constitutes the super-structure, with terra cotta for trim. Owing to the numerous kinds of bricks and the nearness of them to different localities, no particular make is suggested here, but we do recommend that a brick of a hard nature be used, as the harder the brick the less absorption of water, therefore eliminating excess dampness due to use of a poor product.

Other Details.

Terra cotta may be of a glazed or dull finish, or concrete stone may be used for trimming instead. Granolithic floors are provided, drained as shown, and laid on a bed of five inches under concrete, the finished floor being one inch of a mixture of 1-1.

Windows are of the metal sash type with wired glass, complying with the fire laws of different districts.

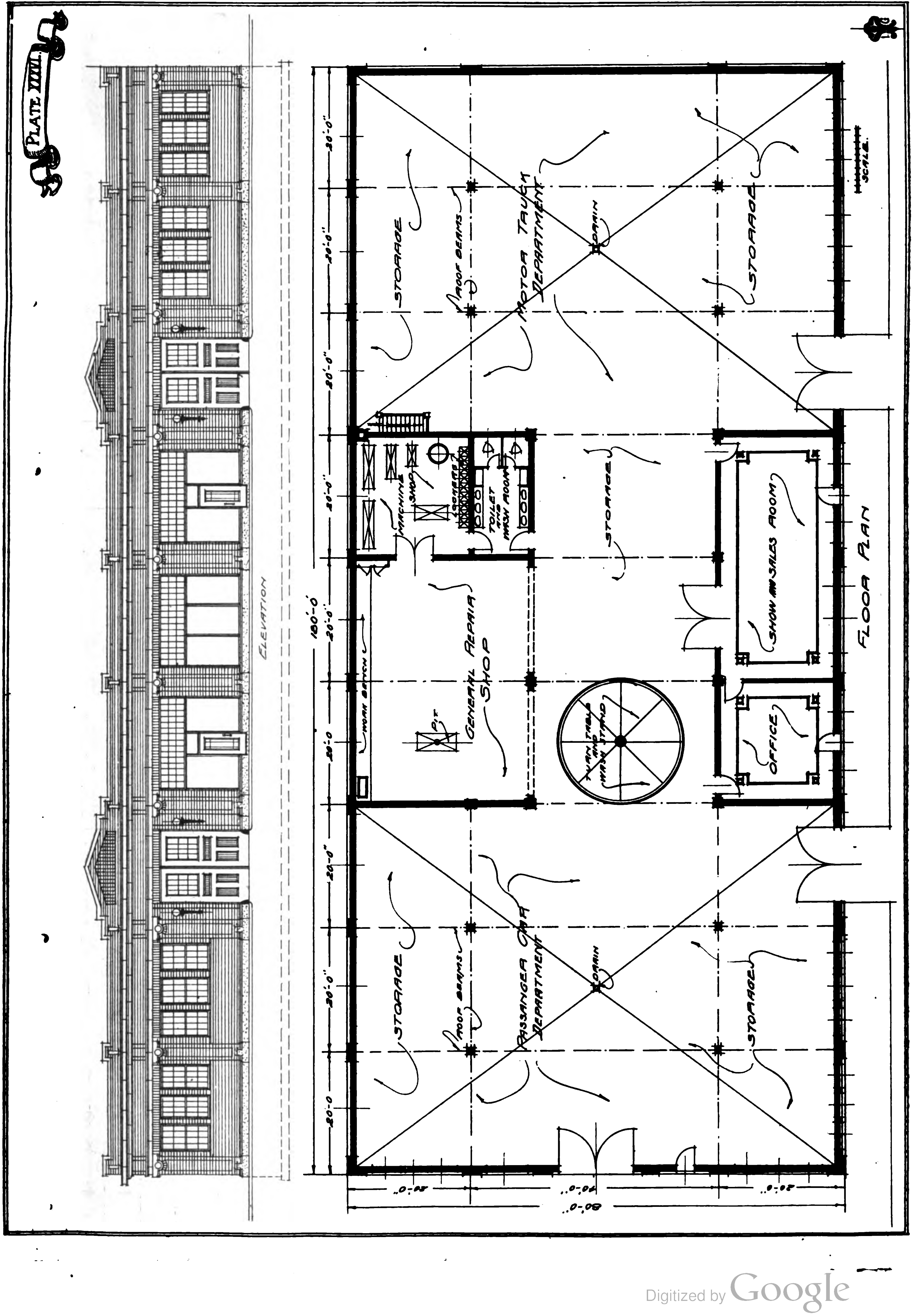
The roof is of plank supported by steel girders and wood purlins. A five-ply tar and gravel roof is advised, this having been found to give excellent results in many instances.

The drainage of the roof should be given careful consideration, the roof sloping at least one-half inch to the foot. Lead flashing should be used throughout. For heating, steam wall radiation is advised.

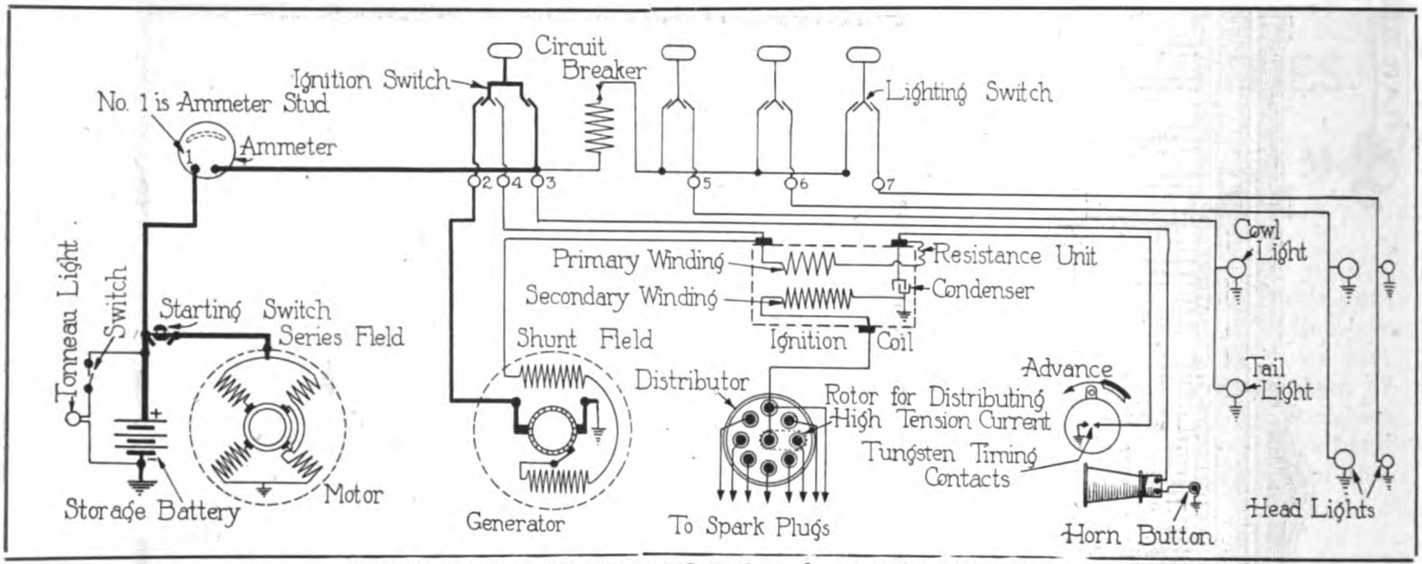
The approximate cost would be $20,000.

For any further details regarding such a structure, write to the Architectural Department of this publication.

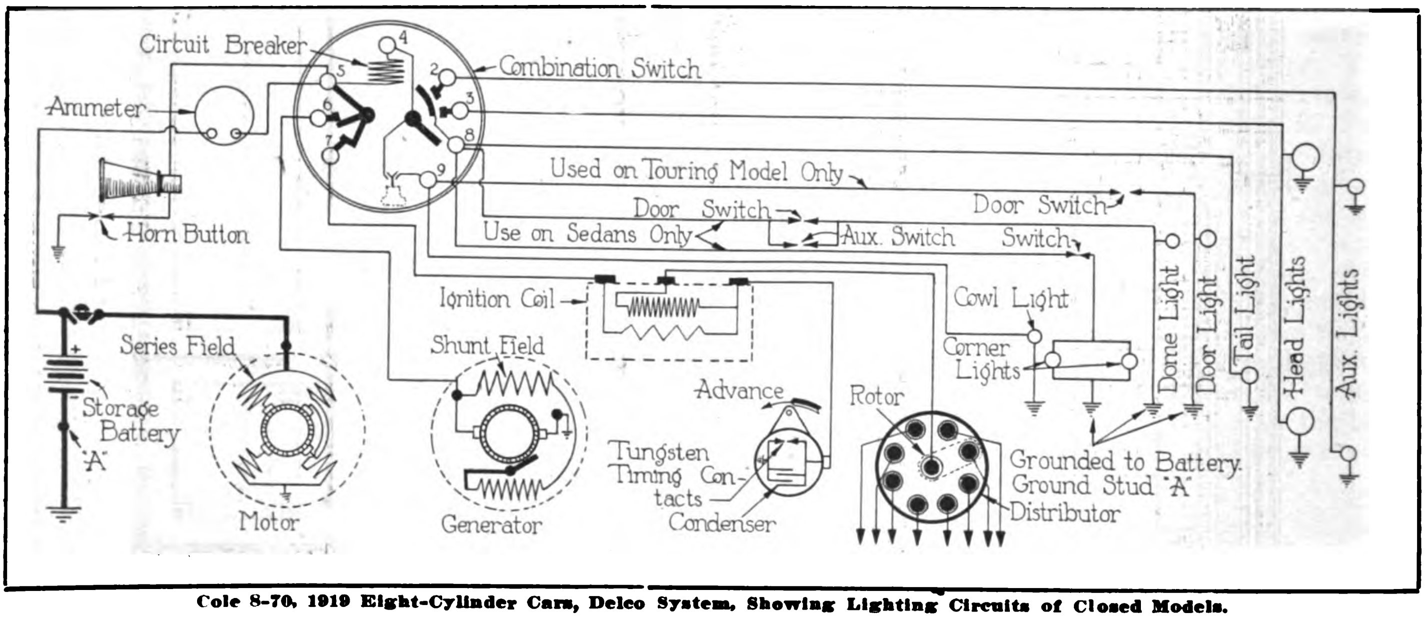
PLATE XXXVI.


ELEVATION
FLOOR PLAN
SCALE
STORAGE
ROOF BEAMS
MOTOR TRUCK DEPARTMENT
DRAIN
MACHINE SHOP
LOCKERS
TOILET AND WASH ROOM
GENERAL REPAIR SHOP
WORK BENCH
PIT
TURN TABLE AND WASH STAND
SHOW AND SALES ROOM
OFFICE
PASSENGER CAR DEPARTMENT
20'-0"
180'-0
80'-0"
40'-0"

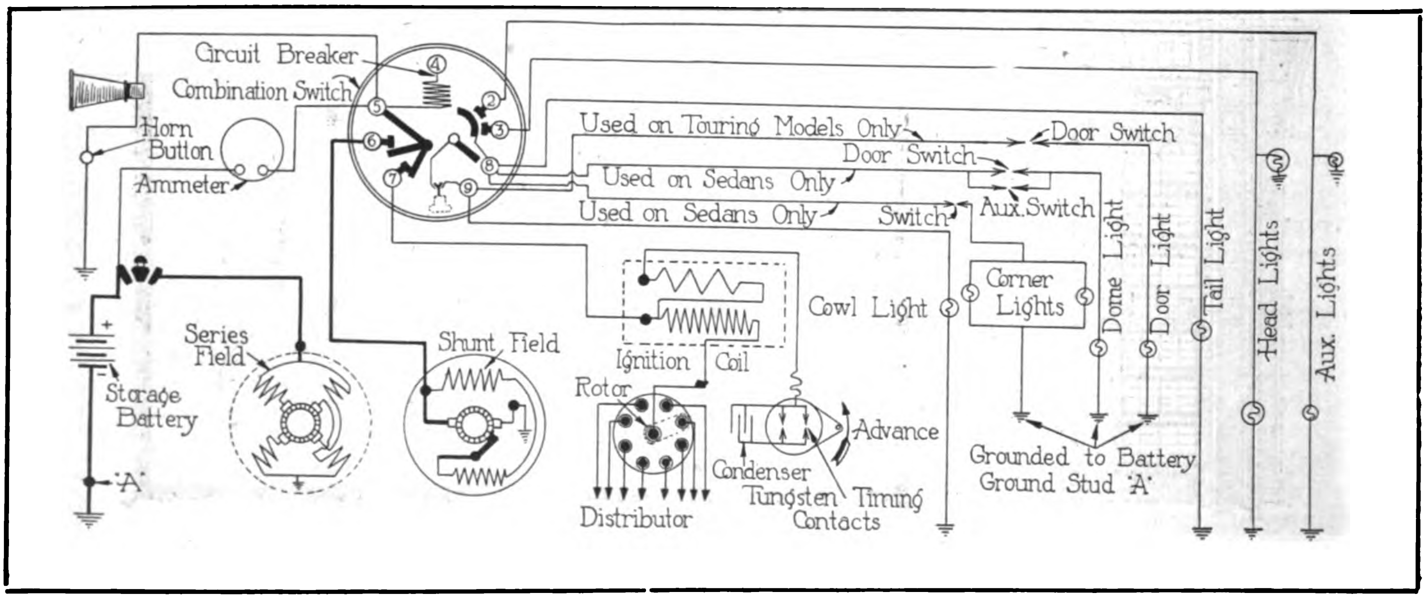
Monthly Wiring Diagram No. 10


Circuit Breaker
Ignition Switch
No. 1 is Ammeter Stud
Ammeter
1
Lighting Switch
2
4
3
5
6
7
Cowl Light
Primary Winding
Resistance Unit
Secondary Winding
Condenser
Tonneau Light
Switch
Starting Switch
Series Field
Shunt Field
Ignition Coil
Advance
Distributor
Rotor for Distributing High Tension Current
Tail Light
Tungsten Timing Contacts
+
Storage Battery
Motor
Generator
To Spark Plugs
Horn Button
Head Lights

Cole 8-60 and 8-70, 1916 and 1918 Eight-Cylinder Cars, Delco System.


Circuit Breaker
4
5
2
Combination Switch
Ammeter
6
3
7
8
9
Used on Touring Model Only
Door Switch
Door Switch
Horn Button
Use on Sedans Only
Aux. Switch
Switch
Ignition Coil
Cowl Light
+
Series Field
Shunt Field
Corner Lights
Storage Battery
"A"
Advance
Rotor
Tungsten Timing Contacts
Condenser
Motor
Generator
Grounded to Battery Ground Stud "A"
Distributor
Dome Light
Door Light
Tail Light
Head Lights
Aux. Lights

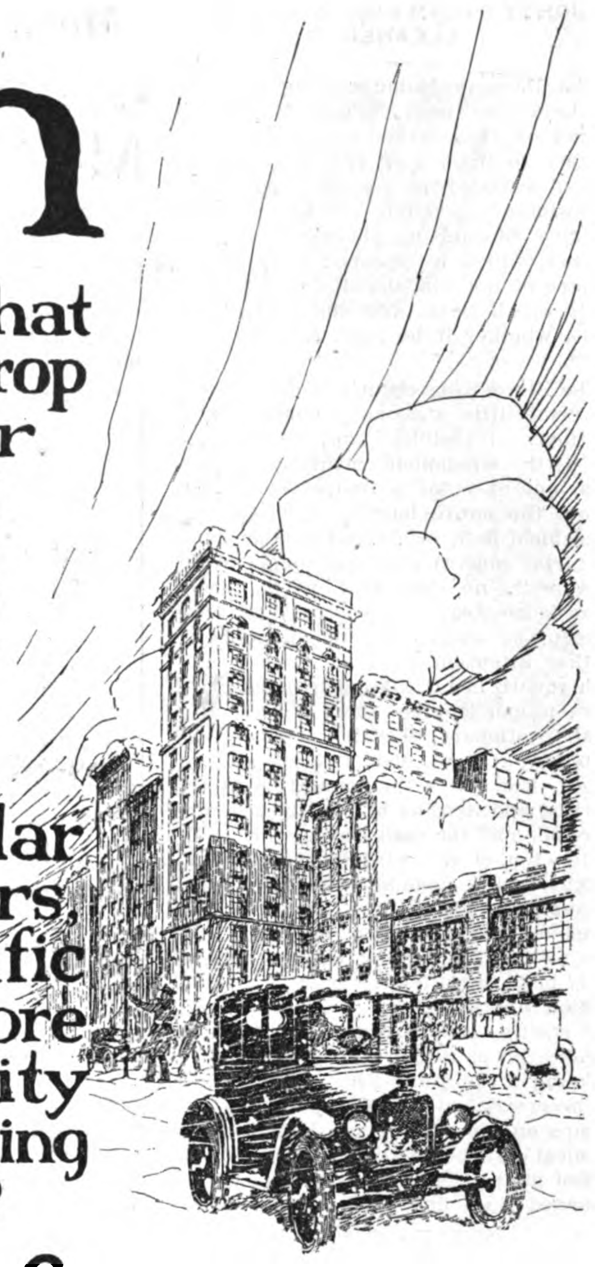
Cole 8-70, 1919 Eight-Cylinder Cars, Delco System, Showing Lighting Circuits of Closed Models.


Circuit Breaker
4
Combination Switch
5
2
3
Horn Button
6
Ammeter
Used on Touring Models Only
Door Switch
Door Switch
8
7
9
Used on Sedans Only
Used on Sedans Only
Switch
Aux. Switch
+
Series Field
Storage Battery
"A"
Shunt Field
Ignition Coil
Cowl Light
Corner Lights
Dome Light
Door Light
Tail Light
Head Lights
Aux. Lights
Rotor
Advance
Condenser
Tungsten Timing Contacts
Distributor
Grounded to Battery Ground Stud "A"

Cole 8-70, 1920 Eight-Cylinder Cars, Delco System, Showing Lighting Circuits of Closed Models.

When

the weather is so cold that
the bottom is going to drop
out of the thermometer



PEERLESS

HONEYCOMB
GUARANTEED

RADIATORS

will still be the popular
radiator for Ford Cars,
—because the scientific
construction of the core
permits of a flexibility
that will withstand freezing

Retail Price $25^{00}

The CORCORAN Mfg Co.
CINCINNATI

Dealers who are not selling Peerless Radiators should investigate this wonderful replacement business. Ask your jobber or address Dept. 5.

DOUGHTY STORM-KING WINDSHIELD CLEANER.

The Doughty Manufacturing Co., 273-279 Lafayette street, New York city, has placed on the market a seasonable accessory to the motor car which should add measurably to comfort and safety in winter travelling. This is the Doughty Storm-King electric windshield cleaner, which is designed to keep the surface of the windshield clear automatically at all times and under all conditions, whether it be mist, rain, sleet or snow.

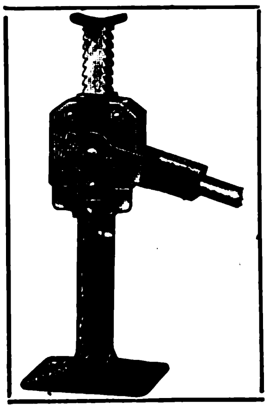
The Storm-King cleaner is driven by a powerful little stationary motor, which continues travelling back and forth across the windshield, insuring clear vision, not only for a limited space, but across the entire length. It cleans the windshield both inside and outside, is of all metal construction and simple in design with no frictional parts; hence there is no wear and tear or expense of upkeep and when once applied needs no further attention. It comprises a one-inch square metal tube, housing a chain drive proportionately small. geared to a small stationary electric motor solidly fastened at one end and all self-contained, lead wires for connection to the starting and lighting battery, and clamps at either end for fastening at the inside to the top of the windshield. Its total weight is 5½ pounds, and the current consumption off the battery is 1½ amperes, or equal to that of one side lamp. The switch for turning current on and off is built in the motor, making no connection necessary. It is operated from any starting and lighting circuit or by five dry-cell batteries.

To apply the Storm-King cleaner, all it is necessary to do is screw the two clamps on top of the windshield, no mechanical skill being required. It is furnished in any desired length in nickel or japanned black finish.

It is claimed that the waste due to unimproved roads is $500,000,000 a year.

Mobilift, a New All-Steel Jack

MOBILIFT, a new electrically spot welded all-steel jack, is claimed to be the fastest working hand lift jack yet offered to the trade. It raises one inch with every complete up and down movement of the handle, weighs but five pounds and has a lifting capacity of 2000 pounds. Constructed of heavy sheet steel and equipped with a telescope handle, it occupies little space and appears to be of convenient design. The manufacturer guarantees its service for two years and that it will live up to the claims made for it.



It is manufactured by the National Jack Co., Cincinnati, O. The price list is $5.

The officials of the National Jack Co. are as follows: President, George H. Frederick; secretary, J. Ray Frederick; treasurer, D. M. Frederick; sales manager, F. E. Backmeier.

The company is capitalized at $50,000 and the registered trade mark is "Mobilift."

EBONITE FOR TRANSMISSIONS.

The Bayerson Oil Works, Erie. Pa., has been manufacturing for several years a lubricant for transmission and differential gears under the trade name of "Ebonite for Transmissions." The name is derived from the color, which is extremely dark.

One of the features of the product is the long string or oil shreds which make up the body. This, the manufacturer states, is due entirely to the exclusive process used. Nothing but pure oil enters into the composition of Ebonite.

Some years ago the company began an exhaustive campaign to find a lubricant which would be a specific for the purpose, and to get away from the common place and more or less mediocre oils and mixtures of oils and greases, etc., which had been adapted to the purpose of transmissions for the reason that there was nothing better to use.

The body of Ebonite is claimed to have almost everlasting wearing qualities, and the density of the oil shreds are such that their cushioning qualities are developed to such a degree that noise of operation is practically eliminated, and there is no possibility of wear or friction at points of contact, as the Ebonite is claimed to be held at these points by its peculiar physical makeup

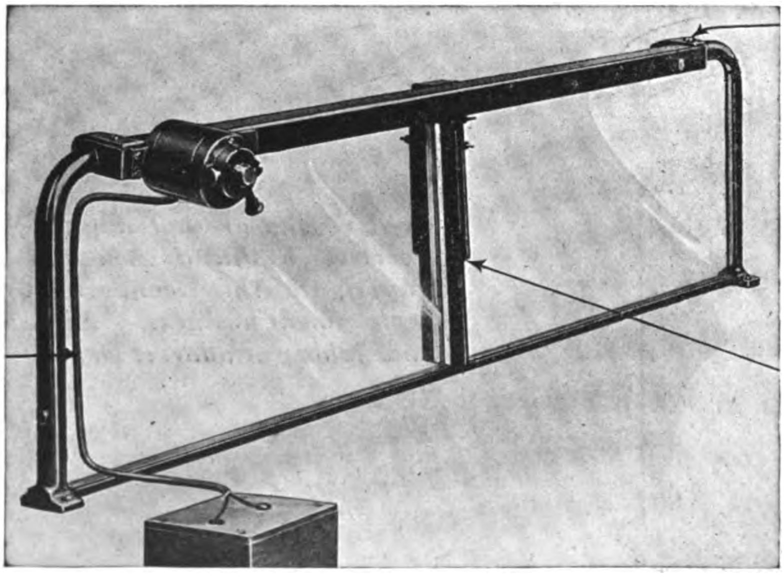
NOTHING EQ L TO
EBONITE
FOR TRANSMI IONS
MANUFACTURE BY
BAYERSON OIL ORKS
ERIE, P

and consistency so that the gears are never for an instant without this cushion protection, or exposed.

The transmission case need be but part full of Ebonite, it is stated, as the long string acts as a conveyor and is picked up and wrapped over and around every part of mechanism. Ebonite also has a good cold test, it is stated, and will not channel or harden to a degree to impair its use in low temperatures.

The company has testimonials of superiority from some of the largest concerns in the country and has had recently to install new equipment to take care of the increased business.

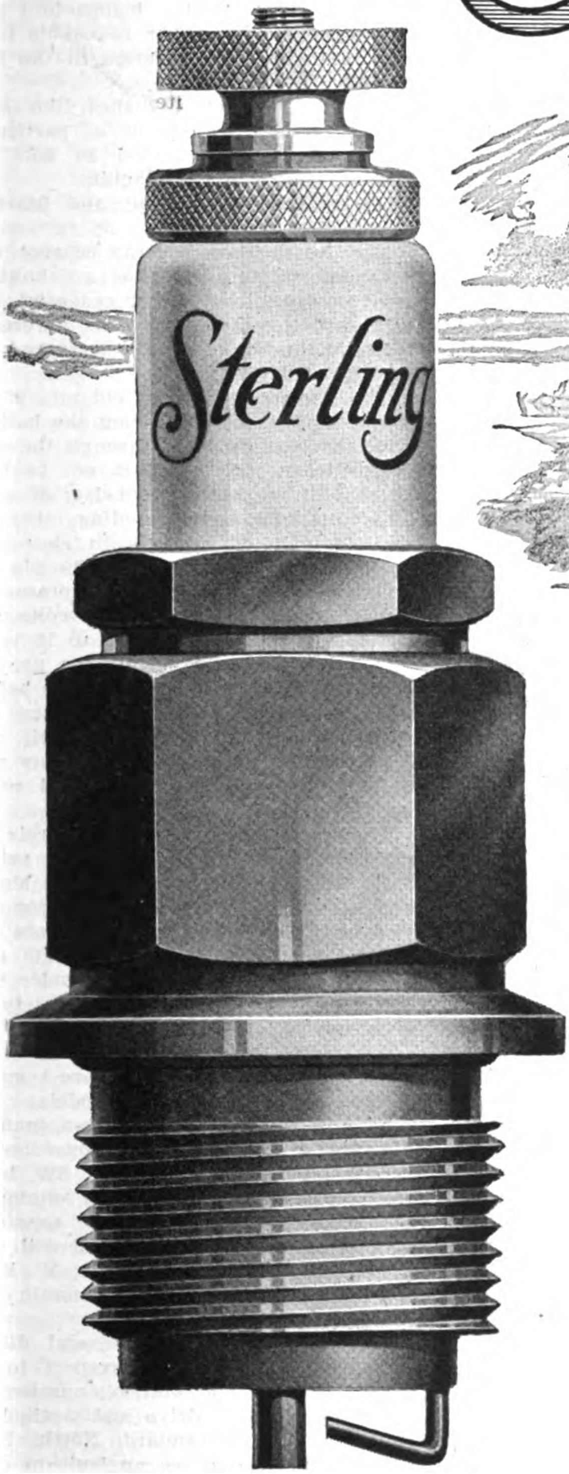
This product is put up only in steel barrels and steel half barrels; also heavy lithographed cans with an inner seal as the company is making an effort to keep its containers in the high rank set by the product, and to insure safe transportation and prevent danger of loss in handling.

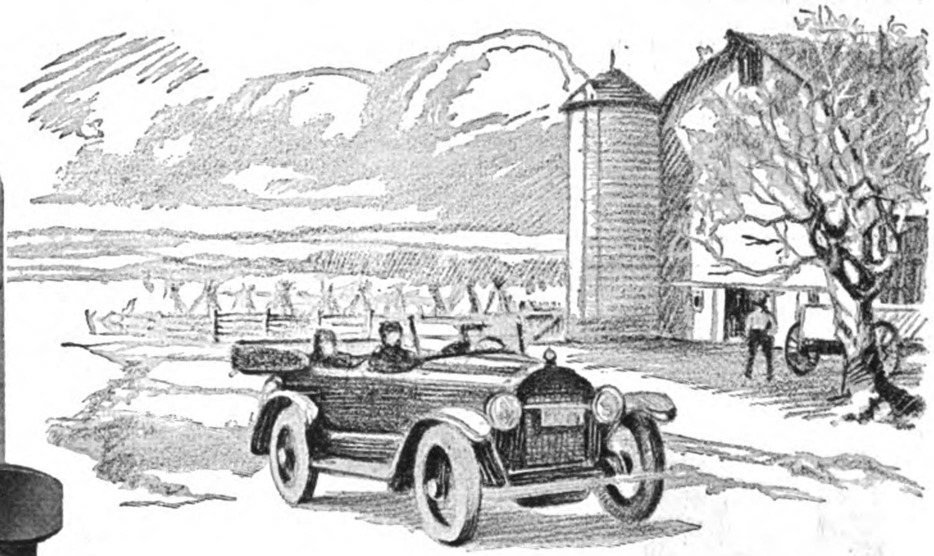


The Doughty Storm-King Electric Windshield Cleaner, the Arrows Showing the Device, Method of Installation, the Battery and Motor.

Sterling

Spark Plugs





AUTUMN is a wonderful time for motoring, for when the tang of fall is in the air the country beckons.

With your motor equipped with Sterling Red Brand Spark Plugs every joy of the open road will be yours.

Sterling Red Brand Plugs feed a hot, sharp spark that keeps the engine working at its best.

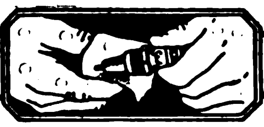
Sterling Plugs are made of the best grade of porcelain; the center electrode is of monel metal that will not warp, and, too, these plugs are separable and easily cleaned.

You can purchase Sterling Red Brand Plugs from progressive garages and supply dealers everywhere.

The Lockwood-Ash Motor Company
2050 Douglas Street, Jackson, Michigan

(76)

SEPARABLE

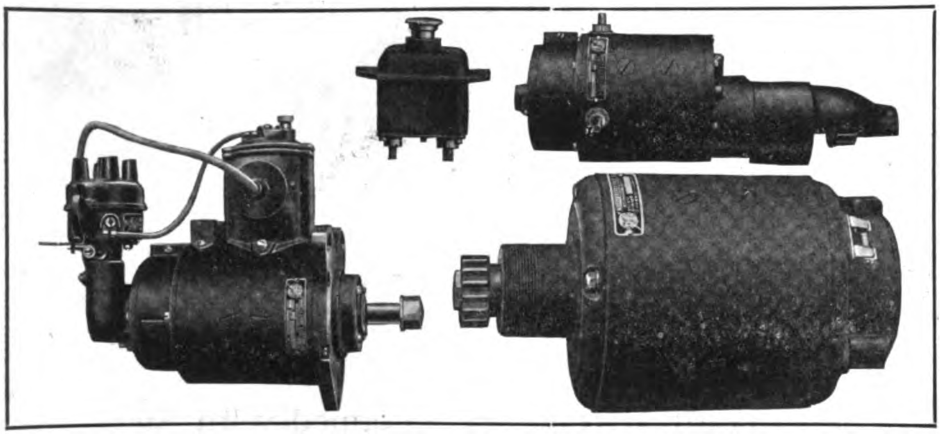


CLEANABLE

North East Ignition, Starting and Lighting Systems

AMONG the better known ignition, starting and lighting systems for automobiles is the North East, manufactured by the North East Electric Co., Rochester, N. Y. The complete North East system is made up of a starting motor, a generator, an ignition unit (or a combination ignition-generator) and a battery, the latter not being ordinarily supplied by the North East Co.

The North East Model L generators are built in a number of types which differ in direction of rotation, voltage, length of field ring and method of mounting. The standard model L is a bi-polar, shunt-wound machine with adjustable third brush output control. It begins to deliver current at a vehicle speed of from seven to 10 miles an hour, depending upon the character of the application and the rated voltage of the machine. The six-volt types cut in at an armature speed of 550 revolutions a minute, and the 12-volt types at 650. From the time of cutting in the output rises rapidly, with increasing speed until its maximum is attained at approximately 1100 revolutions a minute. From this point on, for the next 200 or 300 revolutions a minute, the output is held nearly constant, but with an additional increase in speed it is cut down again to an intermediate value, which is still further reduced if the speed rises higher.



Typical North East Ignition, Starting and Lighting Equipment: Lower Left, Model M, Six-Volt Ignition-Generator, Standard S. A. E. Flange Mounting, Third-Brush Regulation; Lower Right, Model G, 12-Volt Starter-Generator Combines Starting and Generating Functions in a Single Unit—Has Combined Third-Brush and Bucking-Field Regulation; Upper Left, Switch and Cut-Out Unit with Starting Switch and Reverse Current Cut-Out Mounted in a Single Housing; Upper Right, Model R Six-Volt Starting Motor, Standard S. A. E. Sleeve-Type Mounting, Internal Reduction Gears and Bendix Final Drive.

This tapering characteristic affords a charging rate that conforms at every point to the battery manufacturer's recommendations. At moderate speeds, when the demands for current are greatest, the maximum output is delivered, while at high speeds superfluous charging is guarded against by the automatic lowering of the rate. Besides this inherent adaptability, which enables the generator to accommodate itself to ordinary variations of service, a manual adjustment of the output is also provided, which permits of modifying the output to meet special conditions.

The generator field fuse is located accessibly on top of the field ring at the commutator end of the machine.

The generator is capable of automatically reversing its polarity to meet the conditions of the external circuit. Consequently, no distinction between positive and negative leads is necessary in making connection at the generator terminals, because there is no danger of damage to any part of the system even if the leads from the batteries are transposed. It is not advisable, however, to alter the connections at the battery because, while no actual harm would result, the charging indicator readings would then be reversed and might give rise to wrong conclusions as to the performance of the equipment.

The generator brushes are specially selected for the duties they have to perform and, under normal conditions, are capable of very long service.

Starting Motors.

The North East Model H, K and R starting motors are very nearly identical in their fundamental characteristics, the chief distinction between them being in the form of drive. In the Model H an out-board Bendix pinion is used; in the Model K an in-board Bendix; and in the Model R, an out-board Bendix, together with internal reducing gears.

Each model is in turn built in several types, which differ in respect to direction of rotation, length of field frame and method of mounting.

The North East standard two-unit starting motor is a four-pole, straight series-wound machine. Being equipped with automatic screw shift pinion, it is designed to remain in operation only during the actual starting period, since the pinion automatically disengages itself from the engine flywheel as soon as the peripheral speed of the flywheel exceeds that of the motor. Under average conditions the starting motor should crank the engine at a crankshaft speed of from 100 to 200 revolutions a minute, depending upon the characteristics of the installation and the condition of the battery. The cranking speed will, of course, be materially reduced in extreme cold weather or in the case of a depleted battery, but unless the impediment is great enough to cause more than a 50 per cent. reduction in speed, the effectiveness of the starting motor, it is stated, will not be seriously impaired. This is due to the fact that the North East motor is so designed that within wide limits anything tending to reduce its speed automatically brings into play sufficient reserve power to enable it to maintain effective operation in the face of added opposition.

The starting motor brushes, like those of the generator, are of a particular grade, especially selected to suit the characteristics of the machine.

Reverse Current Cut-Out and Starting Switch.

The North East reverse current cut-outs and starting switches are built in several types, but their essential features are the same, the chief difference being in the voltage of the coils and the method of mounting.

The reverse current cut-out, which serves as a check to prevent the battery from discharging back through the generator when its voltage is not as high as that of the battery, consists of a set of shunts and series windings that actuate a pair of contacts to close and open the charging circuit. The six-volt types close the circuit at a generator potential of approximately seven volts, and the 12-volt types at from 14 to 15 volts. The cut-outs of both voltages are designed to open the circuit always before the discharge current exceeds one ampere. Every cut-out is accurately and permanently adjusted at the factory and, under normal conditions, should never need attention in service.

The starting switch, which controls the starting motor circuit, consists principally of a pair of heavy contact blocks and a movable, laminated contactor carried on a push rod. Both contacts and contactor are sufficiently heavy to give practically indefinite service under normal usage and require approximately no attention in service.

North East Ignition Units.

North East ignition units are regularly made in the following models: ST, head and coil on common base, manual advance; SU, head and coil on common base, semi-automatic advance; SW, head and coil on common base, full automatic advance; T, head and coil separate, manual advance; U, head and coil separate, semi-automatic advance; W, head and coil separate, full automatic advance.

Each model comprises several different types, which vary in respect to direction of rotation, voltage, number of cylinders, style of drive and method of mounting. The standard North East ignition unit comprises an ignition coil, a breaker box, a high-tension distributor head and a spark-advancing mechanism. Current is supplied to the primary circuit of the unit by the generator while the engine is running at ordinary speeds and by the battery during starting and very slow speed operation. This low voltage current is converted by means of the breaker mechanism and the ignition coil into high-tension impulses, which are delivered selectively through the high-tension distributor to the spark plugs on the engine.

The amount of current drawn by the primary circuit depends in a measure upon the speed of operation. Even at its maximum at starting, however, the ignition current forms but a small proportion of the total generator output, while during ordinary driving and high speeds the current consumed for ignition is a negligible quantity. The high-tension impulses into which the primary current is transformed are, however, not greatly influenced by speed, but retain nearly the same vigor throughout the entire range.

Spark Advance Control.

In order to compensate for the inherent lag in combustion after the actual production of the spark, provision is made in all units for advancing the time of the spark relatively to the operation of the engine. In the manual control models this advance is accomplished through the spark lever on the steering column, which serves to shift the angular position of the breaker box assembly as running conditions require. In the automatic and semi-automatic models the advancing of the spark is taken care of either wholly or in part through the agency of a centrifugally actuated mechanism on the distributor shaft. This automatic advance mechanism is designed to conform accurately with the characteristics of the engine and, since it is permanently adjusted at the time of manufacture, should never be disturbed in service.

The North East ignition coil is exceptionally durable and under ordinary service conditions requires no attention whatsoever.

The distributor cap and rotor arm, which serve to conduct the high-tension impulses selectively to the proper spark plugs, are designed to operate indefinitely without appreciable wear.

The breaker mechanism consists chiefly of the breaker cam, the breaker arm and contact points and the condenser. The breaker box assembly, in which all these parts are contained, can usually be removed if desired by simply withdrawing it from the base casting after first backing off the retaining screw that holds it in position.

The breaker contacts are of unusually liberal size and the breaker mechanism is so designed as to minimize the wear on their faces. They may, accordingly, be expected to run for a whole season or even longer without requiring any cleaning or readjustment.

Condenser and Breaker Arm.

The condenser is durably built and is sealed in a case to protect it from internal injury. Under ordinary service it requires no attention, but if it should ever become inoperative it can be replaced easily. In case a new condenser should not happen to be available, the ignition unit may be operated for a reasonable length of time with the condenser removed. This should never be resorted to except in an emergency, however, and then for no longer than absolutely necessary.

The breaker cam needs virtually no attention in service. It is fastened rigidly on top of the distributor shaft by means of a nut and special lock washers and is accurately set in position when the unit is installed on the engine.

North East ignition generators are supplied in two styles: Model M with the ignition apparatus attached at the commutator end of the generator and Model P with it attached at the drive end. These are simply combination assemblies of the standard ignition and generator units, and the only additional attention required by them is the thorough lubrication of the internal parts.

North East Single-Unit System.

The North East Model G starter generator is a single-unit machine, performing both starting and generating duties without the aid of any adaptive mechanism. All parts, from brushes to field coils, serve in virtually the same capacity for either function. They are built in a number of types which differ in respect to direction of rotation, voltage and style of wiring (two-wire or ground return system). The standard Model G starter-generator is a four-pole, compound-wound machine with its output controlled by third brush regulation supplemented by a "bucking" series field. The 12-volt types begin to deliver current at an armature speed of approximately 1000 revolutions a minute, and the 24-volt types at 1300. These speeds correspond to from eight to 10 miles an hour in service, depending to a certain extent upon the driving ratio and the operating characteristics of the vehicle.

It has the same tapering characteristics as the Model L standard generator before described, the output rising rapidly with increasing speed until its maximum is attained at approximately 1800 revolutions a minute (16 to 18 miles an hour). From this point on to 2200 revolutions a minute the output is held at a practically constant value; but with additional increase in speed it is cut down again to an intermediate rate, which is further reduced if the speed continues to rise. This affords a charging rate that conforms at every point with battery manufacturers' recommendations.

Manufacturer's Warranty.

The North East Electric Co., in conformity with the standard warranty of the National Automobile Chamber of Commerce, guarantees each new piece of apparatus turned out to be free from defects in material and workmanship under normal use and service, the company's obligation being limited to the furnishing at the factory of any part which shall, within 90 days after delivery to the original purchaser, be returned with transportation charges prepaid and which an examination shall disclose to the satisfaction of the company to have been defective.

TWO PERTINENT PAMPHLETS ON THE OIL QUESTION.

Richard D. Leonard, general manager of domestic sales for the Atlantic Refining Co., 1211 Chestnut street, Philadelphia, Pa., has just released for public distribution "The Story of Gasoline," which he characterizes in the introductory paragraph to be "the plain, frank story of gasoline, told for its million of users; the story of "American ingenuity and progress." The work is handsomely illustrated, and a good idea of its scope may be obtained from a citation of the heads under which the subject is treated, as follows:

What Gasoline Is. Essentials of Good Gasoline: Gravity, Volatility, Calorific Power, Purity, Refinement, Range. Carburetion. Driving in Traffic. Carbon. Dilution of the Motor Oil. The Cost of Gasoline. The Future of Gasoline. Engine Trouble. Precautions.

The work contains many valuable hints on the use and abuse of the automobile engine in relation to its fuel supply, location and remedying of the causes of engine troubles, etc. The Atlantic Refining Co. will send a copy to any one interested.

The Petroleum Outlook.

One of the most complete and interesting publications for the lay reader yet issued on the all-important subject of today, the crude oil supply, is "The Petroleum Outlook," a monograph, a limited number of copies of which are now available for distribution to bankers, brokers, manufacturers, etc., by the publisher, Arthur D. Little, Inc., chemist and engineer, 30 Charles River road, Cambridge, Mass.

This work comprises an economic study of the petroleum outlook with especial reference to American fields, and is illustrated by a large map and several charts arranged for comparative reference. The text, written in popular styles, deals with the geology, production history and apparent state of exhaustion of the crude oil resources of the country. It purports to be an impartial, forceful presentation of the petroleum problem without reference to the companies or interests that own or operate in the respective section.

Requests for a copy of "The Petroleum Outlook" should be addressed to Department E, care of the publisher.

STUDEBAKER REPORTS SHOW GOOD BUSINESS.

The Studebaker Corporation's report, recently compiled, shows that in the nine elapsed months of the current year net earnings, after all charges and provision for preferred dividends, totaled $9,765,851, equal to $15.38 a share on the common stock, compared with net earnings of $7,023,386, or $21.53, earned on the common stock in the first nine months of 1919.

The consolidated profit and loss account for the third quarter of the present year shows that sales totaled $27,823,611, against $21,248,983 in the same months of last year. In the nine months sales amounted to $73,374,153, compared with $48,639,097 in the nine months of 1919.

Comparison of the balance sheet as of Sept. 30 with that of Jan. 1 shows total assets of $101,732,033 for the later date, as against $88,115,378 on the earlier date.

Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK MARKET.

Week Ending Nov. 20, 1920.

Company	High	Low	Last	Change
Advance Rumely	21¼	18½	19	—1
Advance Rumely pfd	54½	53	53	—1½
Ajax Rubber	34	31¾	31¾	— ¼
American Bosch Magneto	69⅞	63⅝	65	..
Bethlehem Motors	3⅝	2¼	2½	— ½
Chandler Motor	77½	72¼	74½	—2¼
Emerson-Brantingham	9⅞	7⅛	7⅛	—7
Fisher Body	95	80	82½	—12½
Fisher Body, pfd	98	98	98	— ¼
Fisk Rubber	15¾	14	14	—1
General Motors	14¼	12⅞	14	— ⅜
General Motors, pfd	68	64½	65½	— ½
General Motors 7% deb	72½	70½	72	+ ⅛
General Motors 6% deb	63	60½	62	—1½
Goodrich, B. F	44⅜	39⅝	41	—2
Goodrich, B. F., pfd	80¼	80	80	—2
Gray & Davis	12⅛	12	12	— ¾
Hupp Motor Car	12⅛	10	10½	—1⅝
International Harvester, new	98¾	98	92	—3¾
International Harvester, new, pfd	104¾	100	100	—4¼
International Motor Truck	34	29⅝	30	—3⅝
International Motor Truck, 1st pfd	70⅛	68	68½	—2
International Motor Truck, 2nd pfd	59¾	57¾	58½	—1½
Kelly-Springfield Tire	43	38¾	41	+2
Kelly-Springfield Tire, 8% pfd	85	85	85	—2
Kelly-Springfield Tire, 6% pfd	73	73	73	—5
Kelsey Wheel	46½	44	44⅛	—5⅞
Keystone Tire & Rubber	10⅝	8⅛	8⅞	—1⅜
Lee Rubber & Tire	18½	17	•17	—2
Maxwell Motors	2½	2⅛	2½	..
Maxwell Motors, ctf. of dep	2⅛	2	2	— ⅛
Maxwell Motors, cgs. Sta. as	2	2	2	— ⅛
Maxwell Motors, 1st pfd	5⅛	5⅛	5⅛	—1⅜
Maxwell Motors, 2nd pfd	3	2⅞	2⅞	— ⅝
Mullins Body	25⅛	24	24	—1
Pierce-Arrow	25	20¼	21⅛	—2⅛
Pierce-Arrow, pfd	77	75⅛	75⅛	— ⅛
Republic Motor Truck	27⅛	25¾	26¾	— ⅜
Saxon Motor	3⅜	3	3⅛	— ⅜
Stewart-Warner Speedometer	27½	26	27	+1
Stromberg Carburetor	53½	38⅛	40½	—11
Studebaker Corp	50	41¼	42¼	—5¼
Studebaker Corp, pfd	85	83¾	83¼	—2¼
Times Square Auto Supply	14	10⅞	11	..
U. S. Rubber	63	58½	60⅝	—3⅛
U. S. Rubber 1st pfd	101	100	100¼	—1¾
White Motors	41⅝	36¼	38	—2
Willys-Overland	8	6⅞	7½	— ⅜
Willys-Overland, pfd	51⅛	47	48	—2

AKRON RUBBER PRICES.

	Aug. 2		Oct. 15	
	Bid	Asked	Bid	Asked
Amer. R. & T. com	..	80	..	75
Amazon Rubber	..	95	..	75
Firestone T. & R. com	120	128	105	110
Firestone T. & R. 6% pfd	99½	93	88½	90
Firestone T. & R. 7% pfd	86	85	82½	83½
General T. & R. com	..	700	..	600
B. F. Goodrich, com	54½	56½	49	51
B. F. Goodrich, 7% pfd	86½	87½	84½	85½
B. F. Goodrich 5-year 7% notes	93½	95	90½	91½
Goodyear T. & R. com	112	114	70½	72½
Goodyear T. & R. pfd	84½	85	77	78
India Rubber com	..	165	140	150
India Rubber, 8% pfd	..	80	..	80
Mason T. & R. com	..	20	20	22
Marathon T. & R. com	45	50	..	40
Miller Rubber, com	120	125	108	112
Mohawk Rubber	..	285	125	200
Portage Rubber, com	75	80	..	50
Portage Rubber, 7% pfd	69	75	65	67
Republic Rubber, com	1½	2	2	2½
Republic Rubber 7% pfd	..	40	..	40
Republic Rubber 6% pfd	20	25	22	25
Rubber Products	..	100	..	100
Star Rubber com	..	150	..	150
Star Rubber pfd	..	100	..	100
Swinehart T. & R. com	..	75	..	60
Swinehart T. & R. 7% pfd	69	80	..	70
Phoenix Rubber, com	..	20	..	20
Phoenix Rubber pfd	..	90	..	90
Standard Tire com	..	175	..	175
Standard Tire, pfd	..	90	..	90

CRUDE RUBBER, NEW YORK PRICES.

	Oct 5 Cts. Per Lb.			Oct 21 Cts. Per Lb.		
Ceylons						
Smoked sheets ribbed, spot	.23	@	—	.23¼	@	—
Smkd. sheets rib., Nov.-Dec	.24	@	—	.24	@	—
Smkd. sheets rib., Jan.-June	.28	@	—	.28	@	—
Smoked sheets plain, spot	.23	@	—	.19	@	—
First latex pale crepe	.25	@	.25½	.25	@	.25½
Amber crepe, No. 1	.23	@	—	.19½	@	—
Amber crepe, No. 2	.22	@	—	.19½	@	—
Amber crepe, No 3	.21	@	—	.17½	@	—
Clean brown crepe	.21	@	—	—	@	—
Light clean brown crepe	.22	@	—	Nominal		
Roll brown crepe	.17	@	—	.17	@	.17½
Grand Central crepe	.19	@	—	.19	@	—
Africans						
Rio Nunez string	—	@	—	—	@	—
No. 1 Benguella	.12	@	—	.12	@	—
No. 2 Benguella	.08	@	.10	.08	@	.10
Paras						
Up-river fine	.26	@	—	.25	@	—
Up-river medium	.23	@	—	.21	@	—
Up-river coarse	.17	@	—	.16	@	—
Caucho ball	.18	@	—	.17	@	—
Islands fine	.16½	@	—	—	@	—
Maderia fine	.30	@	—	.30	@	—
Knapsack	—	@	—	.38	@	—
Centrals						
Corinto prime	.16	@	.17	.14	@	—
Esmeralda prime	.16	@	.17	.14	@	—
Miscellaneous—						
Guayule wet	Nominal			Nominal		
•Balata block Panama	.35	@	—	—	@	—
Balata sheets	.70	@	—	.70	@	—
Cameta	.17	@	—	.17	@	—
Palembang	.07	@	—	.08	@	.08½
Prime Surinam sheets	Nominal					

•Nominal.

DIVIDENDS DECLARED.

Company	Rate	Period	Payable		Stock of Record	
Advance-Rumely, pfd	1½%	Quart	Jan.	3	Dec.	15
Ajax Rubber	$1	Quart	Dec.	15	Nov.	30
Allis-Chalmers	$1	Quart	Nov.	15	Oct.	25
American-Bosch Magneto	$2.50	Quart	Jan.	2	Dec.	15
American-LaFrance	2½%	Quart	Nov.	15	Nov.	1
Avery	100 shares	Stock	Nov.	1	Oct.	11
Case. J. I., T. M., pfd	$1.75	Quart	Jan.	1	Dec.	13
Continental Motors	25 cents	Quart	Nov.	16	Nov.	7
Eisemann Magneto, pfd	$1.75	Quart	Nov.	1	Oct.	20
Fairbanks, 1st pfd	2%	Quart	Nov.	1	Oct.	20
Federal Motor Truck	10 cents	Month	Nov.	1	Oct.	24
Firestone T. & R. 7% pfd	1¾%	Quart	Nov.	15	Nov.	1
Fisher Body	$2.50	......	Nov.	1	Oct.	20
Fisher Body, pfd	1¾%	......	Nov.	1	Oct.	20
Fisk Body, 1st pfd. & 1st pfd. conv	1¾%	Quart	Nov.	1	Oct.	21
Franklin, H. H., Mfg, pfd	1¾%	Quart	Nov.	1	Oct.	20
General Motors	25c & 1/40%	Stock	Nov.	1	Oct.	5
Gen. Motors pfd. & 6% deb	$1.50	......	Nov.	1	Oct.	5
General Motors 6% deb	$1.75	......	Nov.	1	Oct.	5
General Tire & Rubber	4%	......	Nov.	1	Oct.	20
Goodrich, B. F	$1.50	Quart	Feb.	15	Feb.	4
Goodrich, B. F., pfd	$1.75	Quart	Jan.	1	Dec.	21
Grant Motor	1½%	Quart	Nov.	1	Oct.	15
Grant Motor, pfd	1¾%	Quart	Nov.	1	Oct.	15
Hodgman Rubber, pfd	2%	Quart	Nov.	1	Oct.	15
Hood Rubber, pfd	1¾%	Quart	Nov.	1	Oct.	20
Hupp Motor Car	2½%	Quart	Nov.	1	Oct.	15
Kelly-Springfield	$1	Quart	Nov.	1	Oct.	15
Kelly-Springfield	3%	Stock	Nov.	1	Oct.	15
Kelly-Springfield 8% pfd	$2	Quart	Nov.	15	Nov.	1
Lee Rubber & Tire	50 cents	Quart	Dec.	1	Nov.	15
Motor Wheel	2%	......	Nov.	20	Nov.	1
Mullins Body	$1	Quart	Nov.	1	Oct.	16
Mullins Body	1½%	Quart	Nov.	1	Oct.	16
Nash Motors	$1.75	Quart	Nov.	1	Oct.	20
Paige Motors	1%	Month	Nov.	10	Oct.	31
Pyrene Mfg	25 cents	Quart	Nov.	1	Oct.	21
Stewart-Warner	$2	Quart	Nov.	15	Oct.	30
Studebaker Corp	$1.75	Quart	Dec.	1	Nov.	10
Studebaker Corp., pfd	$1.75	Quart	Dec.	1	Nov.	10
Willys-Overland	25 cents	Quart	Nov.	1	Oct.	23

Concerns Engaged in Distribution of Automotive Equipment

The names published below were submitted through various sources, and from the viewpoint of many manufacturers of automotive equipment, supplies, accessories, etc., are listed as jobbers. It must be admitted, that from the standpoint of manufacturers generally there are great variances as applied to the term "jobber." However, as this list contains the names of concerns who are recognized by many manufacturers as jobbers, it is only reasonable to assume that all producers seeking the patronage of the trade will draw their conclusions from their own point of view as to what concerns are entitled to the distinction of being a jobber.

(Continued from the October edition of the Accessory & Garage Journal.)

Missouri (Continued).

Keystone Auto Supply Co., 1474 Hamilton............St. Louis
Leacock Sporting Goods Co., 921 Locust............St. Louis
Manhattan Electrical Supply Co., 1106 Pine..........St. Louis
Missouri Auto Specialty Co., 19th & Locust..........St. Louis
St. Louis Iron Store Co., 700 Cass...................St. Louis
Schroeder Bros. Hdw. Co., 717 Washington..........St. Louis
Scruggs, Vandervoort, Barney Co., Olive & 10th......St. Louis
Shapleigh Hdw. Co., 305 Washington.................St. Louis
Sickles Saddlery Co., J. B., 2100 Washington..........St. Louis
Simmons Hdw. Co., 9th & Spruce.....................St. Louis
Sligo Iron Store Co., 1301 N. 6th.....................St. Louis
South Side Auto Supply Co., 3445 S. Grand...........St. Louis
Straus Saddlery Co., 2657 Locust.....................St. Louis
Vehicle Top & Supply Co., 3414 Lindell...............St. Louis
Victor Auto Supply Co.. 2004 Locust..................St. Louis
Wesco Supply Co., 7th & Clark.......................St. Louis
Witte Hdw. Co., 704 N 3rd...........................St. Louis
Ozark Motor & Supply Co., 308 S. Jefferson..........Springfield
Southwest Auto & Supply Co., 425 St. Louis........Springfield
J. O. Neal Block, 127 W. Swan.................Webster Groves

MONTANA.

Billings Hdw. Co., Montana & Broadway............Billings
Northwestern Auto Supply Co., 5th & Broadway........Billings
Story Motor Supply Co., 400 W. Main................Bozeman
Automobile Supply Co.. 121 W. Broadway.................Butte
Bertram Motor Supply Co., 224 S. Main....................Butte
Butte Electric Supply Co., 44 E. Broadway................Butte
Montana Electric Co., 50 E. Broadway.....................Butte
Cascade Merc. Co......................................Cascade
Pioneer Implt. & Auto Co........................Grassgrange
Northwest Auto Supply Co., 213 2nd Ave., S........Great Falls
Valley Merc. Co., Main St..........................Hamilton
Jestrab Bros., 333 1st.................................Havre
Helena Hdw. Co., 316 N. Main........................Helena
Holter Hdw. Co., A. M., 113 N. Main...................Helena
Missoula Merc. Co....................................Missoula
Missoula Tire & Auto Supply Co.....................Missoula
Valley Hdw. Co..Sidney

NEBASKA.

Newberry's Hdw. Co.. 402 Box Butte.................Alliance
Smith, Jeff...Ashland
Branigan, John, 13th & Quincy......................Columbus
Columbus Tire Co., 1314 Platte......................Columbus
Kopac Bros., 305 W. 13th............................Columbus
Kopac Bros...David City
Baker Hdw. Co., 101 N. 9th............................Lincoln
Henkle & Joyce Hdw. Co., 800 Q St.....................Lincoln
Korsmeyer Co., 1325 N. St..............................Lincoln
Nebraska Buick Auto Co., 13th & P St...................Lincoln
Kopac Bros., 115 Norfolk...............................Norfolk
Jordan Hdw. Co...O'Neill
Warner & Sons...O'Neill
Hudson Mfg. Co., 916 Jones............................Omaha
Lee, Coit, Andressen Hdw. Co., 315 S. 9th..............Omaha
Lininger Implt. Co., 6th & Pacific.......................Omaha
McGraw Co., 1208 Harney...............................Omaha
Master Sales Co., 414 S. 12th...........................Omaha
Motor Supply Co., 1917 Farnam.........................Omaha
Paxton & Gallagher, C. O., 10th St. Viaduct.............Omaha
Peterson & Michelsen Hdw. Co.. 4916 S. 20th............Omaha
Powell Supply Co., 2051 Farnam.........................Omaha
Sunderland Mach. & Sup. Co., 1006 Douglas..............Omaha
Troup Auto Supply Co., 1921 Farnam.....................Omaha
United States Auto Supply Co., 606 S. 14th..............Omaha
U. S. Rubber Co., Ninth & Douglas.......................Omaha
Western Auto Supply Co., 1918 Farnam..................Omaha
Wright & Wilhelmy Co., 10th & Jackson..................Omaha
Bailey & Detweiler.......................................Ord
Kopac Bros., 115th & Idaho Sts.......................Schuyler

NEVADA.

Nevada Auto Supply Co., 112 E. 2nd......................Reno
Tonopah Auto Supply Co., Florence & Main............Tonopah
Tonopah Elec. & Tire Co., Florence & Main............Tonopah
Winnemucca Merc. Co...........................Winnemucca

NEW HAMPSHIRE.

Thompson & Hoague Co., 42 N. Main..................Concord
Seavy, J. H..Dover
Halladay, F. E..Hillsboro
Alding Supply Co., 501 Elm........................Manchester
Manchester Hdw. Co., 934 Elm.....................Manchester
Varick, J. B. Co., 809 Elm.........................Manchester
Austin, Chas. H., 176 Main............................Nashua
Hill Hdw. & Paint Co., 35 R. R. Sq....................Nashua
Wendell, P. A. & Co., 2 Market Sq................Portsmouth

NEW JERSEY.

Disbrow, H. R., Main St............................Allentown
Coyte, Edmund L., Main & Sewell..............Ashbury Park
Snyder & Robins, Main & Lake..................Ashbury Park
Allen W. Philip & Co., 1624 Atlantic............Atlantic City
Butt's Supply Agency, 401 Atlantic.............Atlantic City
Cuckaden Auto Supply Co., 2006 Atlantic........Atlantic City
Manning, Albert D. Co., 2925 Atlantic...........Atlantic City
Taylor's Auto Supply Co., 1907 Atlantic.........Atlantic City
Kling, N. C., Ninth Ave...............................Belmar
Walton, A. W. & Sons, 109 Broadway..................Camden
Conlan Auto Supply, 64 E. Blackwell....................Dover
Dover Auto Supply House, 91 E. Blackwell..............Dover
National Auto Accessories, 391 Main............East Orange
Owen, Jas. H., 459 Central.......................East Orange
Auto Tire Shop, 252 N. Broad........................Elizabeth
Clark Hdw. Co., 83 Broad............................Elizabeth
Ulrich, John J., 42 Westfield.........................Elizabeth
Englewood Auto Supply, 48 E. Palisade...........Englewood
Merriman, A., 26 South.............................Freehold
Muldoon, Frank, 40 W. Main........................Freehold
Acker & Lyle, 257 Main..........................Hackensack
Hoffman, W. A., 159 Main.....................Hackettstown
Moller, Wm., 107 Willow............................Hoboken
Ross, Francis J., 1014 Washington..................Hoboken
Hudson County Auto Supply Co, 683 Montgomery..Jersey City
Landrine, John P., 719 Bergen.................Jersey City
Lutjen, H. E., 296 Central.........................Jersey City
Micucci, Nicholas, 31 Bowers.....................Jersey City
Huylar, Adam L., Front St............................Keyport
McNeice, H., 229 2nd...............................Lakewood
Toenley, A. M. & Co., 191 Broadway.............Long Branch
Millville Steam Vulc. Co., 312 High..................Millville
Eager Auto Sup. Co., 336 Bloomfield................Montclair
Heyer Auto Supply Co., 34 Valley Rd................Montclair
Trowbridge, F. A. Co., 17 South.....................Morrison
Cut Price Auto Tire Co., 73 Albany...........New Brunswick
E. Brass Auto Supply Co., 33 Albany..........New Brunswick
Smith, Newton B., 69 Albany..................New Brunswick
Banister & Pollard Co., 206 Market....................Newark
Burtley Sales Co., 973 Broad..........................Newark
Dayton Tire Co., 445 Central..........................Newark
Durham, P. J. Co., 235 Central........................Newark
Economy Tire Supply Co., 268 Halsey...................Newark
Elin Auto Supply Co., 273 Halsey......................Newark
H. H. H. Motor Supply Co., 263 Halsey..................Newark

Hintze Bros., 459 Central	Newark
Jehle Herman, 419 Halsey	Newark
Ludlow & Squier, 97 Marget	Newark
Miller. Chas. E., 274 Halsey	Newark
Miller & Co., 12 William	Newark
Minor Rubber Co., 941 Broad	Newark
Motor Car Equipment Co., 21 Halsey	Newark
Muller, Anton F. & Co., 258 Springfield	Newark
Schoonmaker Co., E., 27 Halsey	Newark
Thompson, Reilly Co., 277 Halsey	Newark
Lindsley, John N., 244 Main	Orange
Mohor, Max M., 277 Main	Orange
Orange Vulc. & Supply Co., 225 Main	Orange
Regan, P., 229 Main	Orange
Brown's Sporting Goods Co., Howe Ave. & Prospect	Passaic
Mills, H. W. & Co., 218 Washington	Passaic
New Jersey Eng. Co., 177 Main	Passaic
Dayton & Walker Co., 171 Market	Paterson
Harrison, Fredk. & Co., 205 Paterson	Paterson
Mills, H. W. & Co., 59 Washington	Paterson
Myers, Geo. A. & Co., 61 Washington	Paterson
Smith, H. Lund, 199 Paterson	Paterson
Vaughan, C. B., 173 Market	Paterson
Melbourn & Ritter, 53 Smith	Perth Amboy
Newark Auto Supply Co., 304 W. Front	Plainfield
Plainfield Auto Tire Co., 407 Watchung	Plainfield
Point Pleasant Hdw. Co	Pt. Pleasant
Roberts, T. H., 146 Main	Rahway
Davis, Geo. A., 148 W. Broadway	Salem
Erhardt, Paul, Erhardt Bldg	Salem
Apex Auto Supply Co., 109 S. Orange	S. Orange
Marco Co., 62 S. Orange	S. Orange
Thompson Auto Supply Co., 97 Summit	Summit
Economy Motoring Service Station	Sussex
Dunham, S. P. & Co	Trenton
Midler's Auto Supply Co., 117 E. Hanover	Trenton
Tomans Sons Co., John F., 118 N. Warren	Trenton
Kronhelm's Big Auto Supply Store, 8th & Landis	Vineland
Schneider, F. & Sons Co., 50 Bergenline	Weehawken

NEW MEXICO.

Roswell Hdw. Co	Roswell
Wood David Hdw. Co	Santa Fe
Cosgrove, E., 205 Bullard	Silver City
Cox, W. S	Silver City
Hinman, O. C. & Son, 306 Bullard	Silver City
MacArthur, A., Co	Wagon Mound

NEW YORK.

Albany Auto Supply Co., 153 Central	Albany
Albany Hdw. & Iron Co., 39 State	Albany
Alling Rubber Co., 447 Broadway	Broadway
Peerless Vulc. Works, 257 Central	Albany
Alling Rubber Co., 17 E. Main	Amsterdam
Amsterdam Hdw. Co., 14 E. Main	Amsterdam
Herron, P. M. Co., 36 Genessee	Auburn
Kilmer, Richardson Co., 62 Genessee	Auburn
Challen, P. J., 531 Main	Beacon
Alling, Lockwood Co., 10 Court	Binghamton
Binghamton Auto Supply Co., Security Bldg	Binghamton
Binghamton Auto Co., 221 Washington	Binghamton
Motor Equipment Co., 110 Court	Binghamton
Brennan & Adams, 91 Main	Brockport
Cook & King Co., Main St	Brockport
Decker, Chas. Co., 56 Main	Brockport
Banzer & Schluchter, 1455 Bedford	Brooklyn
Beach Auto Supply Co., 1325 Bedford	Brooklyn
Bedford Auto Supply Co., 989 Bedford	Brooklyn
Binbrim, Julius, 1049 Bedford	Brooklyn
Burge, W. C., 1179 Buchwick	Brooklyn
Charles Williams Stores, 1 Main	Brooklyn
Doris & Co., 1415 Bedford	Brooklyn
Drew Auto Supply Co., 2576 Bedford	Brooklyn
Durham, P. J., Co., 761 Park Pl	Brooklyn
Eiless Auto Supply Co., 1204 Bedford	Brooklyn
Falls Supply Co., 149 Lafayette	Brooklyn
Farrell Auto Supply Co., 1178 Bedford	Brooklyn
Gabriel's Auto Supply Co., 1165 Bedford	Brooklyn
Iona Auto Supply Co., 6506 Ft. Hamilton	Brooklyn
Kaplan, Jacob, 336 Flatbush	Brooklyn
King Tire Co., 1209 Bedford	Brooklyn
Knisel, J., 11 Graham	Brooklyn
Krieger & Son, E., 302 Tomkins	Brooklyn
McGrath, Arthur H., 108 Livingston	Brooklyn
Martin, Evans Co., Bedford & Bergen	Brooklyn
Miller, Chas. E., 1421 Bedford	Brooklyn
Muller, Jacob, 830 Fulton	Brooklyn
Oriental Rubber & Supply Co., 1166 Bedford	Brooklyn
Paul, Irving Co., 1194 Bushwick	Brooklyn
Ready Auto Supply Co., 1225 Bedford	Brooklyn
Scharff, Chas. Sons, 132 Stanhope	Brooklyn
Schoonaker, E., 1130 Bedford	Brooklyn
Snyder & Son, J. J., 55 Snyder	Brooklyn
Barclay, James G., 715 Main	Buffalo
Beals, McCarthy & Rogers, 48 Terrace	Buffalo
Buffalo Whol. Hdw. Co., 317 Washington	Buffalo
Cycle & Auto Supply Co., 339 Genessee	Buffalo
F. A. M. Auto Supply Co., 694 Main	Buffalo
Federal Auto Supply Co., 696 Main	Buffalo
Jaynes Auto Supply Co., 804 Main	Buffalo
Meinhard Auto Service Co., 846 Main	Buffalo
Miller, Chas. E., 824 Main	Buffalo
Motor Parts Co., 1064 Main	Buffalo
Rogers & Rogers, 160 W. Ferry	Buffalo
Sackett Electric Co., H. I., 251 Pearl	Buffalo
Scheuerman Co., 332 Pearl	Buffalo
Simpson, H. R., 814 Main	Buffalo
Strauss, Dilcher Auto Supply Co., 707 Main	Buffalo
Strauss, Jos. Co., 215 Genessee	Buffalo
Raylor, H. D. Co., 99 Oak	Buffalo
U. S. Rubber Co., 379 Washington	Buffalo
Walbridge & Co., 392 Main	Buffalo
Weed & Co., 292 Main	Buffalo
Payne Supply Co	Burnhams
Catskill Hdw. Co., 437 Main	Catskill
Day & Holt Co., 347 Main	Catskill
Bruce, M	Charlotteville
Scotland & Munro, 72 Remsen	Cohoes
Corona Auto Supply Co., 166 Corona	Corona
Cortland Auto Supply Co., 15 Railroad	Cortland
Dexter Hdw. Co	Dexter
Fredonia Hdw. Co., 8 W. Main	Fredonia
Spencer, A. E. & Bro., 31 Main	Fredonia
James & Hawkins	Glen Cove
Alling Rubber Co	Glen Falls
McRae, H. A. & Co., 33 Ridge	Glen Falls
Alling Rubber Co., Main St	Gloversville
Bramer, John L., 31 Bleecker	Gloversville
Sowle, J. E., 26 S. Main	Gloversville
Lane, Chas. R., 35 Main	Haverstraw
James & Hawkins, Front St	Hempstead
Tew, Benj. T., Fulton St	Hempstead
Fenner, John G., 228 Main	Herkimer
Hudson Auto Supply Store, 746 Warren	Hudson
Davis, Brown Electric Co., 115 S. Cayuga	Ithaca
Treman King & Co., 101 E. State	Ithaca
Jamaica Auto & Supply Co., Bergen & Bergen Pl	Jamaica
James & Hawkins, 336 Fulton	Jamaica
Strang Auto & Supply Co., 451 Fulton	Jamaica
Clark Hdw. Co., 109 Main	Jamestown
Jamestown Hdw. Co., 120 W. 3rd	Jamestown
Cayadutta Auto Supply House, 8 S. William	Johnstown
Ferres Hdw. Co., John G., 118 W. Main	Johnstown
McGuire, Tymeson Co., 1 W. Main	Johnstown
Staley, Folmsbee Co. 1 E. Main	Johnstown
Brown Auto Supply Co., 244 Clinton	Kingston
Johnson, J. T., 10 Strand	Kingston
Van's Garage, 529 Broadway	Kingston
Winne, L. S. & Co., 328 Wall	Kingston
Larchmont Mfg. Co	Larchmont
Pierson & Weber, 16 Clements	Liberty
Auto Specialty Equipment Co., 590 Jackson	Long Island City
Brown, Chas. J., Bridge Plaza S	Long Island City
Iona Auto Supply Co., 146 Bridge Plaza	Long Island City
Richensteen Bros., Queensboro Bridge Plaza S.	Long Island City
Thompson, H. D. & Co, 37 Main	Malone
Baxter, Chas. M., 63 Mamaroneck	Mamaroneck
Marcelius Hdw. Co., Main St	Marcelius
Jaynes Auto Supply Co., 609 Main	Medina
Medina Auto Supply House, 133 E. Center	Medina
Sullivan, F. A	Middleburg
Breiner, C. M., 31 James	Middletown
Hunter, E. E., 1 James	Middletown
Levine, Sol, 27 Prospect	Mt. Vernon
Weil, Jos., 15 Prospect	Mt. Vernon
Van Dam, F. C. & Son, 467 Richmond	New Brighton
Auto Aero Supply Co., 221 Main	New Rochelle
United Auto & Electric Co., 199 Main	New Rochelle
Acme Auto Supply & Tire Co., 1150 St. Nicholas	New York City
Adison, P. H., 10 Cooper Sq	New York City
Arcade Auto Supply Co., 131 W. 65th	New York City
Asch & Co., 16 W. 61st	New York City
Audubon Auto Supply Co., 1134 St. Nicholas	New York City
Auto Appliance Co., 301 W. 55th	New York City
Auto Economy Access. Co., 1772 Southern	New York City
Auto Hdw. & Equip. Co., 256 W. 55th	New York City
Auto Owners' Supply Depot, 1773 Broadway	New York City
Auto Supply Co., 1789 Broadway	New York City
Auto Necessities Co., 24 Cathedral Parkway	New York City
Auto Sundries Co., 18 Broadway	New York City
Auto Surplus Stock Syn., 1657 Broadway	New York City
Baran, H. P. & Co., 8 Central Park, W	New York City
Bauman, Alex, 136 Lenox	New York City
Bensonia Auto Supply Co., 3166 3rd	New York City
Bettes & Ebsen, 150 Chambers	New York City
Biddle Purchasing Co., 105 Chambers	New York City
Bloomingdale Bros., 3rd & 59th	New York City
Bradford, Ackerman Corp., 30 E. 42nd	New York City
Brandenberg & Co., 1765 Broadway	New York City
Brickner's Auto Supply Co., 5063 Broadway	New York City
Bronx Electric Supply Co., 612 Melrose	New York City
Brown, Geo. D., 846 Eighth	New York City
Butler Bros., 495 Broadway	New York City
Campbell, John B., 172 W. 72nd	New York City
Carr Bros., 65 Broadway	New York City
Carter & Co., R. K., 66 Reade	New York City
Cassidy, Edw. C., 280 Madison	New York City
Circle Rubber Tire Co., 978 8th	New York City
Glucker Hixson Co., 37 Murray	New York City
Cohen, J. B. & Co., 916 8th	New York City
Colonial Auto Rep. & Supply Co., 338 W. 145th	New York City

Crane & Downing, 1912 Broadway............New York City
Creamer, Geo. J., 3344 Broadway............New York City
Downing, Chas. J., 1781 Broadway............New York City
Durham, P. J. Co., 244 W. 49th............New York City
Economical Tire & Supply Co., 1932 Broadway..New York City
Edmund, E. J. Co., 1783 Broadway............New York City
Faw, J. H., 37 Warren............New York City
Fellsen Tire Co., 1993 Broadway............New York City
Fordham Sq. Auto Sup. Co., 346 Fordham Rd..New York City
Frank, Hy, Jr., 374 Hudson............New York City
Franklin Hdw. Co., 37 Howard............New York City
Frasse Co., 170 Fulton............New York City
General Auto Supply Co., 1671 Broadway......New York City
Gensler, Lewis E., 1834 Broadway............New York City
Gladstone Tire & Supply Co., 152 W. 52nd....New York City
Gifford, John A. & Son, 25 Park Pl............New York City
H. & B. Auto Sales Co., 1733 Broadway........New York City
Harris Hdw. & Mfg. Co., 24 Murray..........New York City
Howard Accessories Co., 1790 Broadway......New York City
Hawlicheck, W. W., 304 W. 52nd............New York City
Hayes Auto Supply & Tire Co., 101 W. 66th....New York Ctiy
Imperial Auto Supply Co., 95 Chambers........New York City
Jandorf Auto Co., 1761 Broadway............New York City
Kaenjay Sales Co., 21 Warren............New York City
Keegan, Aprahamian & Co., 250 W. 54th......New York City
King Tire Co., 1985 Broadway............New York City
Klotz, Bauman Co., 1876 Broadway............New York City
Leveridge, Chas. W., 133 Liberty............New York City
Lexington Auto Supply Co., 771 Lexington....New York City
Lower Motor Supply Co., 1727 Broadway......New York City
Lyngaas, Chas. F., 46 W. Broadway............New York City
Manhattan Electric Supply Co., 17 Park Pl....New York City
Martin, Jas., 106 W. 52nd............New York City
Masback Hdw. Co., 80 Warren............New York City
Metcalfe & James, 245 W. 57th............New York City
Miller, Chas. E., 97 Reade............New York City
Motor Car Equipment Co., 21 W. 62nd ......New York City
Mulcahy, P. J., 2286 Broadway............New York City
Nathanson Auto & Supply Co., 463 E. 149th....New York City
New York & Brooklyn Auto Co., 1717 Broadway.New York City
Oliver Bros., 71 Murray............New York City
Park Auto Supply Co., 4 Lenox............New York City
Parsons, J. H., 1697 Broadway............New York City
Paul, Irving Co., 40 Murray............New York City
Peck & Mack Co., 356 Broadway............New York City
Pendleton & Pendleton, 1834 Broadway.......New York City
Picard, A. J. & Co., 9 W. 61st............New York City
Pruden Hdw. Co., W. E., 864 8th............New York City
Reynolds, Wm. C., 129 W. 37th............New York City
Richard Auto Sup. Co., 1755 Broadway.......New York City
Rouss, Chas., 549 Broadway............New York City
Ruprecht, Louis, 30 Church............New York City
Ryan & Hughes, 1698 Broadway............New York City
Schmidt, Chas. D., Broadway & Canal.......New York City
Schoonmaker, E., Co., 835 7th............New York City
Shanahan, W. A., Co, 1964 Broadway.........New York City
Sherwood, A. S., 258 W. 54th............New York City
Shough, Phillip J., 2480 Broadway............New York City
Smith, Haines, 1908 Broadway............New York City
Smith, Worthington Co., 40 Warren............New York City
Specialty Auto Parts Co., 918 8th............New York City
Standard Auto Supply Co., 97 Chambers.......New York City
Star Rubber Co., 1781 Broadway............New York City
Stewart & Co., 349 W. 26th............New York City
Strompf, M., 1296 Lexington............New York City
Sullivan, Butler, 1864 Broadway............New York City
Ten Eick, Cornelius, 253 W. 47th............New York City
Times Sq. Auto Supply Co., 56th & Broadway..New York City
United Anchor Tire Co., 111 Chambers........New York City
United States Auto Supply Co., 102 Chambers..New York City
W. M. Fales Co., 32 Warren............New York City
Wanamaker, John, Broadway & 10th...........New York City
Weaver, Ebling Auto Co., 2230 Broadway......New York City
Weiland, Chas., 147 Chambers............New York City
Weiss, Max, 97 Amsterdam............New York City
Westchester Accessories Co., 1777 Broadway..New York City
Western Electric Co., 195 Broadway...........New York City
Whitemore, Sim Co., 1976 Broadway...........New York City
Wholesale Auto Tire Co., 88 Chambers..........New York City
Wilart Auto Supply Co., 4205½ Broadway....New York City
Willis, E. J., Co., 85 Chambers............New York City
Wilson, Roberts & Monroe, 35 Warren........New York City
Yorkville Auto Sup. Depot., 1235 Lexington....New York City
Ackley, C. H............Newark Valley
Lawson Hdw. Co., 69 Water............Newburgh
Van Motor Co., 117 Broadway............Newburgh
Wilkinson, John G. Co., 6 Water............Newburgh
Elderdield, Hartshorn Hdw. Co., 40 Falls........Niagara Falls
Townsend & Taylor, 2119 Main............Niagara Falls
Barlow & Co., 129 Main............Ossining
Beecroft, W. & V., 1 S. Highland............Ossining
Marchall, A. H. Co., 74 Margaret............Plattsburg
Myers, M. P. & Co., 8 Bridge............Plattsburg
Sowles Hdw. Co., 79 Margaret............Plattsburg
Ericsson, Eddy Co., 110 N. Main............Pt. Chester
Johnson, Bierman Co., 8 King............Pt. Chester
Tri States Auto Supply Co., 9 Jersey............Pt. Jervis
New York Motor & Supply Co., 112 Richmond....Pt. Richmond
Alling Rubber Co., 265 Main............Poughkeepsie
King, John D., 416 Main............Poughkeepsie
Van Benschoten, John, 14 Catherine............Poughkeepsie
Buchanan Hdw. Co............Richfield Spring
Strang Auto Supply Co., 2899 Jamaica..........Richmond Hill
Brown-Brown Co., 215 East............Rochester
Cash Auto Supply House, 117 Main, W............Rochester
Chapin, Owen Co. 370 E. Main............Rochester
Cook Iron Store, 120 St. Paul............Rochester
Elm Auto Supply Co., 23 Elm............Rochester
Ernest, Louis & Sons, 43 South............Rochester
Genessee Motor Vehicle Co., 192 St. Paul............Rochester
Mutual Auto Supply Co., 90 Exchange............Rochester
Northway, Thos. J., 100 Exchange............Rochester
Raithel Auto Supply Co., 334 East............Rochester
Roby. Sidney B. Co., 208 South............Rochester
Rochester Auto Supply Co., 352 Main............Rochester
Rowerdink, W. H. & Son, 80 North............Rochester
Seneca Auto Supply Co., 232 East............Rochester
U. S. Rubber Co., 24 Exchange............Rochester
James & Hawkins Co., Merrick Rd............Rockville Center
Sears, H. P., Cycle Co., 313 Scott............Rome
Wardwell Hdw. Co., 134 W. Dom St............Rome
Starks, Geo. L. & Co., 29 Broadway............Saranac Lake
Walton & Tousley, 34 Main............Saranac Lake
Van Buskirk, Dwight, 249 Main............Saugerties
Alling Rubber Co., 299 State............Schenectady
Juno, Jay A., Co., 617 State............Schenectady
Rickard, Jay A. Co., 253 State............Schenectady
White, J. Ward, 431 State............Schenectady
Willcox, G. N............Smyrna
Emmons, H. L............Spencer
Muller, J. C., 585 Bay............Stapleton
Auto Supply & Tire Co., 817 Butternut............Syracuse
Brown-Brown Co., 438 S. Warren............Syracuse
Burhans & Black, 136 N. Salina............Syracuse
Fuller, E. J., 136 E. Onondaga............Syracuse
Gould Rubber Co., 105 N. Warren............Syracuse
Grant's Sons, Alex, 134 E. Genessee............Syracuse
Hessler, H. E. Co., N. Salina & Butternut............Syracuse
Lee Auto Supply, 241 W. Water............Syracuse
Olmsted Co., 125 W. Jefferson............Syracuse
Onondaga Auto Supply Co., 353 E. Onondaga..........Syracuse
Roberts Electric Supply Co., 321 E. Genessee........Syracuse
Seitz, J. A., Seitz Bldg............Syracuse
Syracuse Auto Supply Co., 311 S. Warren............Syracuse
U. S. Rubber Co., 212 S. Clinton............Syracuse
Bascom, D. C., Exchange............Ticonderoga
Alling Rubber Co., 251 Broadway............Troy
Curtis, Mont G. Co., 241 River............Troy
Hinsdill Electric Co., 550 Fulton............Troy
McCormick & Dunn, 363 River............Troy
Nichols Motor Car Co., Scott D., 235 River............Troy
Trojan Hdw. Co., 96 Congress............Troy
Troy Auto Exchange, 22 Fourth............Troy
Troy Electric Co., 193 River............Troy
United Motor Supply Co., 107 River............Troy
Warren, J. M. & Co., 245 River............Troy
Alling Rubber Co., 92 Genessee............Utica
D. & M. Auto Supply Co., 27 Lafayette............Utica
Hooks, M. E. Co., 12 Devereux............Utica
Horrocks, Ibbotson Co., 54 Genessee............Utica
MacCracken & Rockwell, 331 Genessee............Utica
Prichard, John O., 205 Elizabeth............Utica
Schoonmaker, E. Co., 215 Elizabeth............Utica
Utica Cycle & Supply Co., 117 Columbia............Utica
Up State Auto Supply Co., 117 Terminal............Watertown
Boyce Hdw. Co., 17 N. Main............Wellsville
Auto Aero Supply Co., Depot Sq............White Plains
Fountain Sq. Auto Supply Co., 69 Central........White Plains
Fowler & Sellers Co., 80 Main............White Plains
Preston, W. R., E. Main............Worcester
Excelsior Supply Store, 83 Warburton............Yonkers
Ganter Auto Supply Co., 251 S. Broadway............Yonkers
Terrace City Auto Gds. Co., 55 Warburton............Yonkers
Twine, H. L., 16 Main............Yonkers

NORTH CAROLINA.

Piedmont Electric Co., 64 Patton............Asheville
Pitt Hdwe. Co............Ayden
Prevard Hdw. Co., 105 Main............Brezard
Everybody's Store............Cary
Auto Supply Co., 9 S. Church............Charlotte
Carolinas Auto Supply Co., 221 N. College............Charlotte
Ko Mo Supply Co............Charlotte
Stroupe, W. R. & Son, 209 W. 4th............Charlotte
Hose, Luther T............Clayton
Sampson Hdw. Co............Clinton
Byrum Bros. Hdw. Co............Edenton
Shorber & White Hdw. Co............Elizabeth City
Richmond Hdw. Co............Ellerbe
Parker Bros., 84 W. Whitefield............Enfield
Greensboro Motor Car Co., 313 W. Market..........Greensboro
Odell Hdw. Co., 324 S. Elm............Greensboro
Bland Hdw. Co............Hendersonville
Monroe Hdw. Co............Monroe
Auto Supply Co., Salisbury St............Raleigh
Woodall & Collier, 411 Fayetteville............Raleigh
Everett Hdw. Co., Main St............Rockingham
Burnette Ford Supply Co., 217 S. Main..........Rocky Mount
Hardy Hdw. Co............Scotland Neck
Josey Hdw. Co............Scotland Neck
Pender Hdw. Co............Tarboro
Harris Hdw. Co............Washington
Pegram Watson Hdw. Co., 100 Main............Washington

NORTH DAKOTA.

Motor Car Supply Co., 206 4th	Bismarck
Rhodes, A	Cooperstown
Litch & Son, 45 Sims	Dickinson
Bristol & Sweet Harness Co	Fargo
Grant, J. D., 12 Roberts	Fargo
Billingmeier Merc Co	Goodrich
Cash Hdw. Co	Goodrich
Minot Auto Co., 1 2nd, N. W	Minot
Kilzer Lbr. Co	Richardson
Holtons Hdw. Co	Turtle Lake

OHIO.

Auto Supply Co., 7 E. Cedar	Akron
Hardware & Supply Co., 21 W. Market	Akron
Pennsylvania Rubber & Supply Co., 198 E. Market	Akron
Ward, R. E	Andover
Avery, Hy L., 100 E 2nd	Ashland
Kerr Hdw. Co.. 36 S. Court	Athens
Wheaton & Crooks Hdw. Co., 32 S. Court	Athens
Hannah Bros., Union Ave	Bethel
Geyer Hdw. Co	Bettsville
Bridgeport Hdw. Co., Main & Lincoln	Bridgeport
Bucyrus Auto Supply Co., 337 Sandusky	Bucyrus
Long, E. M. & Sons, 325 Lincoln	Cadiz
Hartley, W. H. Sons Co., 618 Wheeling	Cambridge
Canton Hdw. Co., 201 Market	Canton
Dine Dewees Co., 400 Walnut Ave., S. E	Canton
Young Auto Supply Co., 126 Cleveland	Canton
Spetnagel Hdw. Co., 21 E. 2nd	Chillicothe
Stocklin & Hernstein, 61 N. Pain	Chillicothe
Wissler Auto Co., 19 E. 2nd	Chillicothe
Bantlin, Julius J. Co., 216 E. 3rd	Cincinnati
Bumiller, Herman Co., 432 Main	Cincinnati
C. & D. Auto Supply Co., 7th & Walnut	Cincinnati
Cincinnati Auto Co., 112 W. Court	Cincinnati
Congo Tire Co., Park Ave. & McMillan	Cincinnati
Consumers Mfg. & Sales Co., Miller Bldg	Cincinnati
Cooper, I. J. Rubber Co., 717 Main St	Cincinnati
Dixie Auto & Supply Co., 917 Race St	Cincinnati
Fry Auto Supply Co., 238 E. Fourth St	Cincinnati
Herrlinger Auto Supply Co., 641 Main St	Cincinnati
Kruse & Bahlmann Hdw. Co., 408-22 Pioneer St	Cincinnati
Ohio Rubber Co., 228-30 W. 7th St	Cincinnati
Pennsylvania Rubber & Supply Co., 919 Race St	Cincinnati
Remelin Co., 430 Main St	Cincinnati
Split Hickory Wheel & Top Co., 127 Eighth St	Cincinnati
Times Square Auto Supply Co., 415 Main St	Cincinnati
Toe Water & Co., G. M., 909 Race St	Cincinnati
Banner Tire & Supply Co., 1901 Euclid Ave	Cincinnati
Bingham, W. Co., 1278 W. Ninth St	Cincinnati
Buckeye Tire & Repair Co., 4109 Detroit Ave	Cincinnati
Collister & Sayle Co., 252 Superior Ave., N. E	Cincinnati
Cray Bros., 1111-21 W. 11th St	Cincinnati
Fenfar Co., 2163-69 E. 9th St	Cincinnati
Fross Bros. Co., 7029 Central Ave	Cincinnati
Goss Supply Co., 8755 Broadway	Cincinnati
Luetkemeyer Co., 725 Superior Ave	Cleveland
M. & M. Co., 480-500 Prospect Ave	Cleveland
Mark Auto Supply Co., 1532 Crawford Rd	Cleveland
Marx Auto Supplies, 1015 E. 105th	Cleveland
Mau-Sherwood Supply Co., 1616 W. Third St	Cleveland
May Co., Public Square	Cleveland
Merkle-Miller Hdw. Co., 3792 W. 25th	Cleveland
Millard Auto Specialty Co., 2062 Euclid Ave	Cleveland
Miller, Chas. E., 1829 Euclid Ave	Cleveland
Motor Accessories Co., 6301-3 Euclid Ave	Cleveland
Motor Equipment Co., 1020-2 Euclid Ave	Cleveland
Mutual Motor Store Co., 1225 Superior Ave	Cleveland
Pennsylvania Rubber & Sup. Co., 2819 Prospect Ave	Cleveland
Phil Electric Co., 746 Prospect Ave	Cleveland
Strater, J. Edward, 2060 Euclid Ave	Cleveland
Worthington, Geo. Co., 832 St. Clair Ave	Cleveland
Borror, W. M. & Co., 43 W. Broad St	Columbus
Buckeye Tire & Supply Co., 75-77 S. Fourth St	Columbus
Columbus Cycle & Supply Co., 23 E. Long St	Columbus
Cooper, I. J. Rubber Co., 142 E. Gay St	Columbus
Cussins, Chas. D. Co., 170-176 N. Third St	Columbus
Cussings & Fearn Co., 54 W. Spring St	Columbus
Doermus Tire & Supply Co., 119 E. Gay St	Columbus
Enterprise Auto Supply Co., 1408 N. High St	Columbus
Erner & Hopkins Co., 55 E. Chestnut St	Columbus
Griswold-Sorl Co., 79-81 N. Front St	Columbus
Justus & Parker Co., 129-33 E. Gay St	Columbus
Pennsylvania Rubber & Sup. Co., 128 E. Gay St	Columbus
Reedy Haddy Auto Supply Co., Fourth & Spring Sts	Columbus
Schoedinger-Marr Co., 100 N. High St	Columbus
Sells, J. H. & N. F. A. Co., 32 E. Chestnut St	Columbus
Smith Bros. Hdw. Co., 32 W. Chestnut St	Columbus
Times Square Auto Supply Co., 137 S. High St	Columbus
Tracy-Wells Co., 175 N. Front St	Columbus
Rodger, D. M., 375 Washington St	Corning
Apple, Herbert F., 427 E. Third St	Dayton
Cooper Rubber Co., I. J., 20 N. Jefferson St	Dayton
Dayton Iron & Steel Co., 119 E. Third St	Dayton
Elder & Johnston Co., Fourth & Main Sts	Dayton
Kennett Motor Car Co., 607 Wayne Ave	Dayton
Larkin, M. D. Supply Co., 116 N. Main St	Dayton
Lewis Motor Mart Co., 27 E. Second St	Dayton
Shroyer, G. W. Co., Second & Main Sts	Dayton
Wearwell Rubber Co., 1033 W 3rd St	Dayton
Hartley Hdw. & Supply Co., 140 N. Market St	East Palestine
Elyria Belting & Machy. Co., 135 Buckeye St	Elyria
Crawbaugh Hdw. Co., 327 S. Main St	Findley
Van Eman Auto Supply Co., 114 W. Main St	Findley
Kinsey Supply Co., State & Park Sts	Fremont
York Supply Co., 126 E. Third St	Greenville
Blair, John A	Lebanon
Linco, J. W. Hdw. Co., Broadway & Mulberry Sts	Lebanon
All Gire Auto Supply Co., 129 S. Elizabeth St	Lima
Morris Hdw. Co	McConnellsville
Malta Hdw. Co	Malta
Buchanan Auto Supply Co., 15 W. Third St	Mansfield
Martin Hdw. Co., 11 N. Main St	Mansfield
Wagner Hdw. Co., 25 N. Park St	Mansfield
Union Hdw. Co., 51 Second St	Marietta
Thibaut & Mautz Bros., 119 Center St	Marion
United Electric Supply Co., 126 E. Center St	Marion
Boyd, Earl C., Sixth & Hickory Sts	Martins Ferry
Baxter, T. M	Middle Point
Baldwin, W. E	Montville
Alkire Bros	Mount Sterling
Newark Auto Supply Co., 77 E. Main St	Newark
Norwalk Garage & Supply Co., 98 E. Main St	Norwalk
Watson, Miles J., 26 S. Main St	Oberlin
Hibbs Hdw. Co	Portsmouth
Jaspersen Supply Co., 107 Spring St	St. Marys
Motor Mart Co., 118 W. Main St	Springfield
Root, H. G. Co., 130 Washington Pl	Springfield
Low Bros., 631 Market St	Steubenville
Steubenville Hdw. & Supply Co., 600 Market St	Steubenville
Swan, Bower Co., 530 Market St	Steubenville
Atwood Co., Jefferson & 11th Sts	Toledo
Bostwick-Braun Co., Summit & Monroe Sts	Toledo
Kirk, Ersa E., 719 Jefferson Ave	Toledo
Pennsylvania Rubber & Supply Co., 342 Erie St	Toledo
Roberts-Toledo Co., 13th & Adams St	Toledo
Sattler, Peter Co., 414 Monroe St	Toledo
Service Tire & Supply Co., 220 Erie St	Toledo
Simmons Hdw. Co., 48 S. Erie St	Toledo
Toledo Motor Supply Co., 99 Main St	Toledo
Toledo Rubber Co., 428-30 Summit St	Toledo
Toledo Tire & Supply Co., 241-43 Erie St	Toledo
Union Supply Co., 231-35 Superior St	Toledo
Wilcox, M. I. Co., 110 11th St	Toledo
Smith Auto Supply Co., 3 N. Market St	Troy
Wadsworth Tire & Supply Co., 115 Broad St	Wadsworth
Heinl Electric Co., 15 Auglaize St	Wapakoneta
Park, Edw. Co., 27 Market St	Warren
Warren Hdw. Co	Warren
Brigham Guilford & Co	Wauseon
Reynolds Hdw. Co	Wauseon
Wellston Hdw. Co., Second St. & Ohio Ave	Wellston
Rogat, Carl	Wickliffe
Hunter, S. A. & Sons	Willard
Advance Sales Co., Lincoln & Phelps Sts	Youngstown
D. E. Normandie & Son, F. L., 24 S. Phelps St	Youngstown
McKelvey, G. M. Co	Youngstown
Pennsylvania Rubber & Supply Co	Youngstown
Stambaugh Thompson Co	Youngstown
Tire Shop, 1306 Market St	Youngstown

OKLAHOMA.

Oklahoma Oil & Auto Supply Co., 200 Main St	Ardmore
Lumbard Tire & Supply Co., 108 E. Fourth St	Bartlesville
Motor Supply Co., Second & Dewey Sts	Bartlesville
Welch Wholesale Hdw. Co., 105 S. First St	Clinton
White & Smith Hdw. Co., 515 Frisco St	Clinton
Bonerdrake Hdw. & Implt. Co., 101 Rock Island Ave	El Reno
Elk City Auto Supply House	Elk City
Motor Supply Co., 501 N. Independence Ave	Enid
Lewis, W. P. & Son, 304 Main St	Hobart
Bodger, H. C. Hdw. Co., Kiefer St	Kiefer
McAlester Auto & Supply Co	McAlester
Russell Hdw. Co., Second St	McAlester
Lumbard Tire & Supply Co., 435 W. Broadway	Muskogee
Burwell, Smith Co., 408 Broadway	Oklahoma City
Burwell, J. P. Supply Co., 323 N. Broadway	Oklahoma City
Lumbard, John Tire Co., 615 N. Broadway	Oklahoma City
O. K. Auto Supply House, 412 N. Broadway	Oklahoma City
Pettee, W. J. & Co., 121-3 W. Main St	Oklahoma City
Richards & Conover Hdw. Co., 1st & Rob'son Sts	Oklahoma City
Severin Tire & Supply Co., 5th St. & Broadway	Oklahoma City
Sharp Auto Supply Co., 406 N. Broadway	Oklahoma City
U. S. Rubber Co., 508 N. Broad St	Oklahoma City
Wolff-Eagen Motor Supply Co., 511 N. B'dway	Oklahoma City
More, John M., Fifth St. & Morton Ave	Okmulgee
Sapulpa Auto Supply Co., 201 E. Hobson Ave	Sapulpa
Union Hdw. Co	Sapulpa
Carnation Auto Sales Co., 300 E. Second St	Tulsa
Southern Hdw. Co., 317 S. Main St	Tulsa
Tulsa Motor Supply Co., 202 E. Second St	Tulsa
Tulsa Rubber & Vulcanizing Co., 411 S. Boulder St	Tulsa
Walsh & Johnson Electric Co., 219 S. Main St	Tulsa
Western Auto Supply Co., 5th & Boulder Ave	Tulsa
Steele Hdw. Co	Waurika

OREGON.

Ralston Electric Supply Co., 311 W. Second St	Albany
Basche-Sage Hdw. Co., 1825-29 Main St	Baker
Bandon Hdw. Co	Bandon
McNair Hdw. Co., 27 First St	Bandon

Franz, E. A. Co	Hood River
Stewart Hdw. & Furn. Co	Hood River
The Gunnery, Front St	Marshfield
Morgan Hdw. Co	Myrtle Creek
Allen-Knight, 650 Main St	Pendleton
Pendleton Rubber & Supply Co., 305 E. Court St	Pendleton
Archer & Wiggins Co., Sixth & Oak Sts	Portland
Auto Parts Supply Co., 82 Sixth St	Portland
Ballou & Wright, Broadway & Oak Sts	Portland
Chanslor & Lyon Co., Broadway & Couch Sts	Portland
Marshall-Wells Co., 15th & Lovejoy Sts	Portland
Marx, Roy H., 414 Stark St	Portland
Robertson Hdw. & Steel Co., 34 Second St	Portland
St. Johns Hdw. Co., 102 N. Jersey St	Portland
Strow, George C. Co., Oregonian Bldg	Portland
Talbot Auto Supply Co., 72 Broadway	Portland
U. S. Rubber Co., 26 N. 5th St	Portland
Walter, John A. Co., 54 Sixth St	Portland
Western Electric Co., 14 Union ave	Portland
Winters, A. J., 67 6th St	Portland
Shipp, Watt Co., 132 S. Commercial St	Salem
Cates & Co., 312 Washington St	The Dalles

PENNSYLVANIA.

Allentown Auto Supply Co., 1014 Hamilton St	Allentown
Burger, Ben B., 17 S. 7th St	Allentown
Hersh, F. Hdw. Co., 825-27 Allentown Ave	Allentown
I. X. L. Tire & Supply Co., Sixth & Linden Sts	Allentown
Motor Accessories Co., 1111 Hamilton St	Allentown
National Auto Supply Co., 628 Turner St	Allentown
General Motor Supply Co., 1110 15th St	Altoona
Ardmore Hdw. Co	Ardmore
Lyons, Edw. J., 26 W. Lancaster Ave	Ardmore
McConnell Bros., 919 Center St	Ashland
Judson & Tyler, 21 N. Main St	Ashley
Heverly, J. O., 4-10 Allegheny St	Bellefonte
Potter-Hoy Hdw. Co	Bellefonte
New, Geo. J., 57 E. Market St	Blairsville
Kauffman Electric Co., 124 W. Main St	Bloomsburg
Reber, W. McK., 44 W. Main St	Bloomsburg
Wells, J. G, Market Square	Bloomsburg
Bradford Rubber Works, Pine St	Bradford
Emery Hdw. Co	Bradford
Auto Tire & Supply Co., 119 E. Diamond St	Butler
McClung, W. E. & Son, 127 E. Cunningham St	Butler
Sterling Auto Supply Co., 116 W. Cunningham St	Butler
Washabaugh, J. S., 100 Central Ave	Canonsburg
Wynne Bros., Main St	Canton
Cunningham, Jos. J., 119 E. Main St	Carnegie
Benjamin, E. H., 1203 W. Third St	Chester
Johnson, C. J	Cicora
Auto Supply Co., 18 S. Third St	Clearfield
Welliver. W. W., 313 Mill St	Danville
Hewes, Walter L., 864 Main St	Darby
Coleman, J. Dick	Dayton
Clymer's Dept. Store, 40 W. State St	Doylestown
Hibner-Hoober Hdw. Co., 12 Brady St	Dubois
Moulthrop Bros., 223 W. Long Ave	Dubois
Auto Tire Repair Co., 220 S. Third St	Easton
Miller, Thos. T. Hdw. Co., 32 N. Fourth St	Easton
Way Bros., 29 S. Third St	Easton
Butzer Motor Co., S. State St	Ephrate
Erie Cycle & Supply House, 18 State St	Erie
Erie Tire & Repair Co., 1317 State St	Erie
Hillard & Yokes Co., 21 N. Park Row	Erie
India Rubber Co., 1323 State St	Erie
Roth Cadillac Co., 1117 State St	Erie
Strauss-Dilcher Auto Supply Co., 701 Peach Ave	Erie
United Hdw. & Supply Co., 913 State St	Erie
Franklin Auto Supply Co., 1111 Liberty St	Franklin
Franklin General Eqpt. Store, 1257 Otter St	Franklin
Martin, W. E., 524 Center St	Freeland
Horn & Devling, 29 Main St	Galeton
Temple Hdw. Co., 214 N. Pennsylvania Ave	Greensburg
Muntz-Wright Co., Main St	Greenville
Burns Bros., 1507 N. Sixth St	Harrisburg
Front Market Motor Supply Co., 107 Market St	Harrisburg
Mather Co., E., 204 Walnut St	Harrisburg
Myers Accessory House, Cameron & Mulberry Sts	Harrisburg
Square Deal Auto Supply Co., 1406 N. Third St	Harrisburg
Standard Auto Supplies Co., 113 Market St	Harrisburg
Hazleton Mchy. & Supply Co., 242 N. Broad St	Hazleton
Wagner Bros. Hdw. Co., 345 W. Broad St	Hazleton
Woodring. Jere & Co., 206 W. Broad St	Hazleton
Miller Hdw. Co., C. H., Washington St	Huntingdon
Johnstown Auto Co., 101 Main St	Johnstown
Swank Hdw. Co., Main St	Johnstown
French Bros., 531 Market St	Kingston
General Auto Supply Co., 117 E. Ming St	Lancaster
Herr & Co., 9 E. King St	Lancaster
Reilly Bros. & Raub, 46 N. Queen St	Lancaster
Steinman Hdw. Co., 28 W. Ming St	Lancaster
Auto Supply Store, 313 Depot St	Latrobe
Franciscus Co., 124 Market St	Lewiston
Sheary, Teo W., 50 Valley St	Lewiston
Myers, A. B. & Son, N. Market St	Ligonier
Auto Supply Co., Fallan Pl	Lock Have
Johnson, Henry G. & Co., 9 Main St	Luzerne
Sanner Hdw. Co., 9 E. Center St	Mahoney City
Miller Hdw. Co	Marietta
Graham, P. B., 962 Water St	Meadville
Hauck Bros., W. Main St	Mechanicsburg
Guss, E. M. & Sons	Mifflintown
Sanner Hdw Co	Minersville
Myers & Myers, 319 W. Main St	Monongahela
Cooley & Son	Montrose
Sanner Hdw. Co	Mt. Carmel
Edward Hdw. Co., 17 Main St	Muncy
Courtwright Supply Co	Murrysville
Anderson Hdw. Co	New Bethlehem
Atwell Auto Supply Co., 103 Mercer St	New Castle
New Kensington Motor Sup. Co., 501 9th St	New Kensington
Colonial Garage & Supply Co., 123 Main St	Norristown
Keyser, John B., Jr., 201 W. Main St	Norristown
Quillman, Benj. Hdw. Co	Norristown
Beers Bros. Co., Beers Bldg	Oil City
Riesehman Supply Co., 312 Seneca St	Oil City
Allegheny Auto Sup. Co., 132 W. Allegheny Ave	Philadelphia
Auto Specialties Co., 156 N. Broad St	Philadelphia
Berlin Bros., 7272 Woodland Ave	Philadelphia
Berrodin Rubber Co., 713 N. Broad St	Philadelphia
Cahall Motor Supply Co., Broad & Parrish Sts	Philadelphia
Carroll, Geo. L. Co., 719 Broad St	Philadelphia
Cooke, J. & Co., 1810 Market St	Philadelphia
Eliott-Lewis Electrical Co., 1017 Race St	Philadelphia
Fortieth St. Auto Supply Co., 28 N. 40th St	Philadelphia
Gaul, Deer & Shearer Co., 217 N. Broad St	Philadelphia
Gimbel Bros., Ninth & Market Sts	Philadelphia
Grims Auto Supply Store, 234 N. Broad St	Philadelphia
H. N. A. Auto Supply House, 2822 N. Broad St	Philadelphia
Kelm Supply Co., 1227 Market St	Philadelphia
Kelm Supply Co., 1227 Market St	Philadlephia
Kerr Auto Supply Co., W. F., 1800 Frankford Ave	Philadelphia
Lit Bros., Eighth & Market Sts	Philadelphia
Locust Auto Supply Co., 1411 Locust St	Philadelphia
McCullough & Son, J. H., 219 N. Broad St	Philadelphia
Manufacturers' Supplies Co., Cherry & Juniper Sts	Philadelphia
Metropolitan Auto Supply Co., 716 N. Broad St	Philadelphia
Miller, Chas. E., 318 N. Broad St	Philadelphia
Miller-Eoret Co., 7 N. Fifth St	Philadelphia
Motor Parts Co., 847 N. Broad St	Philadelphia
Naumann Hdw. & Sup. Co., 4324 Germantown St	Philadelphia
Hock, Geo. W. Co., 1504 Race St	Philadelphia
Petry, N. A. Co., 1307 Race St	Philadelphia
Philalelphia Auto Sup. Co., 928 N. Broad St	Philadelphia
Philadelphia Rubber Sup. Co., 620 N. Broad	Philadelphia
Roberts Electric Sup. Co., 1101 Race St	Philadelphia
Sachs, Wm. A., 1152 Germantown Ave	Philadelphia
Seltzer-Klahn Hdw. Co., 535 Market St	Philadelphia
Simmons Hdw. Co., 425 Arch St	Philadelphia
Smith, Chas. S., 1309 Race St	Philadelphia
Snellenburg, N. & Co., 12th & Market Sts	Philadelphia
Standard Sup. & Equip. Co., Cherry & 13th Sts	Philadelphia
Stewart Electric Co., 37 N. Seventh St	Philadelphia
Strawbridge & Clothier, 8th & Market	Philadelphia
Supplee-Biddle Hdw. Co., 513 Commerce St	Philadelphia
Times Sq. Auto Supply Co., 260 N. Broad St	Philadelphia
Walts Auto Supply Co., 1335 Mount Vernon St	Philadelphia
Wanamaker, John, Chestnut St	Philadelphia
Maurer & Son, J. L., Front St	Philipsburg
Philipsburg Hdw. Co	Philipsburg
Benjamin Hdw. Co. 206 Bridge St	Phoenixville
American Hdw. & Sup. Co., 43 Terminal Way	Pittsburgh
Automobile Acces. Co., Craig St. & Bigelow Blvd	Pittsburgh
Consumers Auto Supply Co., 306 Wood St	Pittsburgh
Double Day-Hill Electric Co., 719 Liberty Ave	Pittsburgh
Dyke Motor Supply Co., 600 Grant Blvd	Pittsburgh
Garels, J. G. & Co., 618 Penn Ave	Pittsburgh
Independent Tire Repair Works, 5901 Center Ave	Pittsburgh
Iron City Tire & Repair Co. 5868 Baum Blvd	Pittsburgh
J. & M. Auto Supply Co., 3565 Grant Blvd	Pittsburgh
Jackson Motor Supply Co., 5836 Baum Blvd	Pittsburgh
James Specialty Co., 5933 Baum Blvd	Pittsburgh
Kaufman Dept. Stores, Diamond & Smithfield Sts	Pittsburgh
Kaufman & Baer Co., Sixth Ave. & Smithfield St	Pittsburgh
Knight Tire Co., 3417 Bigelow Blvd	Pittsburgh
Logan, Gregg Hdw. Co., 12 19th	Pittsburgh
Miller & Woodward, 3751 Bigelow Blvd	Pittsburgh
Motor Supply Co., Baum Blvd. & Morewood	Pittsburgh
Penn Motor Supply Co., 5900 Penn	Pittsburgh
Pittsburgh Auto Equip. Co., 5933 Baum Blvd	Pittsburgh
Poplar Supply Co., Grant Blvd. & 33rd	Pittsburgh
Reineman, Walter G., 108 W. Stockton, N. S	Pittsburgh
Smith & Bros., Lewis G., 138 Whitefield	Pittsburgh
Standard Auto Supply Co., 624 Foreland	Pittsburgh
Course Hdw. Co., 30 N. Main	Pittston
Blehl, Geo. M., 204 S. Center	Pottsville
Bright Hdwe. Co., 109-11 Center	Pottsville
Accessory Store, 133 Main	Punxsutawney
Punxsutawney Hdw. Co., 110 E. Mahoning	Punxsutawney
General Auto Supply Co., 20 N. Fifth	Reading
Bard Hdw. Co., 800 Penn	Reading
Bright & Co., 8th & Elm	Reading
Fry, Keyser, 616 N. 8th	Reading
Hoff & Bro., 403 Penn Sq	Reading
Reading Automobile Co., 126 N. 5th	Reading
Auge Auto Sales & Supply Co., 522 N. 9th	Reading
Hafer, E. E. Co., 408 N. 9th	Reading
Jenkins Vulcan Spring Co., 538 Franklin	Reading
Kreider, G. W., 121 N. 9th	Reading
Motor Supplies Co., 212 Penn	Reading
National Auto Supply Co., 244 N. 9th	Reading
Nuebling, J. G., 947 Penn	Reading

Overland Harper Co., 525 Franklin..................Reading
Penn Cycle & Motor Co., 355 Penn..................Reading
Peoples Auto Supply Co., 28 S. 5th..................Reading
Reading Tire & Accessory Co., 28 S. 5th..............Reading
Renninger, W. I., 620 N. Front.....................Reading
Subway Garage, 1000 N. 9th.......................Reading
Youse Co., E. S., 46 N. 5th........................Reading
American Auto Supply Co., 527-29 Linden...........Scranton
Auto Supply Co., 320 Adams.......................Scranton
Barton, Samuel, 413 Linden.......................Scranton
Bates Motor Co., 515 Mulberry.....................Scranton
Conrad Motor Car Co., 400 Wyoming................Scranton
De Witt, O. D., 730 Wyoming.......................Scranton
Ernst & Beaver Co., 318-28 Forest Ct...............Scranton
Etzrodt Bros. Vulcanizing Co., Pittston, Cor. Willow..Scranton
Felton Motor Car Co., Cedar, Cor. Birch.............Scranton
Gruber, E. D., 135 N. Main.........................Scranton
Hy Grad Tire & Supply Co., 347 Adams..............Scranton
Kendall, Sandome Motor Co., 541-43 Wyoming........Scranton
Lansing Hdw. Co., 140 Washington..................Scranton
Marshall, R. B. Co., 14 Adams.....................Scranton
Nicholas, D. G. Co., 122 Adams....................Scranton
Reap, Henry, 127 S. Main..........................Scranton
Scott, Charles B. Co., 119 Franklin.................Scranton
Scranton Motor Car Co., 430 Dix Ct..................Scranton
Signor's Garage, 328 Wyoming.....................Scranton
Simrell, Virgil A. & Son, 529-33 Linden.............Scranton
Standard Motor Car Co., 318 Forest Ct...............Scranton
Standard Top Co., 1201 Wyoming...................Scranton
Susquehanna Motor Car Co., 228 Adams..............Scranton
Weinberg, Samuel Auto Supply Co., 300 Penn.......Scranton
Sanner Hdw. Co.. Independence.....................Shamokin
Hackett & Sons, Geo. W., 325 Market................Suneuhy
Owens Hdw. Co., E. K., 205 Main..................Susquehanna
Becker, Henry, 225 Rowe..........................Tamaqua
Tarentum Hdw. Co., 409 Corbet.....................Tarentum
Sigsworth, S. S....................................Tionesta
Chaffee, E. F. W., 341 Pa. Av. W.....................Warren
Pickett Hdwe. Co., Hickory & Third...................Warren
Auto Accessories Co., 201 S. Main...............Washington
Back & Benedict Hdw. Co., 86 W. Main...........Waynesboro
Rinehart, Daniel, 22 W. Main......................Waynesboro
Waynesburg Hdw. Co..............................Waynesburg
Snyder & Son, A. F................................Weissport
American Auto Acces. Stores, 35 W. Market......Wilkes Barre
American Auto Supply Co., 39 W. Market........Wilkes Barre
Auto Battery & Specialty Co., 41 S. Washington..Wilkes Barre
Auto Equipment Co., 160 S. Main...............Wilkes Barre
Begun, Israle, 256 N. River.......................Wilkes Barre
Bradbury Battery Service Co., 614 Market K....Wilkes Barre
Brodmarkle, Wm. E., 5 E. Main...................Wilkes Barre
Challenger's Garage, 219 S. Washington..........Wilkes Barre
City Automobile Co., 575-79 S. Main.............Wilkes Barre
Commercial Motor Car Co., 59 Public Sq..........Wilkes Barre
Cut Price Tire Co., 90 Washington...............Wilkes Barre
Davenport, H. L, 682 Wyoming D.................Wilkes Barre
Davis Auto Supply Co., 470 Main.................Wilkes Barre
Dorranceton Auto Top & Bicy. Shop, 15 Union D..Wilkes Barre
Economy Automobile Supply Co., 273 S. Main....Wilkes Barre
French Bros., 631 Market........................Wilkes Barre
Garney's Garage, 22 Walnut......................Wilkes Barre
General Motor Equipment Co., 234 Wyoming K..Wilkes Barre
Gerstein, Max, 129 W. Main.....................Wilkes Barre
Goodyear Rubber Co., 57 S. Main................Wilkes Barre
Greene Auto & Parts Co., 256 N. River...........Wilkes Barre
Heller Sales Co., 24 N. Main.....................Wilkes Barre
Kaufer & Bean Motor Car Co., 46 Carey..........Wilkes Barre
Keystone Motor Co., 172 S. Washington..........Wilkes Barre
Kitsee Battery Co., 62 N. Main..................Wilkes Barre
Lackawanna Auto Co., 74 N. Main................Wilkes Barre
Lee, John W., 251 S. State.......................Wilkes Barre
Lewis & Bennett Hdw. Co., 8 N. Main.............Wilkes Barre
Lord, Charles, 184 Main S........................Wilkes Barre
Lowe Bros., Wyoming, Cor. Hoyt..................Wilkes Barre
Matheson, Frank F. Co., 694 Wyoming............Wilkes Barre
Maye & James, 987 Wyoming, F. F.................Wilkes Barre
Motor Car Supply Co., 151 S. Main...............Wilkes Barre
New System Auto Radiator Co., 27 S. Penna....Wilkes Barre
Noble, John, 195 Barney.........................Wilkes Barre
Overland Wilkes Barre Co., 120 S. Main........Wilkes Barre
Perma Loc Mfg. Co., 152 Horton.................Wilkes Barre
Plymouth Auto Supply Co., 22 W. Main..........Wilkes Barre
Posten Transfer Co., Inc., 33 N. Main...........Wilkes Barre
Rabinowitz, Jacob, 23 S. Stote...................Wilkes Barre
Roat, A. J. Supply Co., 660 Market...............Wilkes Barre
Sands Motor Car Co., 206 Carey..................Wilkes Barre
Sterling Garage, 34 N. Franklin..................Wilkes Barre
Susquehanna Motor Car Co., 37 N. Washington..Wilkes Barre
White Hdw. Co., 21 E. Market....................Wilkes Barre
Wilkes Barre Rubber Co., 156 S. Main............Wilkes Barre
Kline & Co., 21 Market Sq.......................Williamsport
Lieb & Son, A. W., 27 W. Third...................Williamsport
Groff & Dolde, 411 Station.......................Wilmerding
Lewis Co., J. B.....................................Wyalusing
Beard & Co., H. B., Center Sq..........................York
General Auto Supply Co., 30 W. Market.................York
Myers, Tarper F., 286 W. Market........................York
York Auto Supply Co., 309 W. Market...................York

RHODE ISLAND.

Newport Auto Supply Co., 15 Long Wharf............Newport
Gallagher & Mooney, 318 Main....................Pawtucket
Rock Bros., 67 East..............................Pawtucket
Toole Co., Wm. K., 24 East.......................Pawtucket
American Radiator Works, 47 Mathewson.........Providence
Apco Mfg. Co., 702 Eddy.........................Providence
Arnold, Hough Co., 130 Washington...............Providence
Auto Electric Repair Co., 152 Broadway..........Providence
Auto Medal Works, 123 Fountain..................Providence
Auto Radiator Works, 77 Sabin...................Providence
Belcher & Loomis Hdw. Co., 91 Weybosset.........Providence
Aborn Tire Shop, 113 Aborn......................Providence
Blackstone Tire & Rubber Co., Inc., 94 Empire......Providence
Broadway Tire Exchange Co., Inc., 105 Broadway..Providence
Bliss, Albert & Co., 130 Empire...................Providence
Cady, C. A. Co., 97 Broadway.....................Providence
Church, E. C. Co., 1-3-5 Eddy.....................Providence
Congdon & Carpenter Co., 102 N. Main............Providence
Central Auto Tire Co., 17 Dorrance...............Providence
Defelice, Frank, 199 Knight.......................Providence
Deluxe Oil & Supply Co., 162 Broadway...........Providence
Doughty Tire Co., 115 Wickenden..................Providence
Economy Auto Supply Co., 30 W. Exchange.........Providence
Edwards Motor Car Co., 186 Washington..........Providence
Empire Auto Supply Co., 84 Empire...............Providence
Flint, Dutee W., 172 Washington..................Providence
Foster, Smith Co., 7 Dorrance.....................Providence
Franklin Auto Supply Co., 10 Franklin............Providence
Feltham, C. Hector, 76 Branch....................Providence
Firestone Tire & Rubber Co., 50 Weybosset.......Providence
Fisk Rubber Co. of N. Y., 134 Fountain...........Providence
Goodyear Tire & Rubber Co., 91 Broadway.........Providence
Goodby. Rankin Co.. 57 Washington...............Providence
Goodrich, B. F. Rubber Co.. 60 Broadway..........Providence
Graham, Thomas F., 640 Smith....................Providence
Green, William F., 1155 Broad....................Providence
Hacking Mfg. Co., 15 Friendship.................Providence
Howland, Clifford H., 114 Elmwood...............Providence
Hardman Tire Agency, 227 Broad..................Providence
Hope St. Auto Supply Co., 729 Hope..............Providence
Kelly Springfield Tires, 83-91 Weybosset..........Providence
Kemp, Jack, 353 Washington.......................Providence
Law, Wm. Co., 123 Aborn..........................Providence
Lee Tire & Rubber Co., 151 Broad.................Providence
McDonnell, James E., 361 Smith...................Providence
Magneto Parts Co. of R. I., 101 Fountain..........Providence
Matteson, Curtis W.. 151 Smith & Point...........Providence
Metallic Shell & Tube Co., 121 Sabin.............Providence
Majestic Tire Co., Washington, Cor. Empire.......Providence
Murphy Tire & Rubber Co., Inc., 166 Fountain.....Providence
Nass & Glover, 115 Empire........................Providence
Olsen Tire Co., 98 Fountain.......................Providence
Porter, Harris H., 35 Clifford.....................Providence
Post & Lester Co., 140 Fountain...................Providence
Providence Auto Equipment Co, 69 Mathewson....Providence
Providence Auto Spring Mfg. Co., 52 Point........Providence
Providence Storage Battery & Sup Co., 92 Empire..Providence
Providence Tire Shop, 29 Franklin................Providence
Radiator Service Co., 121 Sabin...................Providence
Reynolds, Charles B., 57 Weybosset...............Providence
Rhody Auto Supply Co., 120 Empire...............Providence
Rosen, Sigmund, 28 Franklin......................Providence
R. I. Double Thread Tire Co., 25 Franklin.........Providence
Samson Auto Top & Equipment Co., 105 Fountain..Providence
Sterling Tire Corp., 234 Broad.....................Providence
Stranger, Walter A. Co., 37 Friendship............Providence
Setchell, Charles K., 1294 Broad..................Providence
Standard Auto Supply Co.. 28 Franklin............Providence
Storage Battery & Elec. Service Co., 57 Broadway..Providence
Sundlin, David, 107 Charles.......................Providence
Times Sq. Auto Supply Co., 184 Fountain..........Providence
Tire Service Exchange, 121 Empire................Providence
T. & M. Storage Battery Co., 102 Empire..........Providence
United States Tire Co., 18 Snow..................Providence
Waite Auto Supply Co., 64 Exchange Pl...........Providence
Webb Mfg. Co., 303 Butler Exchange..............Providence
Tucker Co., L. W., Opposite Depot..................Wakefield
Ritchot Auto Supply Co., Edmond I., 3 Front....Woonsocket

SOUTH CAROLINA.

Allendale Hdw. Co................................Allendale
Sullivan Hdw. Co.. Main..........................Anderson
Matheson Alexander J. Jr., 105 Marlboro..........Bennettsville
Auto Tire & Equipment Co., 235 Meeting...........Charleston
Bailey, Lebby Co., 182 Meeting....................Charleston
Cameron & Barkley Co., 160 Meeting...............Charleston
Franke Co., C. D., 159-72 Meeting..................Charleston
Carolina Tire & Accessory Co., 1709 Main...........Columbia
Lorick & Lawrence, 1629 Main......................Columbia
Coggeshall Hdw. Co...............................Darlington
Alderman, Jr., D. W. E., Evans St....................Florence
Standard Tire & Rubber Co., 121 McBee Ave........Greenville
Sullivan, Markley Hdw. Co.........................Greenville
Harmon Drug Co., Main & Public Sq...............Lexington
Marion Hdw. Co., Main................................Marion
Walker & Bowman, 1 Court House Sq............Orangeburg
Rock Hill Supply Co., E. Main......................Rock Hill
Motor Supply Co., 147 W. Main...................Spartanburg

Spartan Hdw. Co., Main	Spartanburg
Union Hdw. Co., 8 W. Main	Union

SOUTH DAKOTA.

Brownell Co., 120 N. Lincoln	Aberdeen
Spaulding Supply Co., 311 S. Lincoln	Aberdeen
Huron Auto Supply Co	Huron
Hagen Christiansen Hdw. Co	Irene
Mitchell Auto & Supply Co	Mitchell
White & Parker Hdw. Co	Hurdo
Brownell Co., H. F., 312 9th	Sioux Falls
Dakota Iron Store Co., Fifth & Main	Sioux Falls
Hanson & Tyler Auto Co	Sioux Falls
L. & L. Motor Supply Co., 315 W. 9th	Sioux Falls
Tri State Accessory Co., 119 S. Main	Sioux Falls

TENNESSEE.

Abeel Bros., 1292 McCallie	Chattanooga
Auto Supply Co., 609 Broad	Chattanooga
Chatta Auto Co.. 617 Broad	Chattanooga
Friedman Tire & Rubber Co., 1141 Market	Chattanooga
Hamilton Motor Car Co.. 601 Chestnut	Chattanooga
Hassler Bros., 816 Chestnut	Chattanooga
Mitchell Auto Co., 633 Broad	Chattanooga
Scott Tire Co., 823 Broad	Chattanooga
Sanford Bros., 615 Broad	Chattanooga
Southern Auto Supply Co., 613 Broad	Chattanooga
Wallace Buggy Co., 912 Market	Chattanooga
Elder Conroy Hdw. Co	Clarksville
Laden, R. E., Vine	Dyer
Tennessee Hdw. Co., 203 Main	Humboldt
McGee, Ross Hdw. Co	Jackson
Parrott Motor Co., H. R., Ashe St	Johnson City
Appalachian Rubber Works, 315 W. Cumberland	Knoxville
Briscoe, Wm. N. Tire & Supply Co., 811 S. Gay	Knoxville
Cadillac Sales Co., Inc., 719-21 S. Gay	Knoxville
Central Tire & Supply Co., 304 W. Church	Knoxville
Clapp, R. T. Battery Co., 511 State	Knoxville
McNutt & Co., 813 S. Gay	Knoxville
Overland Knoxville Co., 617-19 S. Gay	Knoxville
Standard Tire Co., 715 S. Gay	Knoxville
Truan. C. A., 325 Walnut	Knoxville
Wright, Curze Hdw. Co., 212 S. Gay	Knoxville
Donelson Auto Supply Co., 231 Monroe	Memphis
Electric Novelty Co., 123 Monroe	Memphis
Lytle Electric Co., 41 S. Second	Memphis
Ozburn, Abston & Co., 610-12 Monroe	Memphis
Times Sq. Auto Supply Co., 174 S. Main	Memphis
Baylor Co., C. E., 105 Main	Morristown
Auto Supply Co., 804 Broadway	Nashville
Blair, J. T., 615 Commerce	Nashville
Chumbley & Co., John E., Stahlman Bldg	Nashville
Craig & Shoffner Hdw. Co., 227 Second N	Nashville
Gray & Dulley Hdw. Co., Third	Nashville
Hirsic Auto Supply Co., 901 Broadway	Nashville
Motor Service Station, 908 Broadway	Nashville
Springfield Accessory Co., Main	Springfield

TEXAS.

Hughes Co., Ed. S	Abilene
Wooten Motor Co., J. P., 1134-66 N. 2nd	Abilene
Healy, Wm. L	Alvin
Amarillo Hdw. Co	Amarillo
Auto Store, Fifth & Tyler	Amarillo
General Auto Supply Co., 113 Fifth	Amarillo
Lyles Tubloss Hdw. Co., 511 Polk	Amarillo
Morrow, Thomas Hdw. Co	Amarillo
Maxey Hdw. Co	Anson
Richardson & Co., W. H., 416 Congress	Austin
Southwestern Auto Supply Co., 106 W. Fifth	Austin
Tips Co., Walter, 710 Congress	Austin
Wroe & Sons, W. T., 417 Congress	Austin
Le Tulle Mercantile Co	Bay City
Quick Service Tire Co., 175 Pearl	Beaumont
Valley Plbg. & Supply Co., 1104 Washington	Brownsville
Austin, Hall Hdw. Co	Brownwood
Scott & Sons, T. W., 211 S. Main	Cleburen
Auto Supply Co	Corsicana
Tatum Hdw. Co., 200 Collins	Corsicana
Smith, Murchison Hdw. Co	Crockett
Bale Tire & Rubber Co., E. L., 2029 Main	Dallas
Butler Bros., Servay. S. E. Cor. Young	Dallas
Electric Appliance Co., 1111 Jackson	Dallas
Ferris. Dunlop Auto Supply Co., 2029 Commerce	Dallas
Fisk Co. of Texas, 2000 Commerce	Dallas
Huey & Philip Hdw. Co., 409 N. Lamar	Dallas
Johnsen, Hans, 2016 Commerce	Dallas
Schoelkopf Co., 806 Jackson	Jackson
Smith, Perry Electric Co., Wood & Lamar	Dallas
Times Square Auto Supply Co., 1020 Main	Dallas
Borderland Auto Supply Co., 363 Myrtle	El Paso
El Paso Cycle Works, 418 Myrtle	El Paso
Elk Auto Supply Co., 500 Mesa	El Paso
Krakauer, Zork & Moyes, 115 San Francisco	El Paso
Tri State Motor Co., 320 W. San Antonio	El Paso
Electra Hdw. Co	Electra
Texas Hdw. & Supply Co	Electra
Farmers Hdw. & Saddlery Co	Forney
Beale Auto Supply Co., 115 W. 10th	Fort Worth
Fort Worth Auto Supply Co., 119 Commerce	Fort Worth
General Auto Supply Co., 603 Commerce	Fort Worth
Mills Cash Auto Supply Co., 281 W. 10th	Fort Worth
Panther Auto Supply Co., 607 Commerce	Fort Worth
Texas Auto Supply Co., 715 Commerce	Fort Worth
Cummings & Co., 302 23rd	Galveston
Galveston Motor Car Co., 20th & Ave. E	Galveston
Gregory Auto Supply Co., 509 23rd	Galveston
Hewding, Chas., 2308 Postoffice	Galveston
Blair Hdw. Co	Gatesville
Matthews Royalty Co	Gatesville
Barden Electric Mchy. Co., 111 Main	Houston
Bering Co., C. L., 1009 Capitol	Houston
Bering, Cortes Hdw. Co., Praire & Milan	Houston
Glass & Sons, Geo. L., 902 Main	Houston
Hawkins Auto Supply Co., G. W.. Carter Bldg	Houston
Meyer Co., Jos. F., 802 Franklin	Houston
Preen Iron & Steel Co., 700 N. San Jacinto	Houston
Stadtler Auto Supply Co., 805 Fannin	Houston
Seeliger Auto Supply Co	Lockhart
Goodrich, Bain Auto Co	Marlin
Wilson Bros. Mercantile Co	Mart
Palestine Hdw. Co	Palestine
Dulaney & Sons, W. F., 56 S. 20th	Paris
Aycock Auto Supply Co., 25 W. Twohig	San Angelo
Auto Owners Supply Co., 215 Ave. C	San Antonio
Converse Auto Supply Co., Travis & Solidad	San Antonio
Fisk Co. of Texas, 204 Ave. C	San Antonio
Frank Saddlery Co., L., 217 W. Commerce	San Antonio
Motor Car Supply Co., 205 E. Travis	San Antonio
Peden Iron & Steel Co	San Antonio
Romana Auto Supply Co., 214 E. Romana	San Antonio
Hardwicke, Etter Co	Sherman
Roberts, Sanford & Taylor Co	Sherman
Penick. Hughes Co., 102 E. Hamilton	Stamford
Hoch Hdw. Co., 202 W. Second	Taylor
Temple Auto & Supply Co., N. First & Adams	Temple
Childress, B. M.. 112 E. Moore	Terrell
Barnard Auto Supply Co., 217 Maple	Texarkana
Taylor Hdw. Co	Tyler
Walsh Hdw. Co	Tyler
Archenhold Auto Supply Co., 704 Franklin	Waco
Hays Tire Co., Eighty & Franklin	Waco
Herrick Hdw. Co.. N. Side Sq	Waco
McCauley, Ward Motor Supply Co., 118 N. Fourth	Waco
Padgitt Co., Tom, Padgitt Bldg	Waco
Rosen & Cory, 706 Austin	Waco
Spencer, Carroll Co	Waco
Waco Auto Supply Co. 512 Franklin	Waco
Maxwell Hdw. Co	Wichita Falls
Ranile Auto Supply Co., 906 Scott	Wichita Falls
Western Auto Supply Co., 718 Indiana	Wichita Falls

UTAH.

Browning Auto & Supply Co., 2450 Grant	Ogden
Cheesman Auto Co., 2566 Washington	Ogden
Lowe Co., Geo. A., 2326 Washington	Ogden
Ogden Electric Supply Co.. 2430 Washington	Ogden
Read & Bros. Co., J. G., 334 24th	Ogden
Auto Supply Co., 426 Main	Salt Lake City
Capital Electric Co., 23 W. First	Salt Lake City
Consumers' Auto Supply Co., 126 E. Third	Salt Lake City
Eardley Bros., 37 E. First, S	Salt Lake City
Electric Supply Co., 243 State	Salt Lake City
Guarantee Tire & Rubber Co., 427 S. Main	Salt Lake City
Inter Mountain Electric Co., 59 E. Fourth, S	Salt Lake City
Monarch Motor Co., 125 E. Second, S	Salt Lake City
Osborne Auto Tire & Sup. Co., 24 E. S. Temple	Salt Lake City
Salt Lake Hdw. Co., 257 Main	Salt Lake City
Strevell, Paterson Hdw. Co., 130 S. W. Temple	Salt Lake City

VERMONT.

Averill & Co., C. W., 83 Main	Barre
Hagar Hdw. & Paint Co., 174 College	Burlington
Strong Hdw. Co., 206 Main	Burlington
Vermont Hdw. Co., Park Ave	Burlington
Perley & Co., M. P	Enosburg Falls
Capital Hdw. Co., 81 Main	Montpelier
Powell & Comings Co., 131 Main	Richford

VIRGINIA.

Bristol Hdw. Corp., 42 Moore	Bristol
Mitchell, Powers Hdw. Co., 609 State	Bristol
Charlottesville Hdw. Co., 316 E. Main	Charlottesville
Lipscomb Hdw. Co., Main	Chase City
Roberts Hdw. Co	Chase City
Fudge Hdw. Co.. C. A	Covington
Piedmont Hdw. Co., 544 Craighead	Danville
Freeman. George W	Exmore
Bugg, Chas. F.. Main	Farmville
Horton's Auto Supply House, 801 Main	Fredericksburg
Watson, Jr., S. J., 16 E. Queen	Hampton
Barker, Jennings Hdw. Co., 1000-6	Lynchburg
Economy Auto Supply Co., 210 Ninth	Lynchburg
Cochenour, Wm. J	Maurertown
Gayle Supply Co., J. P., 307-13 27th	Newport News
Coburn Motor Car Co., Coburn Blk	Norfolk
Grover, Wm. H., 609 Cove	Norfolk

Norfolk Motorist Supply Co., 616 Granby..............Norfolk
Ricketts Drug Store, Main............................Orange
Auto Supply Co., 26 S. Sycamore...................Petersburg
Leonard Hdw. Co., Chas., 24 E. Bank.............Petersburg
Stockdell, Myers Hdw. Co., 30 S. Sycamore.........Petersburg
Williamson Auto Supply Co., 101 W. Washington..Petersburg
Bloch Co...Pocahontas
Pocahontas Motor Co...............................Pocarontas
Lindsay & Co., E. P., 518 Middle..................Portsmouth
Price Hdw. Co., Second & Jefferson...................Pulaski
Benton, Bailey Co., 711 Main......................Richmond
Capital Auto Supply Co., 218 N. 9th...............Richmond
Crump Co., Benj. T., 1307 Main....................Richmond
Dennis Auto Supply Co., 301 W. Broad..............Richmond
Huffman Auto Store, 725 W. Broad..................Richmond
Kaehler Accessories Co., 219 W. Broad.............Richmond
Lane, Bowles Co., 321 W. Broad....................Richmond
Mayo Auto Supply Co., 535 W. Broad................Richmond
Motor Supply Co., 713 W. Broad....................Richmond
Standard Auto Equipment Corp., 417 W. Broad.......Richmond
Talaman Auto Supply Co., 627 E. Main..............Richmond
Virginia Carolina Hdw. Co., 1318 E. Main..........Richmond
Watkins, Cottrell Co., 119 S. 14th................Richmond
Wells, W. C., 325 W. Broad........................Richmond
Winn Auto Supply Co., 1209 W. Broad...............Richmond
Engeley Auto Supply Co., 501 Commerce..............Roanoke
Meadows, Price Co., 114 E. Campbell................Roanoke
Motor Car Equipment Co., 412 S. Jefferson..........Roanoke
Augusta Tire & Accessory Co., 26 S. New............Staunton
Staunton Tire & Supply Co., 10 S. New..............Staunton
Gibbs Hdw. Co......................................Woodstock

WASHINGTON.

Auburn Furniture & Hdw. Co., 109 E. First............Auburn
Laube & Son, J. M., 1234 Elk.....................Bellingham
Morse Hdw. Co., 1025-39 Elk......................Bellingham
Blaine Auto Co.......................................Blaine
Minard & Co..Elma
Valley & Rubber Co., 3 S. Third................North Yakima
Yakima Hdw. Co., 102 E. Yakima.................North Yakima
Olympia Auto Supply Co., 218 Fourth.................Olympia
Marshall Johnson Hdw. Co...........................Republic
Arensburg Auto Supply Co., 906 E. Pike...............Seattle
Auto Tire & Supply Co., 701 Pine.....................Seattle
Auto Parts Supply Co., 812 E. Pike...................Seattle
Bailey, Drake Co., L. C., L. C. Smith Bldg...........Seattle
Ballou & Wright, 1515 12th...........................Seattle
Chandler, Dunlap Co., 75 Columbia....................Seattle
Chanslor & Lyon Co., 916 E. Pike.....................Seattle
Corwin, Abram Sales Co., Maritime Bldg...............Seattle
Ernst Hdw. Co., 514 Pike.............................Seattle
Grinwald Auto Supply Co., 702 E. Pike................Seattle
Lushington Electric Co., 1312 First..................Seattle
Northwestern Supply Co., 102 Prefontaine Pl..........Seattle
Pacific Auto Supply Co., 801 Union...................Seattle
Schwabacher Hdw. Co., 401 First S....................Seattle
Seattle Hdw. Co., 501 1st............................Seattle
Speiger & Hurlbut, 1333 Second.......................Seattle
Washington Auto Supply Co., 915 E. Pike..............Seattle
Western Electric Co., 84 Marion......................Seattle
Western States Motor Supply Co.......................Seattle
Whiton Hdw. Co., 104-14 First........................Seattle
Auto Parts Supply Co., 1102 First....................Spokane
Chanslor & Lyon Co., W., 927 First...................Spokane
Child, Day & Churchill, 1217 First...................Spokane
Dirks Motor Supply Co., 828 Second...................Spokane
Division St. Hdw. Co., 1803 Division.................Spokane
Holley, Mason Hdw. Co., 157 Howard...................Spokane
Kilmer & Sons Co., 1001 First........................Spokane
McGowan Bros. Hdw. Co., Howard & Railroad............Spokane
Marshall, Wells Hdw. Co., E. 131 Main................Spokane
Murray Lighting Co., E. W., 309 Riverside............Spokane
Schrimpf, Chas. G., 608 Monroe.......................Spokane
Farmers' Supply Co..................................Sprague
Auto Appliance Co, 754 Broadway......................Tacoma
Auto Parts Supply Co., 717 Pacific...................Tacoma
Chambers Co., Edwin, 730 Pacific.....................Tacoma
Chanslor & Lyon Co., 723 Broadway....................Tacoma
Square Shop, 1113 Tacoma.............................Tacoma
Whitehouse, Drumheller Co.......................Walla Walla
Ramey Hdw. & Implement Store.........................Waverly
Burbank, Thomson Supply Co., 115 Wenatchee.....Wenatchee

WEST VIRGINIA.

Kane & Keyser Hdw. Co., Grim Ave..................Belington
Harry & Co., W. H., 135 Princeton..................Bluefield
Whitlow Hdw. Co., M. G., 17 Princeton..............Bluefield
Inland Auto & Supply Co., 22 Kanawha..........Buckhannon
Sinsell Hdw. Co.....................................Cameron
Baldwin Supply Co., 22 Summers....................Charleston
Capital City Supply Co............................Charleston
Williams Hdw. Co., 507 Baltimore..................Clarksburg
James Specialty Co., Monroe.........................Fairmont
Acme Hdw. Co., Main.................................Fairview
Emmons, Hawkins Hdw. Co...........................Huntington
Dils & Sons Co., H. P., 211 6th..................Parkersburg
Lesterie, Earl J., 609 Juliana...................Parkersburg
Grant, Howard B.....................................Philippi
Reid's Auto Supply, 930 Market......................Wheeling
Rogers, Rarle Co., 12th & Main......................Wheeling

WISCONSIN.

Schalfer Hdw. Co., 816 College......................Appleton
Miller Hdw. Co......................................Bayfield
Beloit Auto Supply Co., 424 E. Oran...................Beloit
Beimborn, Miller Hdw. Co............................Boscobel
Cambridge Hdw. Co..................................Cambridge
Sorenson, C...................................East Ellsworth
Auto Specialty Mfg. Co., 418 Barstow..............Eau Claire
Clemons Auto Supply Co., 414 S. Barstow...........Eau Claire
Hobbs Supply Co., W. H., 402 Eau Claire...........Eau Claire
Schroeder, Nielson Hdw. Co., 401 S. Barstow.......Eau Claire
Peterson, E. W......................................Florence
Dallman & Cooper Supply Co.......................Fond Du Lac
Miller, Eugene, 180 First.......................Grand Rapids
McIntyre, Burrall Co..............................Green Bay
Morley, Murphy Hdw. Co............................Green Bay
Peerless Tire & Rubber Co., Walnut & Jefferson....Green Bay
Kroner Hdw. Co., Fred, 116 S. Third...............La Crosse
Tausche Hdw. Co. V., 201 S. Fourth................La Crosse
Blossom, Willis W., 1019 Williamson..................Madison
Schorlkopf, L. F., 214 E. Washington.................Madison
American Tire & Rubber Co., 252 5th................Milwaukee
Andrea & Sons Co., Julius, 358 Broadway............Milwaukee
Atlas Auto Sup. & Vul. Co., 1016 Kinnickinnic....Milwaukee
Auto Supply Co., 134 Second........................Milwaukee
Butter, G. A., 603 Mitchell........................Milwaukee
Dougherty Co., J. J., 803 Grand....................Milwaukee
Frankfurth Hdw. Co., Wm., 22 Clybourn..............Milwaukee
Gross Hdw. & Supply Co., 216 Third.................Milwaukee
Hilgendorf, Chas. F., 303 Third....................Milwaukee
Pirtslaff Hdw. Co., John, 57 W. Water..............Milwaukee
Shadbolt & Boyd Iron Co., 129 W. Water.............Milwaukee
Sufielohn & Seefeld, 53 Second.....................Milwaukee
Times Sq. Auto Sup. Co., Milwaukee & Wisconsin..Milwaukee
U. S. Rubber Co., 45 Oneida........................Milwaukee
United Auto Supply Co., 376 Mitchell...............Milwaukee
Wells Auto Supply House, 520 Wells.................Milwaukee
Western Motor Supply Co., 408 Jefferson............Milwaukee
Wilson, H..Mondovi
South Side Harness Co., 122 W. Washington.............Monroe
Lorleberg Co., H., 125 N. Main.....................Oconomowoc
Klemmer Bros., 78 Main...............................Oshkosh
Oshkosh Marine Supply Co.............................Oshkosh
Schruth Bros. Mfg. Co..................................Pepin
Kamm Bros.. 525 College...............................Racine
Racine General Mfg. Co., 1415 Junction................Racine
Geele Hdw. Co., Frank, 602 N. 8th..................Sheboygan
Stahl Implement & Seed Co, 918-20 N. 9th...........Sheboygan
Pease Hdw. Co., 1206 Tower..........................Superior
Andres, R..Tomah
Waterloo Auto Supply Co.............................Waterloo
Wisconsin Auto Supply Co., 131 Clinton................Wausau
Hotz Bros..Wild Bros

WYOMING.

Auto Goods Co.......................................Cheyenne
Kingham Tire & Repair Co., 111 W. 17th..............Cheyenne
Dayton Mercantile Co., Main...........................Dayton
Auto Goods Co., 319 S. Second........................Laramie
Auto Goods Co..Rawlins
Know & Tonner Co.....................................Rawlins
Auto Goods Co., 219 C St........................Rock Springs

PRODUCTION AT CAPACITY ON THE COMMERCE SPEED MODEL.

The Commerce Motor Car Co., Detroit, is back in production after a shutdown of three months and has benefited by under production to such an extent that its plant is now operating at capacity and expects to maintain this situation indefinitely. In October far more orders were received than for August and September combined. The high priced inventory has been reduced to a minimum through the distribution of finished trucks. The manner in which the slump in the industry and the credit restriction was handled has enabled the company to come forward with a post-war speed model at less than pre-war prices.

"Taking early action as a result of the public's mind that there must be a reduction in prices," declares Director of Sales and Advertising George D. Wilcox of the company, "enables us to be among the first to return to normal production basis. We knew that the public wanted prices to come down. We had the public pulse. Instead of ascertaining how we could force a market despite the public's wishes—we instead decided to get our post-war speed model before the public as quickly as possible at lower than pre-war prices. That our policy met with instant public approval is proven by the influx of orders that we have received. Both Commerce dealers and prospective customers who have inspected and had demonstrated to them our Mercantile Express vindicate our judgment and policy.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN AUTOMOBILES, TRUCKS, TRACTORS, ETC.

Connecticut.

Hartford—Capitol City Auto Co.; A. C. Somers, J. A. Dahill, B. M. Holden.

New London—Waterman-Wolfe, Inc.; Ford cars; $20,000; W. B. Waterman, O. O. Wolfe, Sarah Graham.

Stamford—Alden Markham, Inc.; motor vehicles; $5000; Alden Markham, Julia Markham, S. B. Knapp, Ruth Knapp.

Delaware.

Dover:

Southeastern G. M. C. Truck Co.; autos and supplies; $150,000.

Southwestern Zinc Truck Co.; $150,000.

Wilmington:

Auto Service Corp. of America.; autos; $100,000; L. E. Wilson, L. A. Irwin, M. M. Nichols.

General Tires Sales Co. of Lancaster, Pa.; autos and tires; $550,000.

Heifner Motor Car Co.; $2,000,000; M. M. Lucey, M. Butler, L. S. Dorsey.

Metropolitan Motorists' Assn.; autos; $125,000.

Royal Ace Motor Corp.; $2,000,000; C. T. Cohee, C. B. Outten, C. L. Mackey.

Indiana.

Evansville—Hinkle Motor Car Co.; motor vehicles; $50,000; Felix E. Hinkle, Hiram W. Curry, H. Fred Riechman, Frank J. Folz, Eugene J. Esterhold.

Indianapolis:

Indiana American Sales Co.; motor vehicles; $25,000; Frank C. Hogue, Lawrence Olsen, R. E. Strenss.

Indiana Compression Tube & Tire Co.; autos and accessories; $25,000; Jas. T. Weart, L. L. Weart, M. L. Kyle, Geo. W. Dewey.

Indianapolis Motor Co.; autos and parts; $10,000; J. T. Zufall, E. M. Zufall, C. A. Call.

Michigan City—Swart Garage Co.; autos and accessories; $10,000; Wm. W. Swart, Idella Swart, Thos. A. Gill.

Paoli—West Side Auto Co.; $10,000; Karl Kibler, Wm. E. Ellis, Christopher C. Gardner.

Kansas.

Wichita:

Franklin Motor Car Co.; $50,000; A. P. Knight, Wichita; J. E. Callahan, P. H. Parmenter, Kingman.

H. & T. Motor Co.; $20,000; G. P. Nernbaker, W. L. Thompson, G. R. Thompson.

Topeka—North Topeka Auto Co.; cars; J. E. Timon, N. Topeka.

Massachusetts.

Boston—W. F. Smith Corp.; motor vehicles; $100,000; Wm. F and Chas. F. Smith, John J. Reddington, W. E. Drew, Florence R. Rea.

Dedham—Ames St. Garage Co.; autos; $50,000; Horace C. Bussey, Ernest A. Marble, Helen G. O'Connor.

Holyoke—Anson Motor Car Co.; autos; $25,000; Norman D. Anson, Chas. M. Bergul, Walter R. Glynn.

Northbridge—Quinn Auto Co., Inc.; A. E. Seagrave, Benj. H. Quinn, Roy P. Jackson.

Springfield—Daniels-Hurley Motor Co.; motor vehicles; $50,000; Chas. F. Duggan, Timothy F. Hurley, John J. Duggan, Fred A. Reilley, Edward O. Davis.

Worcester—Standard Motors, Inc.; autos; Arthur L. Sterne, Wm. F. Wright, Arthur H. Rowe.

Michigan.

Menominee—Broadway Buick Co.; deal in and repair autos; $5900.

Muskegon—Baldwin Socacool Co.; autos and accessories; $5000; J. W. Baldwin, W. Turner, Jr.

Saginaw—Garber-Chevrolet Co.; $100,000; Guy S. Garber, Randolph J. Garber, Jas. F. Hackett.

Missouri.

Billings—C. A. Meyer Motor Co.; $25,000.

Breckenridge—Andrews Motor Co.; $35,000; Schmitz & Marshall, atty., Chillicothe.

Kansas City:

Robertson Motor Co.; $40,000; S. B. Robertson.

Simons-Wiles Motors Co., 27th and Main Sts.; Buick agency; LeRoy Simmons, Rich. E. Wiles.

St. Louis:

Callahan Motor Co., Title Guaranty Bldg.; $15,000.

Flory-Bradley Motor Corp.; $30,000.

Franklin Motor Car Co.; $60,000.

New Jersey.

Atlantic City—Equity Finance Corp.; autos; $50,000; J. McGoghagen, Hugh J. McHugh, Philadelphia, Pa.; Chas N. Apples, Atlantic City.

Elizabeth—Minnick Motors, Inc.; motor cars; $125,000.

Jersey City—Star Garage & Denby Motor Sales Co.; autos and garage business; $125,000.

Newark—L. & B. Garage Co.; autos; $100,000.

Paterson—Albanse Motors Corp.; general auto business; $125,000; Jos. and Bartholomew Albanse, Josephine A. Till.

New York.

Albany—Clement-Mead Motor Corp., 211 Central Ave.

Brooklyn:

Mahnud Auto Sales Co.; $20,000; F. and F. Dunham, G. Hagerty, 127 Hawthorne St.

M. & L. Motor Co.; $25,000; Wm. and D. Mildner, D. Lawson, 743 Bedford Ave.

R. & G. Motor Sales Corp.; $5000; B. W. Griffenhagen, V. and M. Rappe.

John H. Smith-Leroy T. Beebe, Inc.; motor cars; $100,000; J. H. Smith.

Buffalo—Duplex Distributing Corp.; autos and accessories; $5000; G. E. and H. S. Frank, R. P. Merrill.

Endicott—James-Lanow Motor Co.; $24,000; E. P. James, H. S. LaValle, S. L. Newing.

Fabius—Cooper Syracuse Auto Exchange; $75,000; B. G. Jacobs, F. and J. Cooper, Syracuse.

Jamaica—Hupper, Inc.; auto business; $12,000; B. Stoliske, F. M. Kelleher, G. H. Huppert, E. Rockaway, N. Y.

New York City:

Bee-Bee Corp., Manhattan; auto business; $20,000; D. Brodsky, M. and F. Brody, 131 Henry St.

Cole Motor Co. of New York; $60,000; R. L. and M. E. Engs.

M. & L. Einsidler, Queens; autos; $50,000; H. Goldberg, M. and L. Einsidler, Long Island City.

Gary Motor Truck Distributing & Sales Corp., Manhattan; $100,000; W. A. and A. C. Jennings, M. F. Hurley, 18 Jacobs St.

Hanover Motor Co.; autos; $5000; A. B. Norwalk, M. T. Jaffe, H. G. Marks.

F. Lauterbach; autos; $10,000; W. L. Myers, W. Coller, M. Rosenfeld.

M. & M. Motor Sales Corp., Manhattan; $9000; R. R. and J. W. Myer, H. W. Maass, 125 Wadsworth Ave.

Motor Sales Corp. of N. Y.; $250,000; R. K. Thistle.

Touissant Auto Corp., Manhattan; $100,000; J. L. Welcome, E. L. Labohne, A. LeGars, 545 Lenox Ave.

Traffic Truck Sales Co. of N. Y.; $15,000; D. Dreyfuss, J. F. Bluestone, N. Leiman.

Weber Carburetor Service; autos and accessories; $110,000; W. E. Townsend.

Rochester:

Resolute Motors Corp.; $10,000; W. B. Truesdell, A. R. Teal, G. V. Fleckenstein.

Sargent Baker, auto business; $50,000; G. B. Smith, J. C. Baker, W. Sargent.

Syracuse:

Nash Sales Co. of Syracuse; autos; $55,000; C. E. Williams, S. I. Classon, P. J. C. Ughetta, 652 Flatbush Ave.

Rooney Motor Sales Co.; autos; $25,000; R. J. Dubuque, M. S. and W. T. Rooney.

Watertown—T. N. C. Motor Sales Co.; $250,000; F. H. Talor, J. R. Newton, H. O. Caldwell.

Yonkers—Affleek Auto Corp.; $5000; W. R. and J. G. Affleek, J. G. Affleek, Jr.

North Carolina.

Carthage—Jennings Motor Co.; $100,000; W. G. Jennings.

Greensboro—Gayle-Ireland Motor Co.; $20,000; S. L. Alderman, Chas. N. Ireland, Jr., Sidney Gayle.

Henderson—Landis Motor Co.; $100,000; E. G. Landis.

Ohio.

Cheviot—Mathias Motor Co.; $75,000; John Mathias.

Cincinnati:

C. S. McCoy Motor Co.; $75,000; Leroy E. Eastman.

S. & D. Motor Car Co.; $25,000; C. Schneider, M. E. Davey.

Middletown—Consolidated Motors Co.; $50,000; L. T. Nein, A. A. Strait.

Oklahoma.

Ardmore—Guaranty Motor Sales Corp.; $12,000; E. E. Chivers, V. V. Suggs, F. M. Brigance.

Coalgate—B. F. Williams Motor Co.; $30,000; B. F. Williams, Clare and Boone Williams.

Jennings—Jennings Motor Supply Co.

Muskogee—Mid-Continent Motor Corp.; $20,000; Homer P. and L. W. Lee, Geo. W. Sickles.

Oklahoma City—Sunshine Motor Co. of Kansas City; $1,000,000.

Pennsylvania.

Lancaster—General Tires Sales Co.; autos; $550,000; M. L. Rogers, M. M. Nichols, W. G. Singer.

Philadelphia:

ReVere-Duesenberg Motor Co.

Triangle Sales & Service Corp.; autos, etc.; $100,000; F. R. Hansell, J. Vernon Pinh, Philadelphia; E. N. MacFarland, Camden, N. J.

Rhode Island.

Providence—Providence Buick Co.; general auto business; $125,000; Chas. F. Thatcher, Geo. W. Bugby, Elizabeth L. Mahan.

South Carolina.

Darlington—Flinnis-Hall Co.; general auto business; $30,000; T. S. Flinnis, Hord Stubberfield.

Texas.

Amarillo:

Markham Motor Co. of Oklahoma City, Okla.; $100,000; W. M. Williams, agent, Amarillo.

Thornton-Nash Co.; $3000; T. H. Thornton, R. M. Nash, P. F. Sapp

Austin—Woodward Mfg. Co.; autos and auto bodies; $500,000; D. J. Woodward, J. A. Nichols, D. J. Woodward, Jr., Sam Sparks, R. R. Ogden.

Beaumont—Kyle Owens Motor Co.; $10,000; Kyle Owens, E. C. Gilmartin, E. S. Sutliff.

Cisco—B. & H. Motor Co.; $50,000; Ed. S. Hughes, H. I. Stock, R. E. Brockshire.

Comfort—Alsbury Motor Co.; $34,000; E. M. Alsbury, E. C. Schuster, Ben Taub.

Corpus Christi—Hulbirt Auto Co ; $20,000; L. M. and R. W. Hulbirt, L. M. Hulbirt, Jr.

Dallas:

Auto Car Sales Co.; $10,000; Q. C. Taylor, C. A. Wilcox, E. Cartledge.

Standard Auto Supply Co.; $25,000; T. R. Peacock, M. C. Macbeth, W. E. Z. Grimes.

Denison—Thompson Motor Sales Co., Odd Fellows' Bldg.; $100,000.

Eastland—Magness Buick Co.; $32,000; H. S Magness, J. H. Chestham, F. A. Blankenbeckler.

Edgewood—K. W. Griffin Co.; autos; $12,000; K. W. Griffin, J. P. Downs, R. M. Millsaps.

El Paso:

American Auto Supply Co.; $20,000; H. W. Bauder, W. H. Aldredge, W. H. Aldredge, Jr.

Nash El Paso Motor Co.; $50,000; O. C. Youngblood, R. W. Prosser, M. J. Youngblood.

Ft. Worth—Kirborg Motor Co.; $15,000; G. W. Kirborg, R. L. Foulks, L. L. Manchester.

Hereford—Motor Sales Co.; $10,000; Eli and W. E. Dunlap, I. W. Hough.

Jasper—Jasper Auto Co.; $50,000; G. G. Markley, P H. Powell, J H. Pruett.

Port Arthur—Defiance Auto Co.; $20,000; C. J. Strack, W. G. Reeves, H. F. Baker.

San Antonio—Paige Motor Co.; $50,000; F. O. Davidson, J. A. Treadway, Mary A. Davidson.

Sherman—Thompson Motor Sales Co.; $100,000; J A. Thompson, J. K. Thomas, W. E. Edson.

Silsbee—Silsbee Auto Co.; $25,000; G. G. Markley, P. H. Powell, N. A. Cravens.

Smithville—Smithville Motor Co.; $30,000; A. V. Bothage, Oswald and A. G. Buescher.

Teague—Alderman Clark Motor Co.; $12,000; David Alderman, Townsend Clark, R M. Thompson.

Whitesboro—Shelton Auto Co.; $40,000; P. M. Shelton, Will Shelton, Wm. Shelton.

Wisconsin.

Kimberly—Outagamie Auto Co.; $15,000; Patrick Garow, Henry Reimer, Edwin R. Elk.

Medford—Frindell Motor Co.; $30,000; Herman and Geo. Frindell, Harold Braun.

Milwaukee:

Huth Truck Co.; $25,000; C. C. Huth, Cena Sadler, H. S. Sloan.

Serve-U-Well Motor Sales Co., Plankinton arcade.

Wisconsin Roamer Co.

Racine—Jack Evans Auto Sales Co.; $50,000; J. R. Evans, Grace Haskin, C. E. Newatney.

MANUFACTURERS OF CARS, TRUCKS, TRACTORS, ETC.

Delaware.

Dover:

Garfield Steam Truck Corp.; $1,000,000; Duncan and E. MacDonald, Jas. J. MacMahon.

Southwestern Zinc Truck Co.; $150,000; C. Chester Caywood, Frederic B. Warder, Albert J. B. Phillips.

Twin Safety Auto Appliance Corp.; trucks; $20,000; Edgar J. Fitzgerald, Raymond M. Hicks, John C. Marscher, Jr., Washington.

Wilmington:

Columbia Tractor Co.; $2,500,000; C. T. Cohee, C. B. Putten, S. L. Mackey.

Fidelity Mfg. Co.; autos; $1,000,000; T. L. Croteay, M. A. Bruce, S. E. Dill.

Franklin-Wilmington Motor Car Co.; $200,000; M. M. Nichols, T. A. Irwin, W. C. Singer.

Heifner Motor Car Co., manufacture and sell autos; $2,000,000; M. M. Lucey.

Kroyer Motors Co., manufacture and sell autos; $5,000,000; T. L. Croteau.

Nelson Tractor Corp.; farm tractors, etc.; $1,000,000; Herald H. Nelson, Chas. W. Tuttle, Detroit, Mich.; Zenas B. Chase, Windsor, Ont., Can.

United States Body Corp.; manufacture and sell autos and parts; $100,000.

Missouri.

St. Louis—Buick Mfg. Co.; $100,000.

New Jersey.

Hackensack—Roadless Vehicle Co.; vehicles, speed gears, etc.; $1.000,000; Cornelius A. Cole, Hackensack; Robt. A. Van Voorhis, Jersey City; W. E. Schiels, Jr., Brooklyn, N. Y.

Jersey City:

Automatic Safety Signal Co.; autos; $10,000; Jas. J. McCarthy, N. Louis Paladean, John G. Flanigan.

Franklin Car Co.; autos; $100,000; Philip H. Glorieux, Geo. and Benj. Getsoff.

New York.

Canastota—Watson Truck Corp.; $2,150,000; A. A. Kessler, H. Canler, J. Souter.

New York City:

Automotor Corp., Manhattan; autos and parts; $275,000; P. Thompson, Jr., D. F. Sullivan, H. P. Swanton, 45 E. 17th St.

H. & M. Body Corp.; autos; $1,575,000; S. Bacharach.

Holt Mfg. Co. of Cal.; agricultural implements; $6,000,000; J. Connah, representative, 50 Church St.

Kassony Motor Sales Corp.; autos; $12,500; C. G. Keutgen, G. E. Merrifield, M. K. Kassony.

Sperling Motors Corp.; autos; $20,000; H. S. Hecheimer, P. J. Fowler, O. Sperling.

Plattsburg—Plattsburg Body Corp.; carriages, autos, etc.; $50,000; J. B. Todd, P. A. and J. W. Guibord.

North Carolina.

Charlotte—Cole Tractor Co.; $125,000; E. R. Cole.

Pennsylvania.

Haverford—Strosk Engineering Corp.; autos; $200,000; Wisav C. Arnold, M. Elliott, Frank A. Gabeen, Jr.

Rhode Island.

Providence—W. P. Hamblin Co., Inc.; motor vehicles; $50,000; Frank T. Easton, Wendell P. Hamblin, Eldridge B. Bates.

MAKERS OF PARTS, ACCESSORIES AND EQUIPMENT.

California.

San Francisco—Research Club, auto equipment; $100,000; Robt. E. Weinstock, San Francisco; S. B. Dean, St. Paul, Minn.; J. S. Proctor, Minneapolis, Minn.

Colorado.

Salida—Briggs Auto Chain Eccentric Co.; Thos. Briggs, Dr. C. T. Parker, Glen Seelinger.

Delaware.

Dover:

Apex Motor Corp.; supplies; $4,000,000; T. R Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Auto Indicator Co.; storage batteries, etc.; $1,500,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Bridgeport Auto Body & Tool Co.; $200,000; C. F. Killian, A. Schichowski, A. J. Furth.

Jon-Con Tire Protector Co.; $100,000; Lemuel Jones, G. Raymond Conover, Chas. B. Downes.

Tire Improvement Corp. of Del.; $500,000; T. L. Croteau, M. A. Bruce.

Victor Radiator Corp.; $3,000,002; F. R. Hansell, J. Vernon Pimm, M. M. MacFarland.

Wilmington:

Apex Tire & Rubber Co.; $1,000,000; M. E. F. Hawkins, W. L. Jourdan, E. E. Borton.

Crescent Tire & Rubber Co.; $100,000; M. L. Rogers, M. M. Nicholson, Wm. G. Singer.

Duplex Storage Battery Co.; storage batteries; $3,000,000; Chas. E. Bishop, A. M. Fox, R. H. Ochletre.

Good Ware Storage Battery Co.; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Hawkeye Tire Sales Co. of Missouri; make and sell tires; $10.000; C. T. Cohee, C. B. Outten, S. L. Mackey.

Iron City Shock Absorber Co.; shock absorbers; $500,000.

Tire Improvement Corp. of Del.; $500,000; T. L. Croteau, M. A. Bruce.

Illinois.

E. Moline—Harco Storage Battery Co.; batteries; $100,000.

Indiana.

Goshen—Advanced Castings Co.; $40,000; S. E. and E. Schacht, F. W. Bemm.

Indianapolis:

North American Storage Battery Co.; storage batteries; $100,000; W. E. Bushone, M. O. Smith, H. E. von Grimmerstein, C. E. H. Johnston.

Weidely Accessories Co.; auto accessories; $5000; Walter A. and Helen L. Weidely, Geo. H. Rossebo, Geo. A. Weidely, Ralph E. Jones.

Knightstown—Money-Back Mfg. Co.; auto accessories; $100,000; A. J. Heliker, E.M. Sherburne, F. J. Newby.

Kentucky.

Ashland—Diamond Grid Battery & Electric Co.; $2500; T. P. Owings, J. R. Briant, C. F. Higgins.

Massachusetts.

Boston—Brown Auto Specialties Co.; auto signals; $150,000; Harold L. Brown, Frank J. Harris, Patrick J. Henry, Robt. C. Turner, Francis E. Maloney, Edward H. Parker, Jas. R. Powers.

Spencer—Cunningham Magneto Co.; $200,000; Chas. N. Prouty, Rudolph Banmcel, Spencer; Rich. H. Cunningham, New York city.

Michigan.

Detroit:

Defiance Combination Auto Lock Corp. $40,000; Jacob Sakolow, Robt. N. Brown, Elwood W. Hammond.

Michigan Marine Motor Corp.; $10,000; Wm. L. Murray, D. T. McHugh, E. V. McGrath.

Missouri.

Kansas City—Hawkeye Tire & Rubber Co.; $3,500,000.

St. Louis:

Hadley Bros.-Uhl Co.; patches and rubber cement; $50,000; S. W. Uhl, president; H. L. Hadley, vice president; F. K. Hadley, secretary and treasurer.

Red Cap Battery Co., 4734 Delmar Ave.; $40,000; Sanders, Forgey & Wordier, atty., 1059-1064 Arcade bldg., Kansas City.

New Jersey.

Highland Park—Nitol Motor Products Co.; $125,000.

Passaic—Ajax Battery Co.; storage batteries; $500,000; Delos C. Gibson, J. H. Lefferts, Rich. Baker, Garfield, N. J.

Trenton:

Arrow Auto Signal Mfg. Corp.; signal devices for autos; $200,000.

Ewing Rubber Co.; $100,000; Archibald F. Updike, Jas. Schultz, Alice Emrick.

New York.

Binghamton:

Neu-Metal Products Corp.; autos and accessories; $15,000; H. H. Hathaway, F. E. Spawn, A. Howard.

Telometer Mfg. Co.; auto parts; $200,000; E. R. and R. H. Slagle, F. J. Mangan

Brooklyn:

Protex-In-Tire Co.; linings for tires; $25,000; J. Stienman, L. E. Jennings, H. W. Brock, 478 Jefferson St.

A. S. Rampell & Sons; motors and engines; $10,000; A. S. and S. A. and B. Rampell, 103 Hart St.

Buffalo:

Financial Industrial Corp.; motors; $200,000; E. Michael, W. G. Case, J. C. Conway.

Glaser-Hummell Corp.; motors; $25,000; W. H. and C. F. Hummell, G. F. Glaser, Jr

Liske-Wagner Co.; make bicycles and motors; $15,000; W. C. Shields, A. E. Wagner, C. Liske.

Motor Essentials; $20,000; H. E. Smith, M. E. Kelsey, S. Ginsburg.

New York City:

Butwell Bumper Co., Manhattan; auto bumpers; $100,000; J. M. Lydecker, H. E. Cover, B. M. Asch, Freeport, L. I.

C. R. S. Mfg. Co., Manhattan; devices for autos and elevators; $500,000; W. M. Cronk, J. B. Roberts, W. C. Strabelle, 2 E. 50th St.

Hudson Auto Lamp & Radiator Co.; Manhattan; $5000; L. Horowitz, J. Defrin, M. Davis, 826 Manida St., Bronx.

Multiple Point Spark Plug Co.; $55,000; J. Tacona, D. Place, S. Sodaro.

Northeastern Rubber Co., Manhattan; $250,500; M. Bovie, A. D. Royce, R. Swinnerton, 31 Nassau St.

Portage Tire & Rubber Co. of Del.; $100,000; G. V. Reilly, 65 Cedar St., representative.

Railway Motors, Manhattan; motor truck frames; $60,000; W. D. A. Rose, L. Prasher, H. S. Gray, 598 W. 191st St.

G. L. Ross Sales Corp., Manhattan; auto signal devices; $150,000; M. J. Hertel, T. Macock, G. L. Ross, Baldwin, L. I.

Standard Wire Tire Corp.; tires; $100,000; A. L. Chauvert.

Zorzi Corp.; Manhattan; bodies for autos and air planes; $1,000,000; M. Abrahams, J. J. Kieran, R. W. Gilmore, 10 E. 48th St.

Schenectady—Sterling Storage Battery Co.; $10,750; S. R. van Patten, M. J. Vandermark, C. E. School.

Ohio.

Canton—McKone Tire & Rubber Co.; $500,000; E. E. Wertz, Ed. W. Stevens, E. Thomas, J. Anderson, J. H. Rainsberger.

Oklahoma.

Enid—Enid Battery Mfg. Co.; $10,000; F. W. Miller, Frank L. Wilkins, W. L. Kendall.

Pennsylvania.

Johnstown—American Steel Products Co.; auto accessories; $300,000.

Norbeth—Tompkins Rubber Mfg. Co. $300,000; Ernest E. Tompkins, Norbeth; Jas. M. Stitzer, T. Ewing Montgomery, Philadelphia.

Philadelphia:

Battery Sales & Service Corp.; electric storage batteries; $50,000; W. P. Barba, J. B. Clement, Jr., Philadelphia; Winthrop Sargent, Haverford.

S. & M. Mfg. Co.; spark plugs, etc.; $1,000,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

Pittsburgh:

Aero Spark Plug Corp.; $100,000; J. H. Dunn, Chas. C. Snodgrass, Delta Martin.

Iron City Shock Absorber Co.; shock absorbers; $500,000; T. T. Cowan, C. W. Bonnell, Pittsburgh; M. P. Bolia, Wilkinsburg.

Rhode Island.

Providence—Modern Auto Top Co., Inc.; $25,000; Benj. Kaufman, John Grace, J. C. Semonoff.

Wisconsin.

Jefferson—Jefferson Rubber Co.; $300,000.

Milwaukee:

Milwaukee Commercial Auto Body Co.; $25,000; Morris Schuster.

Milwaukee Pointless Spark Plug Co.; $25,000; W. G. Bowler, Al Smith, Louis Ahsinger.

GARAGE, REPAIR SHOP AND SERVICE STATIONS.

Delaware.

Dover—Keystone Realty-Auto Storage Corp.; $100,000; Horace E. Lee, Wm. F. Page, Howard E. Lee, Jr.

Massachusetts.

Boston—Bay State Garage Co., Inc.; $90,000; Edward J. Doherty, John N. and Mary N. Barstow, Loretta A. and Walter P. Doherty.

Michigan.

Kansas City—H. W. M. Auto Repair Co.; $2000; John C. Nipp, atty., 301 Gloyd Bldg.

New Jersey.

Paterson—Modern Auto Painting Co. of N. J.; $50,000; Robt. Buksch, Jr., Paul E. Conon, Chas. Ehrentraut.

Rahway—Rahway Auto Supply & Service Co.; $150,000; Wm. C., Walter Z. and Russell Hoblitzell.

Trenton—Paul's Garage; $100,000; Bernard F. Gaiser, Henry W. Lehman, Wm. A. Paul.

New York.

Brooklyn:

Bildem Corp.; garage and trucking; $15,000; O. L. and C. Z. and F. C. Demarest, 748 Greene Ave.

Colonial Stone Ave. Garage; $15,000; H. Leichtung, J. Weinstein.

G. B. F. Garage Corp.; $10,000; L. Glickman, F. Fischer, S. Bearkowitz.

Greenpoint Garage; $10,000; M. Nunziata, S. Jacobs, J. Lidsky, 88 Keap St.

Guernsey Garage; $20,000; A. Joseph, B. Stimel, E. Polemsky, 158 Huron St.

No. 11th St. Garage; $10,000; M. Nunziata, S. Jacobs, J. Lidsky, 88 Keap St.

S. & D. Broadway, Myrtle Ave. Garage; $10,000; S. Steinwurzel, S. and L. Denner, 283 Vernon Ave.

Selko Realty Co.; realty, garage and merchandise; $25,000; A. Stone, M. J. McDewitt, H. Graef, 310 W. 11th St.

S. G. & S. Garage Corp.; $12,000; M. Spinner, S. Goldberg, M. Stolzenberg, 716 Bedford Ave.

Sunnyside Garage; $15,200; P. Kaupus, J. and H. Berzeitis, 953 Myrtle Ave.

Washburn Garage; $5000; M. A. and J. B. and A. S. Washburn, 1177 Bedford Ave.

Buffalo:

Frontier Motor Service & Supplies; $20,000; J. M. Fes, A. C. Kautz, J. L. Kenefick.

Great Lakes Battery Service Corp.; $100,000; W. E. Williams, F. W. Ashford, E. S. Tucker.

Fleischmanns—Halpern & Silberman; $10,000; S. and S. Halpern, M. Silberman.

Lake Placid—Lake Placid Garage, hotel and real estate; $50,000; F. Dashnaw, T. A. Leahy, P. J. Hennessy.

Mt. Vernon—Royal Garage of Mt. Vernon; $6000; D. and M. Dreyfuss, J. Augustine.

Newburgh—Deisseroth Bros.; garage; $75,000; S. B. Taylor, W. H. and O. Deisseroth.

New York City:

Academy Garage; $20,000; D. and A. Stein, O. Politzer.

Adoro Garage Corp., Manhattan; $50,000; L. Eckman, I. M. Sackin, N. Brody, 229 E. 12th St.

Amac Realty Corp., Manhattan; garage; $3000; A. E. and M. E. MacDowell, A. McD. Taylor, 164 W. 146th St.

B. & B. Garage; $15,000; J. W. Watson, T. E. Halle, F. H. Butehorn.

Broome & Mangin Garage; $20,000; S. Pankowitz, M. Sheinblum, J. Seltzer.

C. F. G. Garage Corp., Manhattan; $30,000; A. Felt, A. Goddman, J. M. Crane, 218 W. 112th St.

Clarendon Garage, Manhattan; $25,000; J. Schwartz, L. J. Murray, G. A. Ostergror, 654 10th St., Brooklyn.

D. D. D. Corp., Queens; storage and auto warehouse; $20,000; C. Aronowitz, J. L. Diamond, D. D. Deutsch, 1789 Broadway.

E. 134th St. Garage, Bronx; $10,000; J. Bloom, J. Chomsky, G. Horowitz, 858 Cauldwell Ave., Bronx.

E. 137th St. Garage Corp.; $5000; L. F. J. and A. T. Wolf, H. A. Bohn.

Eldorado Garage Corp.; $50,000; S. H. Eisler, W. Lee.

Es-Kay Motor Service, Bronx; $5000; E. Zaccaro, C. Bach, S. Wasvary, 213 E. 122nd St.

Fifteenth Ave.-60th St. Garage, Manhattan; $15,000; M. Elstenstein, A. Gronich, I. J. Schuster, 1869 Third Ave.

F. & M. Garage, Manhattan; $6000; C. and M. Nichthauser, A. H. Friedman, 949 West End Ave.

Gelvan Garage; $5000; G. S. Van Gelder, L. and S. Rosenberg.

G. W. Garage, Manhattan; $15,000; I. and S. Greenberg, J. Wolkowit, 82 E. 11th St.

Hillside Garage; $10,000; G. I. Jewell, J. A. Murphy, K. S. Nieas.

New Forest Garage Co., Queens; $50,000; R. W. Kellogg, J. F. Kackey, W. F. Meyers, Jamaica.

Lyons & Simmons Garage; $10,000; F. W. Simmons, J. E. A. and J. F. Lyons.

Meyers & Marks Garage; $20,000; A. and L. Meyer, S. Marks.

156 East 57th St. Garage, Manhattan; $25,000; M. Stoltzberg, C. Vogel, S. Krautheimer, 109 E. 9th St.

Poe Garage Co., Bronx; $25,000; A. F., C. J. and E. Schwarzler, 1932 Grand Blvd.

Ross & Anthony, Manhattan; garage; $10,000; A. Tell, S. R. Anthony, A. Ross, 680 Lenox Ave.

Royalty Realty Corp., Manhattan; garage; $15,000; A. E. and M. E. MacDowell, A. McD. Taylor, 164 W. 146th St.

Sheridan Garage, Manhattan; $25,000; H. Finkelman, D. and H. Koch, 84 Essex St.

Signal Garage, Manhattan; $15,000; C. Brust, C. Vogel, M. Stoltzberg, 40 E. 7th St.

Tireheal Mfg. Co., Manhattan; tire repairing; $150,000; R. H. Faphael, J. Leiman, S. Schnaps, 2 Rector St.

T. & K. Garage Co., Bronx; $20,000; A. and S. Tannenbaum, M. Kerber, 290 E. 4th St.

Warren-Olshan Garage; $30,000; J. S. and S. Warren, A. N. Olshanitzky.

Peekskill—Bankers' Storage Co.; garage; $350,000; H. W. Curtis, R. W. Hertwig, L. M. Ansley, 200 W. 59th St.

Rochester:

Bush & Cole; auto and repair shop; $10,000; H. E. Erhardt, H. F. Cole, W. E. Bush.

Car Owners' Garage Corp.; $50,000; H. J. and J. E. Peo, E. P. Millhofer.

Union Springs—Union Springs Garage Co., Cayuga County; $6000; E. Jobson, J. T. Mascord, G. C. Starkweather.

North Carolina.

Rockingham—Auto Electric Service Co.; $25,000; F. L. Scarboro.

Ohio.

Cleveland—Grant Motor Service Co.; $10,000; A. V. Cannon, J. P. Taggart.

Dayton—Ludlow Battery Service Co.; $50,000; J. D. MeLat, V. F. Barlow, H. R. Swinehart, D. I. and H. H. Prugh.

Texas.

Ft. Worth—Day & Night Motor Service; $100,000; J. W. Milner, B. N. Honer, B. B. Brown.

Orange—Service Garage & Motor Co.; J. L. Ferguson, manager.

Wisconsin.

Neillsville—Neillsville Garage Co.; $75,000; F. L. Reinhard. Ed Bast, Ed Cassady. Wm. Glassow.

DEALERS IN ACCESSORIES. PARTS AND EQUIPMENT.

Arkansas.

Pine Bluff—Milliken Tire Co.; $5000; P. C. Richardson, Little Rock, president; H. T. Harrison, vice president; J. W. Milliken, secretary and treasurer.

Colorado.

Denver—Co-Operative Auto Supply Co., auto accessories and tires; $100,000.

Connecticut.

Bridgeport—Improved Ignition Co.; auto parts; $25,000; R. H. and F. A. Griswold, H. S. Forsberg.

Delaware.

Dover:

Auto Service Corp. of America; auto supplies; $100,000.

Battery Sales & Service Corp.; $50,000; W. P. Barba, J. B. Clement, Jr., Winthrop Sargent.

Brighton Auto Supply Co.; $100,000; M. L. Rogers, I. A. Irwin, M. M. Nichols, Wilmington.

Kokomo Rubber Co.; Southern Division; tires of all kinds; $2,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Liberty Rubber & Supply Co.; tires; $100,000; Edson E. and Forrest C. Jeffords, Erie, Pa.; Cornelius C. Densford, Buffalo, N. Y.

Magee Auto Supply Co.; $100,000; Chas. L. and Gustava L. Magee, Edgar M. Kitchin.

Wilmington:

Hawkeye Tires Sales Co. of Missouri; sale and manufacture; $10,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

Hawkeye Tires Sales Co. of Nebraska; sales and manufacture; $10,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

Illinois.

Chicago—Monroe Tire Corp., distributor and jobber of tires, tubes and sundries; Harold J. Samuels, president; Leroy Eschner, vice president and treasurer.

Kansas.

Newton—Automotive Accessory Co., P. & L. Motor Co. Bldg.; accessories at wholesale and retail; Chas. Finnell, Don Phillips.

Wichita—Central Tire & Equipment Co.; $30,000.

Massachusetts.

Salem—Salem Tire & Supply Co.; $25,000; A. W. Stoner, R. W. Campbell, H. R. Steel, J. C. Boone, H. R. Pow.

Missouri.

Kansas City—Sterns Auto Supply Co. 1716 Grand Ave.; $100,000; H. C. Walther, atty., 504 Ridge Arcade.

St. Louis—Missouri Equipment Co.; $100,000; O. F. Reynolds.

New Jersey.

Elizabeth—Union County Tire & Rubber Co.; tires; $100,000.

Highland Park—Nitel Motor Products Co.; chemicals, etc.; $125,000; Ferdinand C. Schussler, So. Amboy; Chas. M. MacWilliams, Perth Amboy; Aimee E. Latham, Highland Park.

New York.

Brooklyn—Chase Tire Sales Corp.; $50,000; B. C. Ribman, A. M. and L. G. Chase, 14 Verona place.

Buffalo—Emco Sales Corp.; electric appliances; $25,000; W. F. Emerson, W. C. Carroll, I. Rabinowitz.

New York City:

B. Ignition Mfg. Co., Manhattan; auto supplies; $50,000; I. and H. Braverman. D. Livernant, 134 Watkins St., Brooklyn.

Master Carburetor Co. of New York, Manhattan; $10,000; C. F. Mackey, W. B. Porter, R. M. Jones. 55 West End Ave.

Ohio.

Ironton—Central Tire & Rubber Co.; $12,000; W. E. Boll, J. Kratzenberg, L. Gherling, F. McCauley, G. W. Boll.

Zanesville—Auto Accessories & Vulcanizing Co.; $20,000; O. M. Millen, C. E. Adams, G. S. Greene, Earl Crumrine.

Oklahoma.

Claremont: Automotive Equipment Co.; $25,000; L. C. and D. E. Carpenter, J. M. Pope.

Okmulgee—Scott Tire Co.; $20,000; T. M. and E. J. Scott, Geo. M. Arnold. ,

Pennsylvania.

Lancaster—General Tire Sales Co. of Lancaster, Pa.; autos and tires; $550,000.

Rhode Island.

Providence—Pilgrim Auto Stores, Inc.; $15,000; Wm. H. Atkinson, Saml. White, Chas. L. Fenner.

South Dakota.

Sioux Falls—Emil Larson Supply Co.; auto supplies; $25,000; Emil, Laura and Edgar W. Larson.

Texas.

Dallas:

Pacific Tire Service Co.; $75,000; R. H. Ahrens, A. W. Forester, F. O. Ebert.

Standard Auto Supply Co.; $25,000; T. R. Peacock, M. C. Macbeth, W. E. Z. Grimes.

Wisconsin.

Milwaukee:

Badger Belt & Rubber Co., E. Water and Huron Sts.; Empire tire distributor; Donald C. Barbee, president and general manager.

Breitenbach Machine Co., 1049 5th St.; general machinery and farm operating equipment business; $100,000.

Kelly-Springfield Sales Co.; $50,000.

MISCELLANEOUS.

Connecticut.

Bridgeport—Bridgeport 'Bus Corp.; $250,000; Harry Frank, J. B. Schwartz, G. W. Bevans.

Delaware.

Dover:

Automobile Underwriters Co.; $10,000; Marie Carter, Rolins M. Worly, Cleveland Perry.

Motor Car Abstract Co.; $5,500,000; Walter B. Kenton, Andrew J. E. Wald, Oscar Pierce.

Motor Guaranty Corp.; $250,000; F. R. Hansell, Geo. P. B. Morton, E. M. MacFarland.

Wilmington:

Beaverdale Auto Bus Co.; transportation; $25,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

Emerald Motorship Co.; $3,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

International Trucking Corp.; motor transfer; $100,000; Chas. B. Bishop, A. M. Fox, R. H. Ocheltree.

National Steel Car Lines Co.; $3,000,000; T. Cohee, R. E. McCloskey, S. L. Mackey.

Omaha Motor Transportation Co.; $500,000; M. M. Lucey, V. P. Lacey, L. S. Dorsey.

Partridge Tractor Export Co.; $250,000; S. H. Barnard, Jr., A. M. Fox, A. S. Bishop.

Payson's Motor Shows; $5,200,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Piqua Automotive Financing Corp.; $550,000.

Springfield Automotive Financing Corp.; $550,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

Toy Motor Finance Guarantee Corp.; dealing in stocks, bonds, etc.; $1,500,000; Harry and Kenneth L. Emmonds, Edmond S. Hellings.

Wills Tank Car Despatch Line; $400,000; M. L. Rogers, L. A. Irwin, W. G. Singer.

Georgia.

Atlanta—Southern Motor Finance Corp.; finance dealers; $12,000,000; J. Mallory Hunt, C. Carroll Spear, Norman T. Pool, F. A. Quillian.

Indiana.

Indiana Harbor—Atlas Taxicab Co. of Indiana; $10,000; Dale and Rose Flickinger, Sherman Covert.

Lafayette—Motor Finance Corp.; $500,000; Cecil G. Fowler, Jesse Chas. Andrew, Judge Chas. E. Henderson.

Massachusetts.

Boston—Day Trucking Corp.; $100,000; John J. Day, Rich. H. Fleming, Jas. E. Vallely.

Holyoke—Greyhound Transportation Co.; $50,000; Philip Wallach, David H., Jos. and Max Barowsky.

Springfield—National Auto Parking Co.; $300,000; Clifford P. Thompson, Cummings L. Lothrop, Chas. M. Gondey.

Michigan.

Grand Rapids—Michigan Automobile Ins. Co.; $250,000; W. S. Webber, Grand Rapids, president; B. F. Hall, Belding, first vice president; H. J. Dudley, Grand Rapids, second vice president; H. J. Kennedy, Grand Rapids, secretary-treasurer.

Minnesota.

St. Paul—Universal Highway Sign Co.; $50,000; T. R. Willwerschield, St. Paul; H. W. Brown, F. M. Barnard, Minneapolis.

Sauk Center; Sauk Center Motor Inn, Inc.; $50,000; Wm. H. Rathe, Chas. E. Bohall, Gunder Jensen.

Missouri.

Kansas City:

General Motors Acceptance Corp.; $4,000,000.

Monarch Filling Station, 14 35th and Broadway; A. A. Smith, pres. and gen. man. General offices, 1818 Grand Ave., Kansas City.

St. Louis—Shafer Safety Auto Post Co.; $50,000; Hugh K. Wagner, atty., 211 Calumet Bldg.

New Jersey.

Bloomfield—Bloomfield Taxi Service Co.; $50,000; Jas. and Maria Delaporte, Maria Ippolta.

Clifton—N. Y. & Clifton Transportation Co.; to operate transportation business; $100,000; L. W. Delaney, J. C. Schott, J. F. Murray, Jr., all of Newark.

New York.

Albany:

Interstate Traffic Service; $50,000; T. J. Brown, W. S. Fitzgerald, J. S. Southwick, Cohoes.

Columbia Storehouse & Service Co.; $10,000; L. A. Carpenter, F. M. Callan, W. H. Osterhout, Jr.

Brooklyn:

Garage Property Corp.; $10,000; S. Lebowitz, I. and B. C. Bibman, 125 Prospect Park, west.

Henba Balloon Developing & Transport Co.; make air planes; $50,000; J. Henba, G. Frey, R. Hyde, 9201 Ft. Hamilton Ave.

Lustig Auto Renting Corp.; $5000; B. Siegel, B. and S. Lustig, 586 Manhattan Ave.

Metropolitan Motorists' Assn.; $125,000; Jas. E. Kuebel, Martin E. Bibly, A. Kuebel.

Westcott Trucking Co.; $10,000; M. and F. Volkommer, W. H. Westcott.

Buffalo—Baker Trucking Corp.; $10,000; R. L. Brown, C. V. Merlau, J. W. Baker.

New York City:

Checker Taxicab Corp., Manhattan; $15.000; S. Schwartz, B. Olch, L. Eichner, 49 W. 116th St.

Cunningham Taxicab Co., Manhattan; $5000; T. F. Casey, J. R. Wheeler, J. W. Cunningham, 103 W. 57th St.

Doscher Transportation Corp., Manhattan; $10,000; C. McLennan, M. E. Wood, H. Doscher, 117 Greenwich St.

Federal Motor Freight Corp. of Del $25,000; F. H. Bean, representative, New York.

Chas. N. Fitzgerald Aerial Feats, Inc.; Manhattan; aerial navigation; $100,000; C. N. Fitzgerald.

Garage Construction Corp. of N. Y.; $500,000; L. D. Crear, M. Klein, E. Donnelly.

C. W. Hunt Engineering Corp., 143 Liberty St.; name changed from C. W. Hunt Co., Inc.

Keystone Motor Delivery, Manhattan; $10,000; I. and H. Schoenhaus, S. Fried, 128 Hayward St., Brooklyn.

Motor Brokerage Co., Bnox; $50,000; M Collubier, S. Ullman, L. Gluck, 855 Whitlock Ave., Bronx.

Pennsylvania Terminal Auto Renting Corp., Bronx; $5000; F. McGee, J. A. H. Colcan, J. A. Rawson, 214 W. 21st St., Manhattan.

Pennsylvania Terminal Auto Surety Corp.; $5000; F. C. Stein, J. A. H. Colcan, J. S. Rawson, 210 W. 21st St., Manhattan.

Rahe's Auto & Tractor School Corp operate auto schools; $250,000; Harry J. Rahe, Otto Barth, H. B. Yoder.

U. S. Guardian Corp. of Del.; loan money for autos and trucks; $6,000,000; F. H. White, 141 Broadway, representative.

Warner Taxi Co., Manhattan; $5000; L. J. and D. Buchner, A. Lipton, 160 Broadway

Washington Haulage Co., Queens; $7500; A. J Lindsay, E. T. Murdock, M. B. West, 43 Cedar St.

Poughkeepsie—Birrer Motor Transportation Co.; $25,000; F. B. Lown, D. and F. L. Birrer.

Rochester—East Ave. Bus. Co.; $110,000; A. Michaels, I F. Hames, S. L. Adler.

White Plains—Midway Taxi Service Co.; $5000; J. B. and W. V. Hogan, G. I. Barrett.

Ohio.

Columbus—Advertising Auto Speedway Co.; $10,000; S. A. Grubb.

Conneaut—Conneaut Motor 'Bus Co.; $15,000; F Berta, A. Riego, M. Anthony S. Kacso, J. Antonucci.

Oklahoma.

McAlester—Murray Motor Investment Co.; $50,000; O. M. Murray, E L. Millner, J. B. Rese.

Muskogee—Brotherton Trucking Co. $10,000; Ezra Brainard, Jr., Chas. P. Gotwals, C. E. Shanno.

Pennsylvania.

Philadelphia—Black-Strap Fuel & Potash Products Co.; converting low grade molasses or black strap into liquid fuel; $2,000,000; F. R. Hansell, J. Vernon Pimm, E. M. Macfarland.

Rhode Island.

Westerly—Colonial Air Service Co., Inc.; $45,000; Cash Miller, Geo. H. Harper, Harold B. Kenyon.

Texas.

Dallas—Dallas Garage Men's Assn.; R. W. Kemp, G. E. Swalwell, R. L. Williams.

Houston—Yellow Cab Co.; $75,000; L. A. Robertson. W. L. and J. R. Hill.

Wisconsin.

Greenfield—Wisconsin Motor 'Bus Co.; $15,000; Benj. Morse, Wm. Mitchel, W. McElroy.

Kenosha—Wisconsin Oxy-Hydrogen Co. to build a plant for production of gases for use in welding; $150,000; C. P. Brant, pres. and gen. man.; W. G. Schoonover, sec. and treas.

Milwaukee—Auto Investment Co.; $25,000; W. A. Laev, B. F. Anger, L. A. Bailey.

INCREASES IN CAPITAL.

Arkansas.

Ft. Smith—Ft. Smith Tire & Rubber Co.; $15,000 to $60,000.

Little Rock:

Arcade Motor Co.; $50,000 to $100,000; C. P. Hobgood, pres.

Crow Burlingame Co.; $50,000 to $100,000.

Connecticut.

New Haven—Kelly Tire & Rubber Co.; $5,000,000 to $50,000,000.

Delaware.

Wilmington—People's 'Bus Line; $60,000 to $1,500,000.

Indiana.

Indianapolis:

Huntingburg—De Mott Harlan Garage Co. to De Mott Garage Co.

American Foundry Co.; $40,000 to $600,000.

Haywood Tire & Equipment Co.; $21,000 to $400,000.

Paoli—Graves Brown Auto Co. to Brown Auto Co.

Plymouth—Keystone Foundry Co.; $10,000 to $50,000.

Kentucky.

Louisville:

Midwest Auto Co.; $25,000 to $50,000.

Strube's Garage; $10,000 to $40,000.

Michigan.

Coldwater—Coldwater Garage Co.; $3000 to $6000.

Detroit—Detroit Pressed Steel Co.; $10,500,000 to $23,750,000.

Owosso—Auto Sales Co.; $10,000 to $30,000.

New York.

Brooklyn:

Oriental Rubber & Supply Co.; $25,000 to $50,000.

Steel Spring Piston Ring Co.; $50,000 to $100,000.

Buffalo—Swit Automotive Corp.; $50,000 to $500,000.

Elmira—Ward La France Truck Corp.; $10,000,000 to $10,300,000.

Jamestown—Jamestown Car Parts Mfg. Co.; $100,000 to $500,000.

New York City:

American-La France Fire Engine Co., Manhattan; $4,950,000 to $5,950,000.

Elk Garage Co., Manhattan; $25,000 to $90,000.

Fellsen Tire Co., Manhattan; $30,000 to $100,000.

Lafontaine Garage Corp. Manhattan; $5000 to $25,000.

Lundorf Motor Sales Corp.; $100,000 to $1,000,000.

Motor Guaranty Corp.; $250,000 to $1,000,000.

Noma Motor Corp.; $100,000 to $280,000.

Pennsylvania Piston Ring Co., Manhattan; $200,000 to $300,000.

Weston Wheel Corp., Manhattan; $250,000 to $300,000.

Rochester—Mabbett Motor Car Co.; $50,000 to $150,000.

Schenectady—Webster Motor Sales Co.; $20,000 to $100,000.

Troy—Harvard Motor Car Corp.; $50,000 to $150,000.

Ohio.

Cincinnati:

Herschede Motor Car Co.; $50,000 to $80,000.

Mutual Tire & Rubber Co., from $25,000 to $75,000.

Trailmobile Co.; $680,000; to $1,500,000.

Cuyahoga Falls—Falls Rubber Co.; $1,000,000 to $2,500,000.

Port Clifton—Ohio State Rubber Co.; $1,000,000 to $3,000,000.

Ravenna—Ravenna Rubber Products Co.; $50,000 to $75,000.

Sciotoville—Autombile Supply Co., $24,000 to $34,000.

Springfield—Kelly-Springfield Motor Truck Co.; $6,000,000 to $8,000,000.

Oklahoma.

Enid—Fidelity Motor Co.; $10,000 to $20,000.

Oklahoma City:

Great Republic Tire & Rubber Co. of Del.; $15,000 to $85,000, in Oklahoma.

Sharpe Auto Supply Co.; $50,000 to $100,000.

Pennsylvania.

Philadelphia:

Gasoline Economy Co.; $100,000 to $130,000.

Lyons Storage Battery Co.; $500,000 to $3,200,000.

Texas.

Galveston—Auto. Finance Co. of Galveston; $100,000 to $250,000.

Richmond—Richmond Motor Co.; $25,000 to $35,000.

San Antonio—Citizens' Auto Co.; $35,000 to $55,000.

Smithville—Smithville Motor Co.; $10,000 to $30,000; Oswald Buescher, man.

Wichita Falls—Nash Auto & Truck Co.; $25,000 to $50,000.

Wisconsin.

Hartford—Kissel Motor Car Co.; $1,000,000 to $2,000,000.

Madison—Modern Battery & Service Co.; $5000 to $50,000.

Sheboygan—Laing Vulcanizing Co.; $10,000 to $20,000.

CHANGES IN NAME.

Pine Bluff, Ark.—Pine Bluff Branch of Arcade Motor Co. to Childs Motor Co., 219 E. 6th Ave.; R. C. Childs, man.

Chicago, Ill.—Findlay Disc Wheel Corp. to Chicago Steel Wheel Corp.

Huntingburg, Ind.—DeMott-Harlan Garage Co. to DeMott Garage Co.

Paoli, Ind.—Graves-Brown Auto Co. to Brown Auto Co.

South Bend, Ind.—Indiana Cord Tire Co. to Burr Oak Cord Tire Co.

Altamont, Kan.—Dean & Tarkington to Roy Tarkington.

Arkansas City, Kan.—Woods Bros. Garage to Cannon Ball Garage, 306 N. Summit St.; Roupp & McClaske, prop.

Ottawa, Kan.—Dennis Auto Co. and Dort Auto. Agency consolidated under name of Berlin-Haight Motor Co., 119 E. 2nd St.; C. A. Berlin and Jas. W. Haight, props.

Louisville, Ky.—Speed Tire & Service Co. to Louisville Oldfield Tire. Co.

Detroit, Mich.—Breed, Mutchler, Spiecker Co. to Breed, Spiecker Co.

Archie, Mo.; Cole & Barnard Garage to Limpus & Sons; Homer Limpus, prop.

Buffalo, N. Y.:

Cole Motor Car Co. of Buffalo to Edward H. Baker Corp.

Dunlop American, Ltd., to Dunlop Tire & Rubber Corp. of America.

New York, N. Y.:

Gypsy Auto Painting & Trimming Co., Manhattan, to Jos. A. Michel Co.

Tait Garage Co., Manhattan, to Tait Transfer Co.

New Rochelle, N. Y.—Poulle's Garage Co. to Woodland Garage Co.

Charlotte, N. C.—Balanced Six Motor Co. to Interstate Motor Co.

Altus, Okla.—Cole & Raines to Raines Motor Co.; Ernest Steel, prop.

Bartlesville, Okla.:

All Night Garage to Dawson's Garage, 118 E. 2nd St.; Robt. A. Dawson, prop.

P. J. Morin Motor Co. to S. & M. Motor Co., 209 E. 4th St.; Stein & Mohler, prop.

Fairview, Okla.—Fairview Tire Garage to L. W. Hall Tire Co.; Leonard W. Hall, prop.

Dallas, Tex.—Vacuum Cup Tire Co. to Mallcorn Tire Co.

Waco, Tex.—MacQueen-McKee Motor Co. to Nash-Waco Co.

Appleton, Wis.—Brand Froelich Co. to August Brand Co.

Milwaukee, Wis.:

American Spark Plug Co. to American Spark Plug & Porcelain Specialty Co.

Dietz-Newman Motor Car Co. to L. J. Dietz Motor Car Co.

Motor Products, Inc. to Perego-Clarkson Co.

Stevens-Duryea & Case Car Co. to Kent-Hustis, Inc.

Neenah, Wis.—Neenah Auto & Implement Co. to Tri City Nash Co.

RECORD OF BUILDING OPERATIONS FOR NOVEMBER

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Alabama.

Dothan—J. C. Walden; one-story garage and sales room, 130x100; brick, composition roof, cement floor, heating plant; $40,000.

Arkansas.

Little Rock—H. A. Bowman; one-story brick garage; $6000.

District of Columbia.

Washington:

Geo. H. Bright, 4917 13th St., N. W.; two-story brick and reinforced concrete public garage, 40x100, at 1426 Irving St., N. W.; $40,000.

Waddy B. Wood, 816 Conn. Ave., N. W.; two-story brick garage, 49x100.

Florida.

St. Petersburg:

Mrs. Kate DeKoven; one-story concrete block garage; $5000.

P. K. Smiley; one-story garage, 40x100.

Illinois.

Chicago:

Max Banna, 5649 S. Halsted St.; one-story brick garage.

Frank Becker, 5130 S. Paulina St.; one-story frame garage.

Otto Behnke, 3614 Wabansia Ave.; one-story frame garage.

John Belleson, 4712 W. Madison St.; one-story frame garage.

H. C. Benecke, 6224 S. Kostner Ave.; one-story frame garage.

H. Blender, 817 N. Sacramento Ave.: one-story frame garage.

Z. Boettcher, 2655 Kimball Ave.; one-story brick garage.

C. P. Boglberg, 7220 S. Greene St.; one-story frame garage.

John Brandt, 10,743 Lafayette Ave.; one-story frame garage.

C. Bremer, 1120 N. Springfield Ave.; one-story frame garage.

C. Breumer, 6525 S. Campbell Ave.; one-story brick garage.

A. C. Buffington, 2544 Drake Ave.; one-story frame garage.

Bulka Bros., 1085 N. Marshfield Ave.; one-story brick and stone public garage. 49x56, northeast corner Haddon and Ashland Aves.; $11,000.

F. L. Burlingame, 1426 Edgewater Ave.; one-story frame garage.

A. Cammeta, 2038 W. Huron St.; one-story frame garage.

W. J. Carrigan, 552 W. 62nd St.; one-story frame garage.

H. C. Cline, 6216 Champlain Ave.; one-story frame garage.

E. M. Coffman, 2123 Greenleaf Ave.; one-story stucco garage.

J. B. Cookest, 159 E. Erie St.; one-story brick garage.

J. A. Coulter, 10,449 Hale Ave.; one-story frame garage.

Paul Crikota, 3227 Berkau Ave.; one-story frame garage.

Wm. Cummings, 11,344 Forest Ave.; one-story brick garage.

W. Damels, 3448 W. 62nd Place; one-story frame garage.

A. Danielson, 6064 N. Paulina St.; one-story frame garage.

Robt. Daubert, 6118 S. Artesian Ave.; one-story frame garage.

C. Daus, 3830 N. Claremont Ave.; one-story frame garage.

E. P Denneby, 2741 W. 36th St.; one-story brick garage.

E. Eckhardt, 3601 Wrightwood Ave.; one-story frame garage.

P. A. Egge, 3717 N. Tripp Ave.; one-story frame garage.

D. Elm, 1006 N. St. Louis Ave.; one-story frame garage.

E. Erelson, 8445 S. Sangamon St.; one-story frame garage.

A. F. Erickson, 1338 Rosedale Ave; one-story frame garage.

Johnson Erickson, 5508 Haddon Ave.; one-story frame garage.

Chas. Euler, 2653 Ballou St.; one-story brick garage.

F. H. Fahlen, 2222 Giddings St.; one-story frame garage.

Jos. Farna, 856 N. Crawford Ave.; one-story frame garage.

Fred Fernstrom, 3545 Montrose Ave.; one-story frame garage

W R. Fill, 848 N. Trumbull St.; one-story frame garage.

N. C. Flint, 1340 Lunt Ave.; one-story frame garage.

Fred. Floskamp, 4149 N. Hamlin Ave.; one-story frame garage.

H. Fox, 7522 Perry Ave.; one-story frame garage.

Anton Fucek, 4212 W. 31st St.; one-story frame garage.

Michael Fuehver, 1610 N. Springfield Ave.; one-story frame garage.

M. Fuller, 7508 Merrill Ave.; one-story frame garage.

L. A. Fundling, 619 W. 62nd St.; one-story frame garage.

R. Funn, 5718 Emerald Ave.; one-story brick garage.

M. Gaffin, 3414 Franklin Blvd.; one-story frame garage.

J. J. Garvey, 5406 Broadway; one-story frame garage.

J. Gasch, 3745 N. Kildare Ave.; one-story frame garage.

Morris Gerber, 3218 Lexington St.; one-story frame garage.

Geo. M. Getschow, 4542 Beacon St.; one-story frame garage.

G. W. Greenway, 4167 Berkeley Ave.; one-story frame garage.

John Gruener, 4141 Wellington St.; one-story frame garage.

Wm. Guitman, 851 N. Trumbull Ave.; one-story frame garage.

Chas. Guntner, 8922 Normal Ave.; one-story frame garage.

Olaf Gustafson, 2743 Best Ave.; one-story brick garage.

E. M. Gustel, 7430 Crandon Ave.; one-story frame garage.

Thos. Inglesby, 4146 Grand Ave.; one-story frame garage.

John A. Jakob, 2535 Montrose Ave.; one-story frame garage.

C. A. Johnson, 6733 S. Morgan St.; one-story frame garage.

J. A. Jacobson, 4155 Kammerling Ave.; one-story brick garage.

Dr. A. C. Johnson, 3436 Rhodes Ave.; one-story frame garage.

August Johnson, 5651 Drexel Ave.; one-story frame garage.

J. Johnson, 3728 N. Marshfield Ave.: one-story frame garage.

L. Johnson, 824 N. Richmond Ave.; one-story frame garage

O. A. Johnson, 1945 Berwyn Ave.; one-story frame garage.

Oscar Johnson, 6025 S. Mozart St.; one-store garage.

T. Johnson, 4847 N. Robey St.; one-story frame garage.

O. Jorsch, 2703 E. 76th Place; one-story brick garage.

Joseph Bros., 3393 Archer Ave.; one-story brick and reinforced concrete garage, 30x200, at southeast corner 22nd and Ashland Ave.; $50,000.

Peter Kanna, 4816 W. Kinzie St.: one-story frame garage

F. Kapiska, 5336 Cuyler Ave.; one-story frame garage.

L. Kaplan, 1913 S. Kedzie Ave.: one-story frame garage.

Jacob Karaffa, 1541 S. Cal. Ave.; one-story frame garage.

J. Kelly, 5251 Lexington St.; one-story frame garage.

H. E. Kent, 3346 Wilson Ave.; one-story frame garage.

Mary B. Kilchaus, 3945 W. Congress St.: one-story frame garage.

E. G. Killerbrue, 3552 S. State St.; one-story metal garage.

H. C. King, 4539 West End Ave.; one-story brick garage.

G. Klem, 2300 Roscoe St.; one-story brick garage.

C. Klingstone, 2432 N. Spaulding Ave.: one-story frame garage.

W. Kneziech, 1508 S. Keeler Ave.; one-story frame garage.

P. E. Koehler, 5236 Cuyler Ave.; one-story frame garage

J. Komafel, 7959 Kingstone Ave.; one-story frame garage.

Jos. Kopke, 3750 Cortland St.; one-story frame garage.

John S. Kwarek, 4340 Crystal St.; one-story frame garage.

Edward Kyllor, 1929 Monticello Ave.; one-story frame garage.

A. Kreinske, 10,348 Ave. L.; one-story frame garage.

F. Lackenmeyer, 529 N. Central Ave.; one-story frame garage.

Mrs. Augusta Larson, 1654 Carmen Ave.; one-story brick garage.

Chas. E. Larson, 3941 Kimball Ave.; one-story brick garage.

T. Lautz, 903 N. Rockwell St.; one-story frame garage.

S. J. Leech, 735 E. 89th place; one-story frame garage.

H. H. Lester, 7022 S. Lincoln St.; one-story frame garage.

M. M. Linn, 5216 W. Kinzie St.; one-story frame garage.

C. O. Lobgren, 7547 Langley Ave.; one-story brick garage.

L. V. Logeman, 729 Robbins terrace; one-story frame garage.

Dr. C. H. Long, 4616 Mich. Ave.; one-story frame garage.

Frank E. Long, 163 N. Euclid Ave.; one-story frame garage.

L. W. Luckner, 3617 Narragansett Ave.; one-story frame garage.

J. Malezyniki, 1653 Armitage Ave.; one-story brick private garage, 25x30.

Henry L. Newhouse, 4630 Prairie Ave.; one-story brick and cut stone public garage at 5210-34 Berkeley Ave.

North Side Oldsmobile Co., 3046 Lincoln Ave.; one-story brick and concrete service station and sales room, 50x60, at 5206-8 Broadway.

Staver Motor Car Co., 1100 W. Garfield Blvd.; two-story brick and reinforced concrete service station, 150x170, at State and W. Garfield Blvd.; $150,000.

G. Van Geffen, 30 W. 113th Place; one-story frame garage.

Decatur:

C. E. Balridge, 468 S. Boyd St.; one-story frame garage.

Victor Dewein, 133 N. Taylor Ave.; one-story frame garage.

W. W. Doan, 236 W. Eldorado St.; one-story brick garage.

J. N. Green, 1532 E. Eldorado St.; one-story frame garage.

J. C. Lyons, 824 W. Macons St.; one-story frame garage.

E. S. Merris Garage, 217 Wash. St.; one-story brick garage.

A. V. Stough, 501 E. Division St.; one-story frame garage.

Forest Park—E. E. Clark, 232 Rathrobe Ave.; one-story frame garage.

Springfield—I. A. Weaver, 1319 S. First St.; one-story brick garage.

Wilmette—Paul Fieberg, 213 W. Austin Ave., Chicago; one-story frame garage.

Indiana.

Hammond—J. Y. Hutton; one-story brick and concrete garage, 90x120, at Sibley St. and State Line; $60,000.

Jefferson—Twin Motor Sales Co., 129 E. Maple St.; two-story commercial garage and sales room, 50x153; $75,000.

Iowa.

Des Moines—Dr. Lowell Chamberlain, 6th and Park Sts.; one-story brick garage, 42x78, at Beaver and Urbandale Sts.; $13,000.

Kansas.

Allen—Miller Garage, Chas. H. Calhoun, prop; additions.

Augusta—Standard Oil Co.; filling station, corner State and Fourth Sts.

Strong City—C. R. McDonald, S. Main St.; one-story stone addition to garage, 50x150.

Kentucky.

Covington:

J. W. Jones, 1664 Kendall St.; one-story frame garage.

Otte Kempler, 306 Earle Ave.; one-story metal garage.

J. F. Klare, 1505 Russell Ave.; one-story metal garage.

Edward Pyle, 9 W. Southern Ave.; one-story metal garage.

Thos. Savage, 209 E. 15th St.; one-story steel-clad garage.

Ft. Thomas—Dr. A. P. Walton, 2008 Union Central Bldg., Cincinnati, O.; one-story brick garage.

Frankfort—Dr. John F. Steward; one and two-story reinforced concrete garage. 42x42; $12,000.

Louisville—Standard Oil Co.; one-story garage; $6000.

Newport:

Thos. Hoskings, 412 Monmouth St.; one-story metal garage.

Walter Messner, 409 W. 12th St.; one-story metal garage.

Jos. Scribner, 317 W. 7th St; one-story metal garage.

Maine.

Farmington—Morton Motor Co.; one-story concrete garage and show room, 112x60; $20,000.

Maryland.

Baltimore:

Crystal Ice Co., North Ave. and Chester St.; two-story garage, 80x80.

Del-Mar-Va-Nash Motors Co., 134 W. Mt. Royal Ave.; three-story brick and reinforced concrete auto. building, 150x60; $200,000.

Chas. R. German, 100-B Prospect Ave.; one-story brick garage, 28x75.

R. P. Good, Reisterstown road and Garrison Ave.; one-story brick garage, 56x134.

E. A. Holofoener, Gay St. and East Ave.; one-story garage, 71x100, at 418-24 East St.; $20,000.

John Leone, 2231 Yalbrook Ave.; one-story concrete block garage and repair shop, 40x70.

Frank Molnauer, 531 S. Ann St.; one-story brick garage, 42x96.

S. W. Snitzer, care Union Fish Co., 3454 Reistertown, Rd.; three-story brick garage and service station, 60x90.

Hagerstown—Hagerstown Foundry Co., 8 N. Jonathan St.; two-story concrete garage, 60x90; $10,000.

Massachusetts.

Beverly—Paul S. Eaton, 434 Rantoul St.; one-story concrete and tile public garage and repair shop, 60x96 and 31x46.

Millbury—Peter Lynch; one-story concrete block public garage, 55x70; $15,000.

Salem—Rodman & Cassin, 122 Boston St.; one-story concrete block garage, 28x40; $10,000.

W. Springfield—Harry Schaeffer, 30 Eldrudge Ave.; one-story cement block public garage, 25x40; $5000.

Michigan.

Deckerville—Hartshorn & Son; one-story brick, tile and stucco garage and sales room, 60x120; $60,000.

Detroit:

Saml. Kametski, 114 Theodore St.; one-story brick public garage, 60x90; $25,000.

Rice Co., 821 Broadway; one-story brick garage, 40x96, west side Antoine St.; $10,000.

St. Clair Heights Garage Co., 1804 Mack Ave.; one-story brick, concrete and frame garage, 33x60, at 765 Fairview Ave.; $16,000.

Louis Schmidt, 4 Frontenac Blvd.; one-story brick garage, 46x70; $9000.

Millington—D. E. Evans; one-story brick garage, 66x115; $40,000.

Saline—Fred Wiedman; one-story brick and reinforced concrete garage and service station, 60x160; $20,000.

Duluth:

P. J. Agnew, 419 30th Ave.; one-story frame garage.

John Berger, 203 102nd Ave.; one-story frame garage.

N. D. Borsness, 1297 23rd Ave.; one-story frame garage.

M. L. Carscodden, 425 S. 71st St.; one-story frame garage.

J. A. Crosby, 2608 E. Superior St.; one-story frame garage.

F. J. Dacey, 2525 E. 7th St.; one-story brick garage.

W. E. Danforth, 926 E. 1st St.; one-story frame garage.

Hugh Fawcett, 2128 London Rd.; one-story frame garage.

R. C. Fields, 619 102nd Ave.; one-story frame garage.

M. Gardon, 223 E. 3rd St.; one-story frame garage.

W. C. Gooder, 523 E. 8th St.; one-story frame garage.

O. C. Hanson, 428 43rd Ave.; one-story frame garage.

Edward Lindwall, 4213 Jay St.; one-story frame garage.

J. Alfred Mellin, 4510 Cambridge St.; one-story frame garage.

J. L. Meyers, 423 E. 4th St.; one-story frame garage.

E. Olson, 505 E. 6th St.; one-story frame garage.

Chas. A. Peterson, 225 W. 5th St.; one-story frame garage.

Mike Rajhovich, 123 W. 3rd St.; one-story frame garage.

A. Sauri, 1717 E. 6th St.; one-story frame garage.

Peter Skadberg, 828 N. 58th St.; one-story frame garage.

S. M. Widdis, 321 E. 8th St.; one-story frame garage.

Frank Wilson, 2319 Wilkins Ave.; one-story frame garage.

Minneapolis:

C. V. Anderson, 3200 Holmes Ave.; one-story frame garage.

S. B. Appleton, 3614 Nicollet Ave.; one-story brick garage.

G. A. Carlson, 1301 Monroe St., N. E.; one-story frame garage.

J. S. Dolan, 1302 Plymouth Ave.; one-story frame garage.

Grusner & Thurber, 1715 4th Ave.; one-story brick garage.

Jas. R. Holden, 3609 Clinton Ave.; one-story plaster veneer garage.

Rudolph Merle, 2012 Dupont Ave., south; one-story brick garage.

Missouri.

Butler—Producers Consolidated Oil Co., Kansas City; gasoline filling station, N. Main and Pine Sts.; $15,000.

Harrisonville—Producer's Consolidated Oil Co., Kansas City; reconstructing filling station, northeast corner N. Independence and E. Chestnut Sts.

Ironton—H. L. Bell; garage.

Kansas City:

Benj. Elboun, 2411 Olive St.; one-story brick and stone trim garage, 50x132.

Harvey Crude Oil Co.; fuel oil station and main gasoline storage and distribution plant; (site) $50,000.

Latham—F. L. Hill Garage; fireproof, modern garage, Main St.

Lathrop—Lee Elston; addition to garage, Termier lot, 70x100.

St. Louis:

Constantine DeFranco, 5256 Wilson Ave.; one-story brick and reinforced concrete garage, 50x30.

Meletio Auto Service Co., 1422 Morgan St.; one story brick garage and filling station, 54x102, at 1428 Morgan St.; $50.000.

Chase Ulman, 4540 Linden Blvd.; one-story garage and show room, 79x165.

New Jersey.

Chelsea—Frank B. Chambers, 2722 Atlantic Ave., Atlantic City; three-story brick garage and sales room, 50x95, $70,000.

Elizabeth:

L. Kramer, 205 Bond St.; one-story cement block public garage, 207-9 Bond St.; $9500.

S. Paul Krause, 66 William St., Newark; two-story brick public garage and gasoline station at Cherry St. and Lincoln Highway.

Hoboken—Chas. Noeding, 125 Harrison St.; one-story brick and hollow tile public garage at 2nd and Harrison Sts.; $16,000.

Jersey City—Wm. and Edward Ritherbeck, 141 Clarke Ave.; one-story brick garage at 151-155 Clarke Ave.; $10,000.

Morristown—Saml. Dante, 126 Speedwell Ave.; one-story concrete block garage at Speedwill Ave. and Early St.; $15,000.

Newark:

Franklin Lumber Co., Nye Ave. and Fabyan Place; one-story brick commercial garage; $9000.

John S. Geiger's Sons, 83 Hartford St.; one-story brick garage at 95-99 Hartford St.; $20,000.

Otto Koenig, 151 Wilson Ave.; one-story brick commercial garage at Wilson Ave. and Garrison St.; $30,000.

Paterson—Passaic County Board of Chosen Freeholders, Court House; one-story brick garage at 1719 Marshall St.; $40,000.

Pleasantville—Edwin Burk; one-story brick and tile public garage and service station, 77x166, at Shore Rd. and Verno Ave.

S. Orange—S. M. Swanson, 511 Hartford Rd.; two-story garage.

New York.

Brooklyn:

Bay 23rd St. Construction Co., 181 Bay 17th St.; one-story garage; $45,000.

August Bivcleth, 17 Spencer St.; one-story brick garage at E. Spencer and Flushing Ave.; $45,000.

Brownsville Association, Inc.; one-story brick garage; $30,000.

Harry Bryant, 291 Hinsdale St.; one-story brick garage; $50,000.

Cropsey & Mitchell, Cropsey Ave. and Bay 25th St.; one-story brick garage; $6000.

Albert E. Ehrlich, 8624 Bay Parkway; one-story brick garage, west side 18th Ave.

Garage Property Corp., 5011 17th Ave.; one-story garage; $40,000.

Louis Getzoff, 522 Stone Ave.; one-story brick garage at southwest corner Stone and Blane Aves; $20,000.

Hyman Goldberg, 1632 42nd St.; one-story garage; $30,000.

Mary E. Guerin, 1112 Ave. C; one-story brick garage; $40,000.

Frank J. Helme, 190 Montague St.; one-story brick garage, west side Coney Island Ave.; $20,000.

Isaac Karlson, care Mr. Whitehorn, 791 Broadway; one-story brick garage at 320-28 Flushing Ave.; $35,000.

Harry Katz, 146 Prospect Ave., Bayonne, N. J.; one-story brick garage, north side 9th St.; $15.000.

King's Highway Realty Co., 1817 King's Highway; one-story brick garage, east side E. 16th St.; $50,000.

Morris Klein, 53 Howard Ave.; one-story brick garage; $20,000.

L. Kooner, 1113 St. John's Place; three-story brick garage; $35,000.

Walter G. Lahm, 57 E. 15th St.; one-story brick garage; $50,000.

Walter I. Landolt, 114 Dobbin St.; one-story brick garage; $12,000.

Matteo Marsilla 26 Bushwick Ave.; one-story brick garage; $15,000.

Martha Garage Corporation, 1478 President St.; one-story brick garage; $50,000.

Chas. H. Noble, 2 Wall St., New York City; three-story garage at southwest corner 8th and Roebling Sts.; $75,000.

Nolos Realty Corp., 215 Montague St.; one-story brick garage; $75,000.

Princess Construction Co., 92 Webster Ave.; one-story garage; $50,000.

Wm., Ralph and I. Rosenstein, 204 New Lots Rd.; two-story brick garage, east side Lawrchee St.; $75,000.

Adler and David Seirman, 1563 Pitkin Ave.; one-story brick garage, south side 59th St.; $30,000.

Chas. Shkolnick; one-story garage; $30,000.

Harry Strengin, 1703 Pitkin Ave.; one-story garage, at 806 Coney Island Ave.; $30,000.

Ida Stulman, 820 Lafayette Ave.; one-story brick garage; $75,000.

Talbanesor Realty Corp., 190 Bay 31st St.; one-story garage; $12,000.

West Church Realty Co., Inc., 44 Court St.; one-story brick garage, northeast corner Livonia and Van Sinderon Aves.; $30,000.

Barney Wiener, 496 Hopkinson Ave.; one-story brick garage at Sheffield Ave. and Fulton St.; $25,000.

Buffalo:

Erie Service Co., 349 Masten St.; one-story brick garage, 100x150.

Sikes Chair Co., 500 Clinton St.; one-story brick and concrete garage 32x65. $10,000.

Elmhurst, L. I.—E. R. Durkee Co.; one-story concrete garage; $12,000.

Jamaica:

Roseville Bldg. Co., 7812 18th Ave.; Brooklyn; one-story brick garage; $35,000.

Walker Bros. Motor Co., Inc.; one-story brick public garage, west side Bergen Ave.; $80,000.

Long Island City, L. I.—John P. Conaty; one-story garage; $40,000.

Middle Village—C. & K. Bldg. Co., Wayne St.; one-story brick garage and repair shop; $57,000.

Niagara Falls—W. M. Richardson; two-story brick garage and sales room, 69x96, at 2765 Main St.; $30,000.

New Rochelle:

S. L. Carpenter and Robt. T. Safford, Jr., 219 Sickles Ave.; one-story cement block garage at Huguenot St. and North Ave.; $50,000.

M. Goldstein, 142 Huguenot St.; 1½-story brick garage at Huguenot and Hudson Sts.; $12,000.

New York City:

Jacob Bernstein; one-story brick garage at 165th St. and Biston Rd.; $70,000

Broadway & 126th St. Corp., 1057 Bryant Ave.; two-story brick and concrete garage at northeast cor. Broadway and 126th St.; $150,000.

S. Calabre Bldg. Co.; one-story garage; south side 163rd St., Bronx; $25,000.

City of New York, Dept. of Plant and Structures, Municipal Bldg.; one-story reinforced concrete garage at 231-37 Delancey St.; $40,000.

City Real Estate Co., 176 Broadway; one-story garage, west side Boston Rd., Bronx; $40,000.

Community W. Houston St. Garage, Inc., 3 Charlton St.; one-story brick garage; $15,000.

Jos. Dollan Contracting Co., 25 W. 140th St.; one-story brick garage; $45,000.

Edel Realty So., 1901 Walton Ave.; one-story brick garage; $75,000.

Gallagher & Shand, Inc., 1731 1st Ave.; one-story brick public garage; $40,000.

Foer Lee Ferry Garage Co., 619 W. 29th St.; two-story garage; $350,000.

Levine & Larger, 110 E. 31st St.; one-story brick garage, north side Southern Blvd., Bronx; $35,000.

Silvia Maresca, 2677 8th Ave.; one-story brick garage; $35,000.

John Massiminio, 205 160th St.; one-story brick garage at northwest corner Jerome Ave. and 177th St. Bronx; $50,000.

N. Y. Railway Co., 165 Broadway; three-story brick garage at 130-42 Barron St.; $30,000.

Anthony, James and Frank Paladino, 219 E. 118th St.; one-story brick garage at 437-443 E. 120th St.; $25,000.

Rochnitz Bros., 143 Liberty St.; one-story brick and terra cotta commercial garage at 302-16 E. 45th St.; $150,000.

Saml. Rubin, 1360 Findlay Ave.; one-story brick garage; $20,000.

Bertram Smith, 2527 Hghes Ave.; one-story reinforced concrete garage, northeast corner City Island Ave. and Ditmars St.; $30,000.

Nathan W. Wolfe, 1537 Bathgate Ave.; one-story brick garage, west side Southern Blvd., Bronx; $15,000.

Oneida—A. I. Gaul; one-story concrete block garage, 55x85; $12,000.

North Carolina.

Charlotte—Standard Oil Co.; one-story garage and storage station; $85,000.

Ohio.

Cincinnati:

Max Schuler, 532 Carplin Pl.; one-story brick garage.

M. B. Schwenker, 336 Thrall St.; one-story frame garage.

J. B. Sprange, 927 Hawthorne Ave.; one-story frame garage.

W. A. C. Wachs, 235 Hosea Ave.; one-story brick garage.

L. Paul Waltz, 3075 Daytona Ave.; one-story brick garage.

Chas. A. Weber, 4202 Delaney St.; one-story frame garage.

Chas. Weichold, 1718 Hanfield St.; one-story frame garage.

Mrs. Harry Williams, 706 Wayne Ave.; one-story frame garage.

Wm. Witte, 1955 Rockland Ave.; one-story frame garage.

J. Zeidman, 1046 Wesley Ave.; one-story brick garage.

A. F. Zobel, 393 Probaxco Ave.; one-story frame garage.

Cleveland—A. Holbeck, care D. Cefarett, 510 Permanent Bldg.; one and two-story public brick and reinforced concrete garage, 74x138; $50,000.

Dayton—D. A. Wetzel, 1302 S. Carlisle Ave.; one-story public garage, 40x60, at 114 S. St. Clair St.; $5500.

Hamilton—Martin Lingler; two-story brick show room, 18x45; $14,000.

Norwood:

O. L. Downey. 4021 Burwood Ave.; one-story frame garage.

Wm. C. Eichner, 2211 Hannaford Ave.; one-story frame garage.

D. E. Ettzroth, 4023 Burwood Ave.; one-story frame garage.

Henry Feldman, 4607 Smith Rd.; one-story brick garage.

W. F. Gangemage, 3827 Forest Ave.; one-story frame garage.

F. Henke, 1905 Waverly Ave.; one-story brick garage.

Clemens A. Jeckel, 2352 Quarman Ave.; one-story frame garage.

Chas. Mallery, 5433 Laura Lane; one-story brick garage.

Fred Rains, 2237 Hannaford Ave.; one-story concrete garage.

Mrs. Theodore Thole, 1804 Mills Ave.; one-story frame garage.

Perrysburg—Ford Agency; two-story brick and frame garage, 66x150; $20,000.

Portsmouth—Chas. Herr; two-story brick and stone trim garage, 42x145; $30,000.

Sciotisville—Dr. Hutchinson; one-story brick garage, 40x110; $20,000.

Wellston—C. M. Reese; two-story brick and reinforced concrete garage, 60x120; $40,000.

Youngstown:

G. H. Black. 177 Wellendorf Ave.; one-story brick garage.

W. G. Butler, 1923 Elm St.; one-story brick garage.

T. L. Cowher, 133 Bruce St.; one-story frame garage.

B. F. Diefenderfer, 18 N. Rebecca St.; one-story frame garage.

Steven Dorbranchin, 640 Tyndale Ave.; one-story frame garage.

S. M. Evans, 21 W. Delason Ave.; one-story frame garage.

Edgar Lawn, 956 Boston Ave.; one-story frame garage.

J. J. Rogers, 634 Hayes Ave.; one-story frame garage.

Michael Voytko, 981 Wilson Ave.; one-story frame garage.

Yoho & Hooker, 322 Cottage Row; one-story frame garage.

Oklahoma.

Bartlesville—Indian Territory Oil Co.; one-story garage, 108x140; $65,000.

Lawton—Adolph Fietz; two-story brick auto building; (lot) 27½ ft. front.

Oklahoma City—Paige Motor Co.; four-story stone over reinforced concrete show room 75x150.

Pennsylvania.

Chalerol—Frank Zwick, Hotel Arthur; two-story brick and concrete commercial garage, 48x80; $35,000.

Clairton—W. A. Terrill, 520 Van Kirk St.; two-story brick commercial garage. 36x110.

Corapolis—Keystone Garage Co.; one-story brick and concrete commercial garage, 50x110.

DuBois—J. M. Hepfer; one-story brick sales room, 50x75; $10.000.

Elizabeth—A. G. Rothey & Co.; one and two-story brick and hollow tile commercial garage, 60x156, at Farmers' Alley and Plum St.

Harrisburg—H. A. Hipplo, Harrisburg National Bank Bldg., 14 S. 2nd St.; one-story concrete block garage, 50x100, at 22nd and Dorry Sts.; $15,000.

Lewistown—Keystone Motors Co.; two-story brick and concrete public garage. 180x200, rear 12-20 W. 3rd St.; $100,000.

Norristown—R. Krieble; two-story brick garage and shop, 20x25; $3000.

Philadelphia:

Apperson Auto. Co.; six-story sales and service station, 60x100, Broad St., near Girard Ave.

J. J. Conner, 52nd and Regent Sts.; one-story brick public garage, 100x120, at 52nd and Pentridge St.; $40,000.

Erie Ave. Supply Co., 7th and Erie Ave.; two-story brick garage, 30x80; $5000.

Julius Glanzberg and L. Littleman, 2021 S. 8th St.; 10 one-story garages, 11x30 each; $14,000.

E. Allen Wilson, 1208 Chestnut St.; one and two-story brick garage, 75x110, at 21st and Berks Sts.; $50,000.

Pittsburgh:

H. Muzzee. Ellsworth and Maryland Aves.; one-story cement block commercial garage, 40x40.

Sawders Murray Co., 609 Neville St.; one and two-story brick garage, 100x100, at 44th St. and P. R. R.

Waynesboro—Edward Oiler, 56 E. Main St.; one and two-story public garage, 40x175; $14,000.

Texas.

Corpus Christi—Columbian Refining Co.; filling station and wholesale plant, Leopard St.

Dallas—J. F. Lang, 1516 Langs Blvd.; one-story iron clad garage; $6000.

Gonzales—Mathieu Matthews; one-story garage and filling station; $30.000.

Virginia.

Lynchburg:

W. L. Clark; one-story brick and concrete filling station and accessory shop.

Virginia Auto Co., 8th and Church Sts.; two-story brick and concrete garage 39x60.

Newport News—McKee, Williams & MacIntire, 225 28th St.; two-story brick and reinforced concrete public garage, 100x100; $100,000.

West Virginia.

Clarksburg—Wm. Husbaum; one-story garage, 80x105.

Wisconsin.

Milwaukee—Ernest T. Lubeck, 765 Prospect Ave.; one-story brick garage.

Oconomowoc—W. S. King; one-story garage and sales room. 60x90; $20,000.

Shawano—Shawano Motor Car Co.; one-story brick and concrete garage and sales room, 70x150; $15,000.

Sheboygan:

Barney Aleff, 1127 Clara Ave.; one-story frame garage.

Geo. Gerlat, 1523 N. 3rd St.; one-story frame garage.

Geo. Graff, 4717 Mich. Ave.; one-story frame garage.

A. Mahlendorf, 918 N. Y. Ave.; one-story frame garage.

Jos. Rademacher, 1530 N. 8th St.; one-story frame garage.

Alvin Schmidt, 1515 Ga. Ave.; one-story frame garage.

Geo. Schueler, 1931 N. 12th St.; one-story frame garage.

Wausau—Daheke, Giese & Walker; one-story hollow tile and brick garage and sales room, 56x66; $10,000.

CONTRACTS AWARDED.

Arkansas.

Little Rock:

Climber Motor Corp.; all-steel auto building, 100x200, cement floors.

Green Motor Co.; remodelling auto building, southwest corner Markham and Main Sts.

Marked Tree—Blanton & Smith; brick service station, 50x150.

Ft. Smith—Gibson Oil Co.; filling station, E. Main St.

Connecticut.

Bridgeport—John R. Sheehan, 211 State St.; one-story public garage, 120x105, for S. S. Wheeler, 1185 Main St.; $20,000.

New Haven—New Haven Dairy Co., 201 Hazel St.; two-story garage, 150x70; $75,000.

New London—Torrello Bros.; one-story garage and service station at 576 Bank St.; for Thos. Ragonese, 721 Bank St.; $40,000.

District of Columbia.

Washington:

W. N. Beam, 700 10th St., N. W.; two-story garage, 60x105, for L. P. Stuart & Bro., 138 12th St., N. E.

Frank L. Wagner, 1413 H St., S. T.; three-story service station, 45x160, for Hurley Motor Co., 829 14th St., N. W.

Florida.

Orlando—C. C. Hanner; one-story reinforced concrete garage, 80x90, for Cook Auto Co.; $60,000.

Georgia.

Columbus—Griffin Construction Co., Atlanta; two-story reinforced concrete service station, 55x125, for Jordan Co.; $48,000. Lessee, Ga. Auto Exchange.

Illinois.

Chicago:

A. Abrahams, 3640 N. Richmond St.; one-story frame garage.

Augustus Adler. 10504 S. Racine Ave.; one-story frame garage.

Wm. Anderson, 7144 St. Lawrence Ave.; one-story frame garage.

Mrs. L. E. Anderson, 1238 N. Kedzie Ave.; one-story brick garage.

R. T. Anderson, 4823 N. Winchester Ave.; one-story frame garage.

Leo Angly, 2022 Humboldt Blvd.; one-story frame garage.

C. H. Black, 1428 W. 113th Place; one-story frame garage.

Susan Bohling, 9708 Ewing Ave.; one-story frame garage.

W. S. Bougher, 6706 S. Green St.; one-story brick garage.

S. R. Burgoyne, 8244 Dante Ave.; one-story frame garage.

C. D. Dahlquist, 1326 E. 54th St.; two one-story garages, 58x20 and 28x20, at 5326 Kenwood Ave.; $3500.

Thos. Gerzech, 5226 Bishop St.; one-story frame garage.

W. R. Green, 3226 Wash. Blvd.; one-story brick garage.

J. L. Hagerman, 1402 E. 61st St.; one-story brick garage.

Andrew Hall, 3634 N. Richmond St.; one-story frame garage.

Wm. Hammerstroem, 3038 Darwin Terrace; one-story garage, 105x23, at 1449 Irving Park Blvd., for W. Dyser; $8000.

Jos. Hannigan, 5405 W. Monroe St.; one-story frame garage.

Hans H. Hansen, 5022 Lowell Ave.; one-story frame garage.

Mrs. B. Harm, 1021 N. Massasoit Ave.; one-story frame garage.

G. Hart, 3948 Arthington St.; one-story frame garage.

E. Hartzer, 5701 S. Kedzie Ave.; one-story frame garage.

John Hebel, 2750 W. 39th Place; one-story frame garage.

John Held, 3647 N. Artesian Ave.; one-story frame garage.

Hellmuth Cooperage Co., 5217 Western Blvd.; one-story brick garage.

L. G. Hemsteger. 5421 Woodlawn Ave.; one-story frame garage.

Wm. L. Herdt, 906 N. Hoyne Ave.; one-story frame garage.

W. Herhold, 622 N. Pine Ave.; one-story brick garage.

C. C. Hile, 1215 E. 65th St.; one-story frame garage.

B. J. Hosper, 1657 W. 19th St.; one-story frame garage.

Thos. Howells, 5908 S. Paulina St.; one-story frame garage.

Hubbard Bros., 4425 N. Racine Ave.; one-story frame garage.

Edward Huehl, 10,416 Ewing Ave.; one-story frame garage.

Henry J. Hurning, 2503 Leland Ave.; one-story brick garage.

Look & Vanderberg, 1100 N. Monroe St.; one-story garage, 95x125, at Sangamon and Monroe Sts.; $40,000.

L. J. McCabe, 2814 Wellington Ave.; one-story brick garage.

P. H. McDonald, 6117 Dorchester Ave.; one-story brick garage.

Wm. Magerstadt, 5211 S. Morgan St.; one-story frame garage.

M. C. Mahone, 2959 Harrison St.; one-story frame garage.

M. J. Mahoney, 122 N. Leamington St.; one-story frame garage.

C. Mantzer, 4845 N. Seeley Ave.; one-story frame garage.

L. Marks, 8415 Baltimore Ave.; one-story concrete garage.

W. Marny, 4541 Wash. Blvd.; one-story frame garage.

J. F. Marshall, 2641 Bosworth St.; one-story frame garage.

Frank Megich, 2918 N. Halsted St.; one-story frame garage.

A. Merl, 3308 N. Keating Ave.; one-story frame garage.

F. W. Meyers, 2707 Potwyn Place; one-story frame garage.

E. D. Miller, 5024 W. Huron St.; one-story frame garage.

G. W. Minnth, 1470 Farragut Ave.; one-story frame garage.

S. Monson, 8137 Dorchester Ave.; one-story brick garage.

Albert Mueller, 2335 W. Adams St.; one-story brick garage.

K. W. Munson, 3516 N. Cicero Ave.; one-story frame garage.

Edward J. Murnan, 4108 N. Central Park Ave.; one-story frame garage.

R. R. Neher, 2208 N. Kedvale Ave.; one-story brick garage.

A. C. Nelson. 7408 Oglesby Ave.; one-story brick garage.

C. F. Newman, 949 N. Mayfield Ave.; one-story frame garage.

R. E. Nichol, 2930 Byron St.; one-story frame garage.

C. A. Nimt, 328 N. Lotus Ave.; one-story cement garage.

Chas. Norberg, 3150 N. Springfield Ave.; one-story brick garage.

J. F. O'Brien & Co., 236 E. 61st St.; one-story public garage, 100x160, at 71st St. and Constance Ave.; $40,000.

C. D. Robson, 38 S. Dearborn St.; one-story garage, 72x66, at 1522 S. Wabash Ave.; for Emilies Longhi.

Wm. J. Scown, 36 W. Randolph St.; one-story service station, 16x22, at 2143 S. Ashland Ave.; for Standard Oil Co., 910 S. Mich. Ave.; $10,000.

E. W. Sproul & Co., 2001 W. 39th St.; one-story garage, 26x83, at 1353 W. 37th St., for Troco Nut Butter Co., 30 N. Mich. Ave.; $6000.

Mr. Strom, 104th and Vincennes Sts.; one-story garage and repair shop, 50x50; $8000.

West Englewood Construction Co., 1624 W. 63rd St.; one-story garage, 125x20, at 59th and Bishop Sts., for McKeown Transfer Co., 1447 W. 63rd St.; $90,000.

St. Charles—Hans Jensen; one-story garage, 52x100, for E. J. Hahn Garage; $10,000.

Indiana.

Ft. Wayne—J. F. Humper & Sons, 614 Home Ave.; two-story garage and sales room, for Dr. R. B. Shields, 3939 Harrison St.; $45,000.

Indianapolis:

Conder & Culbertson, 31 E. Ga. St.; one-story garage, 118x135, for Federal Realty Co., 31 E. Ga. St.; $65,000.

E. G. Spink Co., 914 Hume Mansur Bldg.; one-story public garage, 46x146, at 3704 N. Penn St., for Dorchester Realty Co.; $15,000.

Iowa.

Cedar Rapids—R. A. Fisher; one-story garage, 26x50, for G. A. Sayer, 101 3rd Ave.; $10,000.

Kansas.

Council Grove—Service Garage, Purvear & Son; large addition.

Downs—Woolley Service Stations, Sam and Harry Woolley, owners; two-story, fireproof garage and service station.

Galena—Galena Auto Co., 5th and Main Sts.; improvements.

Garden City—L. M. Huff; garage at Stevens Ave. Lessee, Hills & Setty.

Kinsley—Roy Hatfield; auto building, 44x130, for S. M. Tarp, Tarp Motor Co.; $27,000.

Liberal:

Liberal Auto Supply Co.; work shop, 50x50.

F. C. Randall; garage, 76 ft. front; $45,000.

Lincoln—Lincoln Motor Co.; brick front to garage.

Manchester—Kiekel Bros; remodelling garage.

Olathe—J. H. Cosgrove & Son; brick sales room, north side square, for Williams & Lyons, Dodge Bros. Agency.

Plainville—Beam Motor Co.; stock room; addition to Red Line Garage.

Pratt—W. R. Covert; auto top and paint shop, 50x80, for R. M. Woodruff; $80,000.

Salina—Leckstrom & Hederstedt; one-story brick garage, 50x120, east side S. 5th St.; $10,000.

Scandia—A. G. Allmutt; garage; Chadwick livery stable site.

Severy—Sample Bros., Robinson Bldg.; garage on Kansas Ave.

White City—Peck Construction Co.; new stucco front on Wallage Garage.

Kentucky.

Barbourville:

Bert Churchill; one-story, fireproof garage, 70x120, for Knox Garage; $20,000.

Knox Garage Co.; two-story brick garage, 70x120; $20,000.

Frankfort—Kent K. Kearns; large garage for State Highway Dept.; $34,600.

Maryland.

Baltimore—E. Eyring & Son, 3501 Fait Ave.; two-story garage and machine shop, 150x167, for Spams Motor Co., 3185 Philadelphia Ave.

Pocomoke City—McIver Construction Co., 1802 Whitmore Ave.; one-story garage, 60x150 and 60x120.

Massachusetts.

Chicopee—Jas. Hennessey, 1288 St. James Ave.; one-story public garage for H. A. Biddle, 1228 St. James Ave.; $7000.

Everett—Linn Weiner, 1485 Dorchester; one-story garage, 72x80, for Louis Albaum, 68 Malden St.; $15,000.

Lexington—C. C. Temple Co., 40 Court St., Boston; one-story sales room and service station, 50x85, for G. W. Childs.

Norwood—Walter Smith & Sons; one-story public garage, 51x53, for Norwood-Buick Co., 649 Wash. St.; $15,000.

Pittsfield—Jas. Milne, 78 Woodleigh Ave.; one-story private garage, 15x35, at 168 West St., for Manufacturers' Trucking Co., 172 West St.; $15,000.

Worcester—Jas. Miles & Son Co., 393 Main St.; one and two-story garage, 154x28, at 401 Southbridge St., for Claflin Summer Coal Co., 9 Pleasant St.; $28,000.

Michigan.

Battle Creek—R. G. Phelps, 731 Maple St.; two-story public garage, 128x132, for Cushman Auto Sales Co.; $200,000.

Missouri.

Albany—E. Y. Davis & Son; shop addition, 70x24, to garage of Walter Cox.

Columbia—Simon Construction Co.; frame service station, 34x35, for Kansas sales room, Terrell-Crouch lumber yard building, for John N. Taylor.

Joplin:

Hickman Motors Co.; show room and service station, 410 W. 4th St., for T. E. Hickman, Kansas City.

Hudson-Hughes Motor Co.; remodelling auto building, 614-20 Wall St.

Kansas City:

Bowling & Son, Sharp Bldg.; one-story City Auto & Tractor School, 1432 Lydia Ave.

Barney Tannof, 2219 E. 21st St.; one-story brick and stone trim garage, 50x132, for Ben Elboum, 2411 Olive St.

Waddell & O'Brien, 1705 Walnut St.; auto building, 19th and Grand Sts.

Latham—A. C. Edwards; garage for F. L. Hill.

Memphis—Briscoe Garage, W. R. Seber, Manager; garage.

Neosho—Hugh Haye and H. R. Malaby; remodelling Motor Service Co.'s garage and repair shop, E. Main St.

St. Louis:

Battery Service Co.; service station, 22nd and Locust Sts.; $100,000.

Meletio Auto Co., 1422 Morgan St.; one-story garage and filling station, 54x102; $50,000.

John D. Paulus, 4729 Northland Ave.; one-story garage, 103x269, for Hudson Frampton Motor Car Co., Leonard and Locust Sts.

Chase Ulman, 4540 Linden Blvd.; one-story garage and show room, 79x165, at 2120 Locust St.; $45,000.

Sikeston—Boss Motor Co.; garage and auto building; $50,000.

New Jersey.

Burlington—J. J. Kolster, Beverly; one-story garage, 12x20 and 6x12, rear 16 W. Union St., for C. H. Prickett, 18 W. Union St.; $3500.

Harrison—Frank Cope, 584 S. Orange Ave.; one-story public garage, at 434 Harrison Ave., for Rosana Perrone, 436 Harrison Ave.; $12,000.

Jersey City—Magnolia Construction Co., 90 Waldo Ave.; one-story brick garage (29 stalls), at 70-72 Waldo Ave.; $10,000.

Newark—Isidore Roxcon, 61 Monmouth St.; one-story public garage, at 1196-1200 Broad St., for L. & B. Garage Co., 61 Hillside Place; $35,000.

N. Bergen—Jos. Paganessi; one-story public garage, at Hill St. and Hudson Blvd., for Altbarndt & Mech, 11 Topler St.; $37,000.

S. Orange—Lithgow Co., 79 King St., New York City; one-story garage at Hillside Ave. and Mountain House Rd., for Clifford A. Gould, 401 Hillside Ave.; $8000.

New York.

Binghamton—Wm. Seman; one-story concrete block garage, 60x65, at Main and Jarvis Sts., for N. George, 136 Main St.; $12,000.

Brooklyn:

Frank Berlenbach, 36 Suydam St.; one-story garage at Pacific and Schenectady Aves.; $50,000.

David Meyer, 5422 4th Ave.; one-story brick show room at 4th Ave. and 52nd St.; $20,000.

Glencoe—Douglas W. Weater; one-story garage, 40x50; $12,000.

Long Island City, L. I.:

Midwood Bldg. Corp., 44 Court St., Brooklyn; five-story reinforced concrete service station; $500,000. Lessee, Standard Steel Car Co., Pittsburgh, Pa.

Geo. A. Violante, 241 Camelia St.; one-story sales room and service station, for Hillman Motor Corp., 568 Jackson Ave.; $250,000.

Frank Wall; one-story private garage, for John Hinch, 2nd Ave. and Graham St.; $15,000.

New York City:

S. Calabro Bldg. Co.; one-story garage; $25,000.

Clarence Ciampi, 613 Fordham Rd.; one-story garage; $12,000.

John H. Deeves & Bros., 103 Park Ave.; two-story garage at 643 W. 50th St., for Colonial Sand & Stone Co., 650 W. 49th St.; $35,000.

Geo. Dose Engineering Co., Inc., 43 W. 27th St.; two and three-story concrete garage at 529-33 W. 55th St.; $1[illegible]5,000.

Robt. Freedman, care Leviathan Garage, 405 E. 11th St.; two-story garage at 518-22 E. 15th St., for Rebecca Borkewitz, 189 Orchard St.; $50,000.

Gallagher & Shand, Inc.; one-story brick public garage; $40,000.

Saml. Rubin, 1360 Findlay Ave.; one-story garage; $20,000.

Standard Concrete Steel Co., 201 W. 33rd St.; two-story public garage at 413-15 W. 54th St., for Kline Bros., 425 W. 54th St.; $25,000. Also four-story garage and service station at 148-50 12th Ave. and 613 W. 23rd St., for Wm. S. Barrington and Benj. Moore, 191 9th Ave.; $300,000.

Oneonta—M. D. Bennett, Sidney; three-story public garage, 80x96, for F. L. Dibble, 115 River St.; $60,000.

Oswego—P. Raby; three-story garage, 100x100, at Station and E. Bridge Sts., for Oswego Motor Car Co.

Rochester—Geo. Kircher, 1384 Clifford Ave.; one-story garage and service station, 60x200, for Starter & Ignition Service Co., Inc., 437 E. Main St.

Syracuse:

H. D. Dost & Co., 945 Broadway, New York; one-story garage, 60x122x15, at Bear and Solar Sts., for Standard Oil Co.; $20,000.

D. W. Gallagher, 1606 S. Geddes St.; one-story commercial garage, 50x69x15, at King and Taylor Sts., for Herbert H. Liddle, 518 Walnut St.; $8500.

O'Brien Construction Co. McCarthy Bldg.; one-story electric garage 66x125, at 305 E. Genesee St., for Garland Latta Battery Service, Inc.; $40,000.

North Carolina.

Charlotte—C. C. Coddington; one-story concrete auto building, 75x187; $40,000.

Ohio.

Cincinnati—J. E. Cook & Co., 1564 Elm St.; one-story garage, 150x150, at Warsaw and Woodlawn Aves.; $40,000.

Cleveland—Webber Co., 1609 W. 25th St.; one-story brick garage at 3100 Vine St., for Bivins-Bowe Baking Co., 3007 Clinton St.; $10,000.

Columbus—W. G. Petty, College St. and Fulton Ave.; one-story brick garage, 30x50, at 2272 Main St.

Dayton—G. H. Schwartzer Co., 832 S Ludlow St.; one-story brick garage, 26x300; $10,000.

Euclid Village—J. R. Gloyd Co., 1876 E. 33rd St., Cleveland; one-story garage, 62x32, for Martin Barriss Co., 2048 W. 3rd St., Cleveland; $6500.

Lakewood—W. J. Gabriel, 1220 Cranford Ave.; one-story public garage, 60x200, at 17,318 Detroit Ave., for Lakewood Auto Sales Co., 17,600 Detroit Ave.; $15,000.

Norwood—Truck Delivery Co., 4424 Ashland Ave.; one-story public garage, 140x229, at Montgomery and Hopkins Ave.; $75,000.

Oklahoma.

Buffalo—Farmers' Oil Station.

Hobart—Alex Kastner, brick and concrete garage building, 50x117, 3rd and Wash. Sts.

Hollis—Dr. Pendergraft and Howard Smith; brick filling station, 25x60.

Jennings—Jennings Garage; enlargement, 140x50.

Waurika:

Dunkin Bros., Daggett Bldg., W. Broadway; garage and service station on Main St.

W. H. Gresham; filling station, Main and G Sts.

Pennsylvania.

Allentown—Wm. H. Gangwere, National Bank Bldg.; one-story public garage, 80x120, at 1313-19 Linden St., for Penn Motor Co., 1425 Hamilton St.; $50,000.

Bally—Danl. Bauer; one-story public garage, 40x70, for Bally Garage.

Bethlehem—F. B. Glassmire, Bethlehem Trust Bldg.; one-story garage, 30x70, at 11th and Union Sts., for Bethlehem Paper Co., Bethlehem Trust Bldg.; $5200.

Brownsville—L. J. Noble; three-story garage, 65x105, for B. J. Bernstein, 2723 Broadway; $35,000.

Dormont—Central Hope Co., Vandergrift Bldg., Pittsburgh; one-story commercial garage, 60x96, for Alex. Garage Co., 3216 Wainbell Ave.; $10,000.

Erie—Geo. Schantz Engineering Co., 860 Seneca St., Buffalo; one-story garage, 42x24, at 15th and Reed Sts.; for Schaffner Bros. Co., 641 E. 15th St.

Philadelphia:

Jos. Ashby; one-story garage, 37x96, west side Oxford Ave., south Loney St., for Harry Fenton; $7000.

C. E. Biddle; one-story brick garage, 60x17, with rear building 16x103, north side Pentridge St., east 51st St., for Dr. Regan; $14,000.

Geo. W. Bottoms; one-story garage, 16x19, at 923 N. 64th St.; $1350.

Antoni Bukowiski; one-story garage, 48x19, south side Thompson, east Westmoreland St.; $2000.

E. G. Burwell, Jr.; four garages, 61st and Yocum Sts., for A. L. Elliott; $2600.

Clark & Dillenback; two-story garage, 20x24, at 209 Pelham Rd., Germantown; $2500.

Nicola DiFabro; one-story garage at 432 N. 64th St.; $1200.

Chas. Dunn; one-story garage, 23x25, at 1105 N. 63rd St., for A. A. Bland; $4200.

I. D. Engle; one-story garage, 16x22, rear 1400 S. 58th St.; $1000.

A. J. Fiorello; one-story garage, 8.6x19, southeast corner 17th and Reed Sts.; $1200.

J. D. Fisher; one-story garage, 36x100, at 4856-58 Lancaster Ave., for Melchiori Bros.; $10,500.

France & Meissar; one-story garage and shop, 20x50, north side Yocum St., west 69th; $1800.

A. L. Fretz & Son; one-story garage at 6637 N. 8th St., for A. Lincoln; $1500.

Fry Bros.; one-story garage, 15.6x28.9, north side Luzerne St., west 17th, for Dr. S. J. Wojcyznski; $1700.

General Construction & Engineering Corp.; one-story garage, 20.6x35.6, at 1016 Westview St., for M. H. Harrington; $5600.

B. W. Glover; one-story garage, 34x85, north side Pemberton St., west 7th, for Donata Amaroso; $6300.

S. Gourley, 2108 Nassau St.; one-story garage at 12th and Vine Sts., 90x140, for Quaker City Cab Co., 1211 Vine St.

A. Hartman; six-story sales and service station, 58.1x103.3, with wing 78.1x17, at 1603-7 Vine St.; $100,000.

Fred R. Havens Co.; one-story garage, 42x37, south side Indiana Ave., west 18th St., for C. H. White & Sons Co.; $6000.

W. S. Heisler; one-story garage, 15.8x37, rear 3307 N. 15th St., for Chas. Merkle; $2350.

Saml. Himelfurb; three garages, rear 950 N. 52nd St., for Chas. Marion; $2000.

E. W. Holland; one-story garage, 25x100, for Harry D. Lyster; $5000. Also one-story garage, 50x100, for Harry D. Lyster; $10,000.

Simon Kaplan; one-story garage, 18x30, at 2906 N. Orkney St., for Bernard Solomon; $3000.

Kensington Construction Co.; one-story garage, 19x37.9, at 4343 N. Marshall St., for Wayland Herb; $1900.

Albert Kramer; two-story brick garage, 16x20, at 4461 Silverwood St.; Ludwig Philipp; $1600.

C. Lakowicz; one-story garage, 18x100, west side Torresdale Ave., below Orthodox St.; $2500.

Chas. D. Land; two one-story garages, 16x16 each, at 2008-10 N. 22nd St., for F. Fraganza; $4860.

John Lauro; two-story garage, 16.6x46, with wing, 24.6x19.2, rear 4931 N. 4th St.; $5000.

A. Leibovitz; one-story garage, 50x16, northeast corner 41st and Baltimore Ave.; $1500.

Frank Lucci; two-story brick auto supply station, 18x100, at 661 N. Broad St., for J. G. Duncan Co.; $15,700.

John Marchino; one-story garage, 17x24, rear 1222 S. 58th St., for John D. Lamond; $1000.

Jas. N. Mitchell; one-story garage, 21x21, at 661 Lincoln Drive; $1500.

H. Moister; one-story metal garage, 24x24, at 6201 Girard Ave., for E. R. Keyworth; $1200.

Wm. F. Muldrew; one-story garage, 160x18, west side York Rd., south 70th Ave.; $7500.

Willard Myers; one-story brick garage, 40x80, northwest corner Boston Ave. and Salmon St., for Jos. Hunter's Sons; $7000.

Niles-Bement-Pond Co.; one-story garage, northeast corner Meadow and McKean Sts.; $2000.

Jas. Oliver; one-story garage, 50x124, at 238-42 N. 63rd St., for John M. Kennedy, Jr.; $32,000.

S. M. Peters; one-story garage, 35x19, northwest corner Second and Minor Sts., for Edward Schaffer; $1200.

Phila. Realty Co., Inc.; one-story auto sales room, 125x95, north side Walnut St., west 46th., for John P. Donahue; $37,000.

Jas. Reichenbach; one-story garage, 50x72, York Rd., below Ontario St.; $8000.

A. Raymond Robb Co.; one-story garage, 15x86, for John Frederick; $4000.

Robbins Contracting Co., 1137 N. Front St.; two-story garage, 80x87, at 5th and Berks St., for McCaffery File Works; $50,000. Also two-story brick garage, 48x74.3 and 83.2x90, southeast corner 5th and Berks St., for McCaffery File Co.; $31,000.

J. S. Rogers Co.; three-story auto manufacturing plant, 60x400, with inclosed fireproof loading platform, 50x155, at Grange Ave. and Reading Ry., for Fox Motor Car Co.; $500,000.

Benj. C. Sagel; one-story garage, 18x38, at 5617 Market St., for Geigood Bros.; $5000.

Chas. S. Shuster; one-story garage and storage station, at 1951 N. Broad St., for Dr. W. Richardson; $3000.

Gilbert R. Smith; one-story brick garage, north side 69th Ave., west 10th St.; $1200.

H. C. Sweger; one-story brick garage, west side Germantown Ave., north Mt. Pleasant St., for Chas. Hemberger; $35,000.

Thomas Co.; one-story garage, 10x20; $2000.

A. S. Tourison, Jr.; two-story garage, 19x20, west side Ardleigh, north Durham St., for Sedgwick Farmes Co.; $2500.

Turner Construction Co.; one-story garage, 32x77, southeast corner Front and Shunk Sts., for American Mfg. Co.; $10,000.

Milton W. Young; one-story garage, 24x24, at 5911 Overbrook Ave., for Francis C. Gregsley; $1500. Also two-story garage, 26.8x25, northeast and southeast corner 71st St. and Sherwood Rd.; $8000.

F. W. Zebley; one-story garage, southwest corner Highbee and Vandyke Sts., for Geo. Lauderbeck; $2000.

Pittsburgh:

Jos. Damm, 1403 East St.; one-story commercial garage, 65x65, at 1206 East St., for Louis Kaufman, 920 Liberty Ave.; $14,000.

Mellon-Stuart Co., Oliver Bldg.; two-story garage, 80x114, at Friendship Ave. and Euclid St., for Whitehill Motors, Inc., 5707 Friendship Ave.; $100,000.

Miller Construction Co., Empire Bldg.; six-story sales room and storage station, 50x110, for Dyke Motor Supply Co., 5500 Hoburt St.; $90,000.

Geo. Shipley, 7026 Agnew St.; one-story garage for W. M. Henderson, 5650 Aylesboro Ave.

Toupet & Conley Co., Inc., 5874 Ellsworth Ave.; one-story commercial garage and sales room, 7x90x225, at Liberty and Center Ave.; for Hiland Auto Co., 5829 Penn Ave.; $600,000.

Scranton—Mann & Behlki, Coal Exchange Bldg.; one-story public garage, 30x90, for J. Simpson, 308 Clay Ave.; $15,000.

Wayne—A. C. Hale, Lincoln Highway; one-story sales room and service station, 50x100; $50,000.

Williamsport—Turner Construction Co., 1713 Samson St., Phila.; four-story public garage at 3rd and Hepburn Sts., for McCormack Motor Car Co., 601 N. 3rd St.; $250,000.

Tennessee.

Nashville—Rock City Construction Co.; one-story garage, 30x70, for P. H. Hicks, Stahlman Bldg.; $9000.

Texas.

Brenham—J. R. Nix; garage and filling station, Houston & Texas Central R. R., for Mrs. A. C. Vogelsang, Burton.

Cuero—Magnolia Petroleum Co.; filling station, Church and Esplanade Sts.; (site) $7000.

Dallas—Rupert Slaughty; one-story garage, 42x140, at 1818 Wood St., for Ballard, Burgher & Fisher; $17,500.

Houston—Oldsmobile Sales Co.; Frank Bradley, Pres. and Gen. Man.; two-story fireproof brick and tile auto building, 1115 San Jacinto St.; $40,000.

Longview—J. G. Pogues; brick garage, 150x100, corner Mothvin and Green Sts.

Platonia—Citizens' Auto Co.; hollow tile auto building with glass front.

San Antonio—Russell C. Hill; one-story brick and hollow tile auto building, white stone trimmings, plate glass windows; $20,000. Lessee, Bull Bros.

Seymour—J. M. Brown; blacksmith shop and garage.

Sweetwater—John Meyers and J. H. Snell; drive-in filling station and garage, 50x200, West N. 2nd St. Lessee, Bibbee & Warren.

Waco—Sparks & Williamson; one-story auto building for Goodhue Smith; $6000.

Virginia.

Brambleton—Price Construction Co., Maryland Trust Bldg., Baltimore, Md.; one-story brick and reinforced concrete garage, 55x105, for Standard Oil Co., Baltimore.

Cape Charles—C. H. Legg; one-story garage, 78x125, for F. C. Fitshugh; $30,000.

Wisconsin.

Milwaukee:

S. Buchbinder, 545 Van Buren St.; one-story garage, 70x65; $15,000.

Gus E. Kahn, Caswell Blk.; two-story garage, 40x120, at 499 Jefferson St., for W. H. Krueger Motor Car Co., 485 Jefferson St.

A. G. Wolff, 901 Becher St.; one-story garage, 50x60, at Greenfield and 21st Aves., for Wm. Schaefer, 995 Greenfield Ave.; $8500.

Garage Happenings

Bessmer, Ala.—Edwards Motor Co. has remodeled its show room and constructed plate glass front.

New Haven, Conn.—Capital Garage, 164 Columbus Ave., has built one-story concrete block addition, 31x85, adjoining present building, costing $10,000.

Quincy, Fla.—O. C. Pinson has sold his vulcanizing shop to J. P. Colgan.

Columbus, Ga.—Couchi Automobile Co. has rebuilt garage destroyed by fire.

Boise, Ida.—Edward L. Kokesch and Otto E. Marshall have opened tire shop at 25 Devereux St. They specialize in vulcanizing, etc.

Illinois.

Abington—C. E. Chambers has sold his garage and battery service station to Edward H. Sevens.

Aldeo—Logan Dun's Garage has purchased interest in East End Garage.

Aledo—C. S. W. Giffin has purchased interest of his partner, Clovis Finch, in Clovis & Finch Garage.

Alton—J. E. Orr has purchased interest of Denny Hayward in garage and repair shop in J. J. Henry building on Washington Ave.

Anna—Harry Lee has moved his garage and service station to 126 E. Vienna St.

Athens—Seigle Garage is now being conducted by Joseph Johnson.

Aurora—N. C. Wagner recently purchased interest of his partner M. J. Linder, in Victory Garage on North La Salle St.

Austin—Large addition has been built to C. E. Bailey's automobile shop at 609-11 N. Waller St.

Belleville—Louis and Ollie Truttmann have sold their garage and repair shop on North Illinois St. to Selle & Miller.

Carlinville:

C. M. Rhodes has sold his interest in garage on W. Main St. to T. F. Shoemacher, St. Louis, Mo.

Robert Whitely, Jr., has sold his garage on North West St. to Leo Seaman.

Monmouth—Cunningham Auto Top Co. has opened an auto top repair shop at 516 W. 4th Ave.

Monticello—John E. Pembroke has sold his garage and repair shop on East Main St.

Mt. Carmel—L. H. Kamp will erect an addition to his garage and repair shop to cost $20,000.

No Komis—Milo J. Johnson is now associated with his brother in a garage and repair shop.

North Henderson—Partnership of Woodside & Koons Garage has been dissolved. Business will be continued by Watson T. Woodside.

Oak Park—Battery Sales & Service Co. has opened for business at 818 N. Boul.

Ottawa:

Charles A. Causlin is conducting tire service station at 811 La Salle St., formerly operated by J. E. Mitchell.

Leverich Garage on Clinton St. has been purchased by Mrs. Anna Leix.

Osco—J. J. Hadley will erect an addition to his garage and repair shop.

Pana:

Kulin Brothers are conducting garage at 3rd and Locust Sts., formerly operated by Thomas & McTaggart.

John A. Downs & Son have sold their garage and accessory shop to Universal Motor Co.

C. W. Roberts has purchased interest of his partner, J. E. Bramlett, in vulcanizing, repair and supply shop.

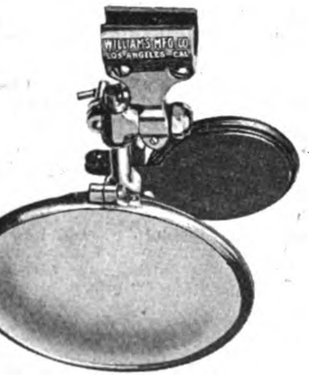
Paris:

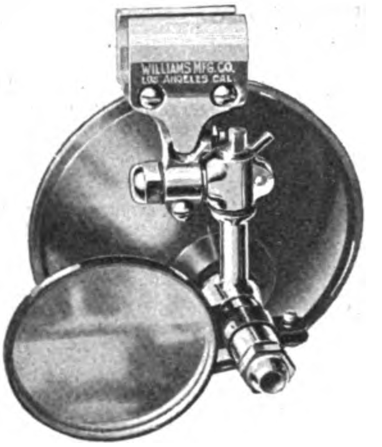
Paris Auto Co. has opened an office on North Central Ave.

Willys & Knight have opened Overland salesroom and service station at 219-21 W. Court St.

ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The Williams Combination Spot Light and Trouble Light offers to the motorist a combination which the manufacturer claims is unexcelled for its purpose. High grade material is used throughout in its construction, while all metal parts pass through several annealing and spinning processes which give the metal a uniform thickness and compactness, thus affording a better finished surface. All bright parts are heavily nickel plated before the enamel is applied, while the enamel is put on with an air brush to secure uniformity and is then baked in an oven at 400 degrees Fahrenheit, resulting in a hard, durable finish. No spot light with soldered parts could possibly stand so intense a heat, the manufacturer states.


WILLIAMS MFG. CO.
LOS ANGELES CAL.

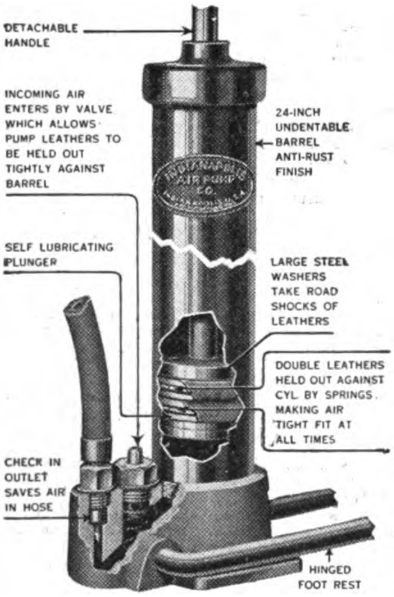

WILLIAMS MFG. CO.
LOS ANGELES CAL.

Williams spot lights are guaranteed unqualifiedly at the time of sale and the manufacturer will make good any defect in the lamp or its parts.

Manufactured by Hughson & Merton, Inc., 56 East Randolph Street, Chicago, Ill., and 77 O'Farrell Street, San Francisco, Cal. Prices on request.

The Indianapolis Guaranteed Pump embodies many special features in its construction which place it in a separate class from other high grade air force pumps. The cylinder of the pump is made of 18-gauge (1/16 inch) steel, and is claimed to be dent proof, even under abuse. The finish of the barrel is either a highly polished nickel or an equally highly polished, chip-proof, baked enamel.

The pump plunger is fitted with two leathers, each provided with a machine turned washer and expansion spring which at all times hold the leather snugly against the inner surface of the barrel or cylinder. The incoming air, instead of being taken in at the top of the barrel as is customary, enters through a special valve provided for the purpose in the base. The valve, being automatic in action, also prevents the air from leaking out. A check valve is located at the air outlet, where the air passes into the hose to the tire, which is also automatic in action. It is stated that the pump is very easy to operate on account of the improved principle employed in its construction, and that tires of varying sizes can be inflated in a few minutes time with a minimum of effort.

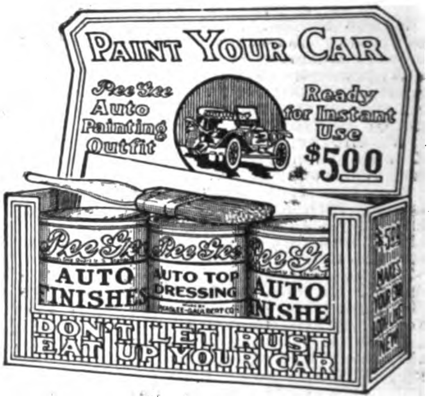

DETACHABLE HANDLE
INCOMING AIR ENTERS BY VALVE WHICH ALLOWS PUMP LEATHERS TO BE HELD OUT TIGHTLY AGAINST BARREL
24-INCH UNDENTABLE BARREL ANTI-RUST FINISH
INDIANAPOLIS AIR PUMP CO.
SELF LUBRICATING PLUNGER
LARGE STEEL WASHERS TAKE ROAD SHOCKS OF LEATHERS
DOUBLE LEATHERS HELD OUT AGAINST CYL. BY SPRINGS. MAKING AIR TIGHT FIT AT ALL TIMES
CHECK IN OUTLET SAVES AIR IN HOSE
HINGED FOOT REST

FIVE-YEAR TIRE PUMP INSURANCE
THE ONLY ATTENTION NECESSARY
ONE—ONLY—DROP OF OIL AT
AIR INLET VALVE OCCASIONALLY
A FIVE-YEAR GUARANTEE

Manufactured by the Indianapolis Air Pump Co., 1625 Bell Street, Indianapolis, Ind. Price, $4.

The Pee Gee Auto Painting Outfit is claimed to make it possible for the motorist to purchase at small cost the necessary enamel, varnish and top dressing to refinish the average small car at nominal cost so that by following the complete instructions given, which are very simple and easily understood, he may refinish his car in a few hours time and be able to use it the next day without danger of marring the new finish.

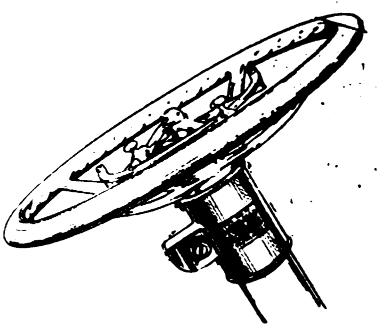
The outfit is packed in a neat cardboard container with each article plainly marked and includes a brush for applying the paint, one quart Auto flat black, one quart Auto gloss black, one quart Auto top dressing, one-quarter of a dozen sheets No. 1 and No. 00 sandpaper each and one two-inch all Chinese bristle varnish brush.


PAINT YOUR CAR
Pee Gee Auto Painting Outfit
Ready for Instant Use
$5.00
Pee Gee AUTO FINISHES
Pee Gee AUTO TOP DRESSING
Pee Gee AUTO FINISHES
DON'T LET RUST EAT UP YOUR CAR

Manufactured by Peaslee-Gaulbert, Louisville, Ky. Price of outfit, complete, $5. Dealer and jobber trade solicited.

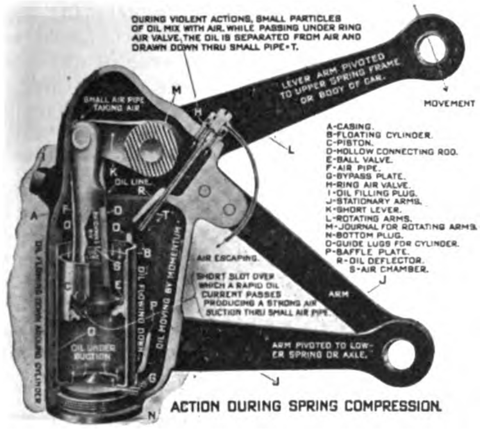
Karlok Thief-Proof Lock for Automobiles was designed to obviate the stealing of automobiles, the manufacturer stating that he has perfected a lock that cannot be picked and that provides certain assurance of protection from theft.

The device is attached to the steering post of the car and the underside of the wheel hub is equipped with a Yale lock which is easily locked and unlocked, and will prevent anyone from moving the car in any direction other than a straight line, as the wheels are set in a straight ahead position when the Karlok is attached. In case of fire the car can be rolled ahead out of danger.



Manufactured by the Russell Sales Co., Newark, N. J. Price $15. Literature on request.

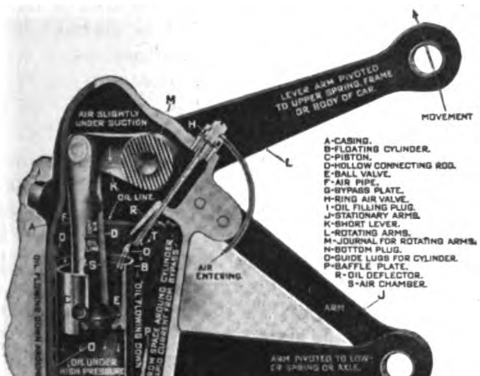
The Landis Shock Diffuser differs from most of the so-called shock absorbers in the fact that instead of using coiled springs to take up and absorb the road shocks, use is made of a container, partially filled with oil, which is acted upon by a piston. A cushioning effect is gained through the admission of air which is later compressed within the diffuser and acts as a buffer.


DURING VIOLENT ACTIONS, SMALL PARTICLES OF OIL MIX WITH AIR. WHILE PASSING UNDER RING AIR VALVE, THE OIL IS SEPARATED FROM AIR AND DRAWN DOWN THRU SMALL PIPE-T.
LEVER ARM PIVOTED TO UPPER SPRING FRAME OR BODY OF CAR.
MOVEMENT
SMALL AIR PIPE TAKING AIR
A-CASING.
B-FLOATING CYLINDER.
C-PISTON.
D-HOLLOW CONNECTING ROD.
E-BALL VALVE.
F-AIR PIPE.
G-BYPASS PLATE.
H-RING AIR VALVE.
I-OIL FILLING PLUG.
J-STATIONARY ARMS.
K-SHORT LEVER.
L-ROTATING ARMS.
M-JOURNAL FOR ROTATING ARMS.
N-BOTTOM PLUG.
O-GUIDE LUGS FOR CYLINDER.
P-BAFFLE PLATE.
R-OIL DEFLECTOR.
S-AIR CHAMBER.
OIL LINE
AIR ESCAPING.
SHORT SLOT OVER WHICH A RAPID OIL CURRENT PASSES PRODUCING A STRONG AIR SUCTION THRU SMALL AIR PIPE.
ARM
ARM PIVOTED TO LOWER SPRING OR AXLE.
OIL FLOWING DOWN
OIL MOVING BY MOMENTUM
OIL FLOWING DOWN AROUND CYLINDER
OIL UNDER SUCTION
A
B
D
E
F
G
H
J
K
L
M
N
O
P
R
T

ACTION DURING SPRING COMPRESSION.

The diffuser is fastened to the car chassis by means of three arms; two are fastened to the axle and one to the frame. The action of the springs when driving over uneven road surfaces causes the arms, which are fastened to the axle, to actuate the piston, this in turn compressing the oil below, thus cushioning the shock, while the upward rebound is snubbed by the compression of the air above the piston shortening its distance of travel.

Provision is made for any excess of oil in the base to pass into an enlarged chamber at the side as it is thrown upwards by the action of the piston during the period of compression, and, when the compression is released, the oil again returns to the bottom of the container. A grate having small openings is provided at the bottom of the oil container, which regulates the flow of oil, when under compression, and prevents the piston from losing its compression effect too rapidly.


LEVER ARM PIVOTED TO UPPER SPRING FRAME OR BODY OF CAR.
MOVEMENT
AIR SLIGHTLY UNDER SUCTION
A-CASING.
B-FLOATING CYLINDER.
C-PISTON.
D-HOLLOW CONNECTING ROD.
E-BALL VALVE.
F-AIR PIPE.
G-BYPASS PLATE.
H-RING AIR VALVE.
I-OIL FILLING PLUG.
J-STATIONARY ARMS.
K-SHORT LEVER.
L-ROTATING ARMS.
M-JOURNAL FOR ROTATING ARMS.
N-BOTTOM PLUG.
O-GUIDE LUGS FOR CYLINDER.
P-BAFFLE PLATE.
R-OIL DEFLECTOR.
S-AIR CHAMBER.
OIL LINE
AIR ENTERING
ARM
ARM PIVOTED TO LOWER SPRING OR AXLE.
OIL FLOWING DOWN
FROM SPACE AROUND CYLINDER RAPID CURRENT FROM BYPASS
OIL FLOWING DOWN AROUND CYLINDER
OIL UNDER HIGH PRESSURE
A
B
D
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J
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ACTION DURING SPRING RECOIL.

The Landis Shock Diffuser is claimed to be an unusually high grade device and is being placed on a number of the larger, higher priced cars. It is further stated that cars so equipped are practically free from the annoyance of shocks and vibration due to uneven road surfaces.

Manufactured by the Landis Engineering & Manufacturing Co., Waynesboro, Pa. Prices and literature on request.

The Sunbeam Search Light is stated to be a very desirable spot light of exceptional illuminating possibilities. It is so constructed as to be easily attached or detached for use when locating and remedying troubles of all kinds about the car. The focussing device is so arranged as to produce a large or small beam on the road as best meets the needs of the motorist. The light is fitted with a silver plated convex lens and highly polished reflectors and uses six-eight volt, 21 candlepower nitrogen bulbs. The back of the light container is finished in black enamel and all parts are highly finished, while an excellent regulating attachment is included which is stated to comply with the law.

Manufactured by the Sunbeam Manufacturing Co., Inc., Seattle, Wash. Prices and literature on request.

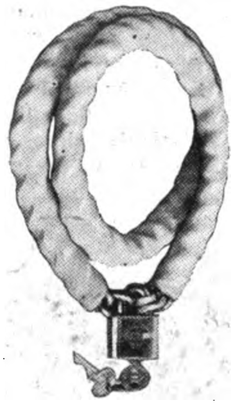
The B-G Spark Plugs were developed during the war for aviation purposes and the manufacturer states that they did such good work under these conditions that they have decided to use the principles employed to make a component suitable for passenger cars, trucks and tractors.

The self-cleaning feature of the B. G. plug is based on the sudden changing of the direction of gases or air in which small globules of oil are suspended. The oil will continue in the initial direction, while the gases will make the change of direction. This fact is used in the construction of the interior of the B-G plug in the shape of a small oil pocket in the lower cavity of the plug, formed by the construction of the body of the plug. All holes or inlets into the plug are shaped to direct the incoming gases and oil globules into this pocket, where the oil will be separated and held suspended until the spark jumps between the sparking points, causing an explosion of the gases in the combustion chamber and in the interior of the plugs.

The combined area of all the openings in the end of the plug is sufficient to permit the interior of the plug to fill with pressure nearly equal to that accumulated in the compression chamber of the cylinder on a compression stroke of the piston. This causes a tremendous blast to pass between the sparking points at the exact time that the ignition current jumps the gap between the sparking points, thus assuring clean sparking points at the most essential moment. The interior of the plug is so constructed that when the gases are ignited and pass out from the plug into the combustion chamber of the cylinder they are all directed by the interior construction of the plug, between the sparking points, thus blasting or blowing any carbon or oil that may have accumulated in the chambers of the plug into the combustion chambers of the cylinder.

Manufactured by the Brewster-Goldsmith Corporation, 33 Gold Street, New York City. Prices and literature on request.

The Brookins Thief-Proof Tire Lock is designed with the end in view to making it next to impossible for a thief to steal an automobile tire from the tire hanger of a passenger car. The links from which the chain is made are electrically welded from specially heat treated and chilled, non-corrosive steel which, it is claimed, cannot be cut by the strongest bolt cutters, neither can the links be pried apart.



A pure rubber tubing covers the chain to prevent rattling and to protect the enamel finish of the car.

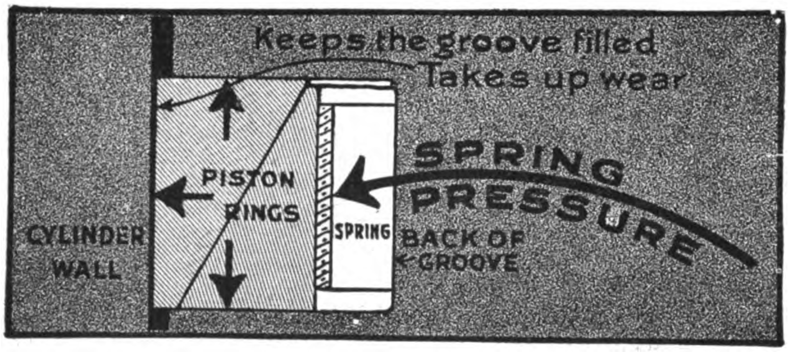
With each chain is supplied a specially designed 24-tumbler lock with hardened shackle, it is stated, which cannot easily be cut. The lock is dust, rust and weather proof and is guaranteed by the manufacturers to be non-pickable, and is stated to bear the indorsement of the Underwriters' association.

Manufactured by the Brookins Manufacturing Co., Dayton, O., Department A. Price at all accessory dealers, $4.50.

Packard Electric Cable has been manufactured for many years and is known throughout the trade as a product that can be relied upon, whether in high or low-tension work, to give the best of satisfaction. It is insulated with several layers of pure Para rubber properly compounded to give maximum dielectric and mechanical strength. The rubber insulation is protected by two heavy braids impregnated with Packard special formula enamel which is proof against deterioration from heat, grease, oil, gasoline and vibration, the manufacturer states.

Packard cable has a characteristic seal brown color with two red stripings running spirally in opposite directions. The true Packard cable is supplied in coils of 100 feet or more, neatly wrapped and tagged.

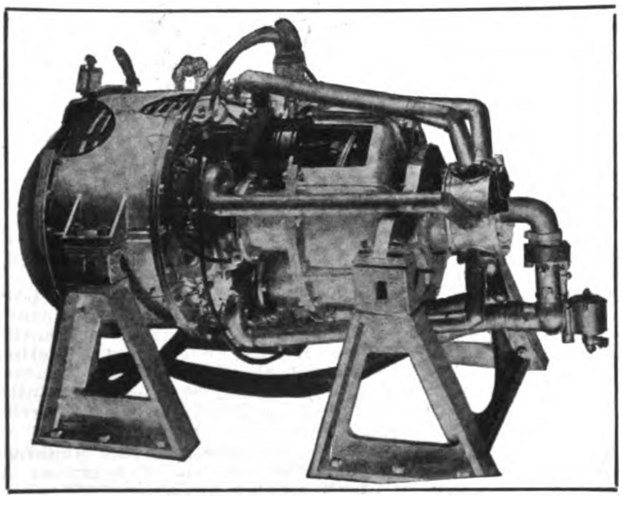
Manufactured by the Packard Electric Co., Warren, O. Literature and prices on request.



Section Showing Construction of 3-A Piston Rings.

CONSTRUCTION OF 3-A PISTON RINGS.

The accompanying sketch shows the construction of the 3-A piston ring, which is made and marketed by the Steel Spring Piston Ring Co., 147 Metropolitan avenue, Brooklyn, N. Y. Two pieces of Mohegan metal of triangular cross section form the wear members of the ring and their bearing quality is claimed to be such as to relieve the cylinder from all wear, while at all times they completely fill the cylinder groove from top to bottom. The wear members are kept snugly against the cylinder walls at all times and at all points—also against the top and bottom of the groove—by a spring backing. This construction also cushions piston slap and maintains an oil-tight, compression-tight seal for a long time.



New Type of Motor Designed by Sun Motors Corporation, Granite City, Ill.

This is accomplished by the utilization of a spring inserted between the rings and the piston and keeps the ring at just the right pressure all around the walls even when the ring is worn. Only one over size is made, .031 inches, which it is claimed, takes the place of the 15 or 20 sizes supplied by cast iron ring manufacturers. It is stated that the 3-A piston ring will stop oil trouble and compression loss on cylinders, .008 out of round, on worn grooves and aluminum pistons.

The manufacturer offers, upon the return of the rings to refund the price of any set of 3-A rings that does not accomplish all that is claimed for them.

NEW TYPE ENGINE USES STEAM AND GAS FOR FUEL.

The Sun Motors Corporation of Granite City, Ill., a $5,000,000 concern, has been recently organized to manufacture a new type of motor, the principles of which are stated to be so revolutionary that they are startling to the average layman, although these same principles have long been familiar to scientists.

Briefly, this motor is designed to utilize gas steam turbine principles in creating power and it is claimed by its inventors that this motor is capable of going 40 miles on a gallon of gasoline, at the same time giving 50 per cent. greater power efficiency than the present type of internal combustion engine.

This motor converts the expansion forces of gasoline into its steam pressure equivalent by the injection of water into the combustion or mixing chamber, at 212 degrees Fahrenheit. This is possible because of a specially designed steam chamber surrounding the combustion or mixing chamber into which the water is automatically supplied. The heat given off by the explosion of the gas is sufficient to immediately convert the water in this steam chamber into live steam.

The valves, specially built to control the trapped steam and gases in their respective chambers, open at the same instant, allowing both exploded gas and steam to be discharged into a chamber designed for combining steam and gas.

At this point the gases (combination of steam and gas) are shot into a nozzle at a velocity of 22,000 feet a minute; the gases are then discharged through the nozzle against the rotor blades of the turbine. The gas velocity, together with the expansion power of steam, causes the turbine to revolve. This gives the motor a peripheral instead of impulsive power.

AN ACCEPTABLE CHRISTMAS GIFT.

The F. W. Wakefield Brass Co., Vermilion, O., manufacturer of Red Spot lighting specialties, suggests the appropriateness of a good search light as a Christmas gift in the eyes of any motorist. It combines value and utility and certain acceptability from the fact that while it is not an absolute necessity its presence on the car continuously enhances it as a token of friendly remembrance.

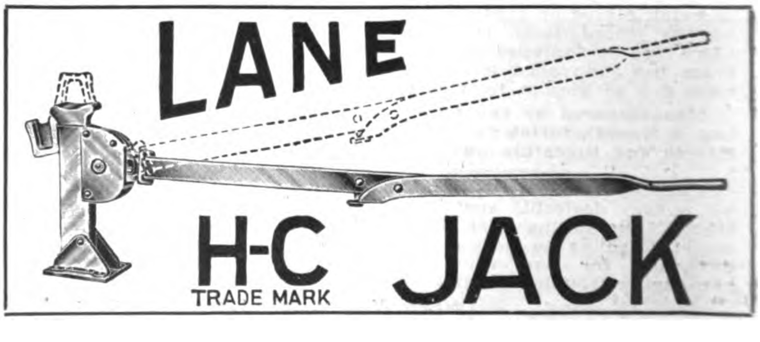
The Red Spot search light people are cooperating, through their jobbers, with many dealers in conducting a holiday sale campaign.

FARR'S TIRE CEMENT AND PATCHES.

The story of the development of Farr's Sure-Hold tire cement and Stay-Put patches, manufactured by Farr's Sure-Hold Tire Cement Co., New York city, is an illustration of the old adage that "Necessity Is the Mother of Invention." Mr. Farr, the originator, while riding in a motor car in the pursuance of his vocation as an accessory salesman, got exasperated at being bothered by blowouts and the failure of ordinary patches to stay in place, and invented a cement and type of patch that is claimed to obviate trouble of this nature.

LANE H. C. JACK.

The Lane H. C. jack, designed to use with any 1920 car, has just been placed on the market and reports tend to show that it has met with high favor by the automobilist, as well as the manufacturer. The outstanding feature of its construction is the ease with which it can be adjusted and operated. The user can stand nearly erect while placing it under the axle, and can raise the wheel to any desired height without stooping, by means of the patented handle. It appears to be desirable from a mechanical as well as a labor saving viewpoint. Manufactured by Lane Brothers Co., Poughkeepsie, N. Y.



Hardware Association to Stage Big Accessory Show

One of the important divisions of the National Hardware Association of the United States, which is one of the principal organizations covering that field in the United States is the Automobile Accessories branch, which is to hold its third annual meeting in the Coliseum in St. Louis, Mo., Nov. 30, Dec. 1, 2 and 3.

This event is considered as one of the most interesting and successful features of the entire automotive show and convention season, and in point of the pertinency and scope of the programme offered, the number and diversity of the exhibits, and numbers of members and others allied to the industry in attendance, promises this year to eclipse all previous occasions held under the auspices of this association. The tentative programme is as follows:

Tuesday, Nov. 30, 10 a. m.—Opening remarks, President A. H. Decatur, Decatur & Hopkins Co., Boston, Mass.; annual address of the chairman, A. H. Nichols, Buhl Sons Co., Detroit, Mich.; roll call; address of welcome, Hon. Henry W. Kiel, mayor of St. Louis; address, "The Business and Financial Outlook for 1921," A. L. Shapleigh, Shapleigh Hardware Co., St. Louis, Mo.; report of St. Louis general committee, Chairman H. W. Geller, Geller, Ward & Hasner Hardware Co., St. Louis; address, "St. Louis," Charles F. Hatfield, general manager St. Louis Convention Bureau; discussion, "Probagle Developments in the Accessories Market During 1921 from the Wholesalers' Standpoint," H. E. Hulburd, George Worthington Co., Cleveland, O., W. H. Terstegge, Stratton & Terstegge Co., Louisville, Ky., and R. O. Smith, W. A. L. Thompson Hardware Co., Topeka, Kan.; discussion, "The Accessories Market from the Viewpoint of the Manufacturer," J. C. Stearns, Culver-Stearns Manufacturing Co., Worcester, Mass.; discussion, "The Present Condition of Accessories Stocks," W. S. Isherwood, Champion Ignition Co., Flint, Mich., and R. L. Wilkinson, Klaxon Co., Newark, N. J. Adjournment, 12:15 p. m.

Wednesday, Dec. 1, 9:45 a. m.—Address, "The General Outlook for 1921," W. D. Biggers, president American Hardware Manufacturers' association, Detroit ,Mich.; address, "Assisting the Retailer," Rivers Peterson, editor National Hardware Bulletin, Argos, Ind.; discussion, "Some of the Evil Results of Quantity Price Schedules," D. D. Akers, King Hardware Co., Atlanta, Ga.; discussion, "The Advantages of Quantity Price of Schedules;" discussion, "How Manufacturers Can Assist in Catalogue Compilation," S. Edward Rose, Barker, Rose & Clinton Co., Elmira, N. Y.; discussion, "Catalogue Efficiency," Kenneth Gardner, Gardner Printing Co., Cleveland, O.; discussion, "Guaranteeing Prices Against Decline," T. R. Thompson, Townley Metal & Hardware Co., Kansas City, Mo.; discussion, "Credit Conditions;" discussion, "Overhead Expense in the Wholesale Distribution of Accessories;" question box. Adjournment at 12 m.

Thursday, Dec. 2, 9:45 a. m.—Discussion, "The Validity of Orders and the Return of Merchandise;" discussion, "The Advantages of Changing Discounts Instead of List Prices," H. J. Hopkins, Geller, Ward & Hasner Hardware Co., St. Louis; discussion, "Developing the Dealer," W. R. Hay, Kelley, How, Thomson Co., Duluth, Minn., G. S. Winders, Van Camp Hardware & Iron Co., Indianapolis, Ind., and J. C. Adams, Marquette Manufacturing Co., St. Paul, Minn.; discussion; "Stimulating Dealer Interest," Felix Van Cleef Brothers, Chicago, Ill.; discussion, "The Compensation of Salesmen," F. J. Tenk, Tenk Hardware Co., Quincy, Ill.; discussion, "Cash Premium, Its Necessity and Its Obligations," Edward O. Faeth, Stowe Supply Co., Kansas City, Mo.; discussion, "The Disposition of Unsaleable and Slow-Moving Stock," J. F. Miller, Bigelow & Dowse Co., Boston, Mass.; discussion, "Market Tendencies in Tires and Tubes;" discussion, "How Can the Methods of Distributing Tires and Tubes Be Improved?" F. R. Goodell, Converse Rubber Shoe Co., Malden, Mass.; Glover S. Colladay, Frank Colladay Hardware Co., Hutchinson, Kan., and D. T. Henne, Columbia Tire & Rubber Co., Columbiana, O.; question box. Adjournment, 12 m.

Friday, Dec. 3, 9:45 a. m.—Discussion, "Federal Revenue Legislation;" discussion, "Recent Tendencies in Lens Legislation," H. E. Patterson, Warner-Patterson Co., Chicago, Ill.: address, "Postal Legislation," Charles D. Clark, National One Cent Letter Postage Association, Cleveland, O.; statement of preference as to place of fourth annual meeting and exhibition; question box; unfinished business; new business. Adjournment at 12 m.

List of Officers.

The officers of the National Hardware Association are as follows:

President, A. H. Decatur, Decatur & Hopkins Co., Boston, Mass.; first vice president, Brace Hayden, Dunham, Carrigan & Hayden Co., San Francisco, Cal.: second vice president, F. A. Heitman, F. A. Heitman Co., Houston, Tex.; secretary-treasurer, T. James Fernley, Philadelphia, Pa.

Automobile Accessories Committee—Chairman, A. H. Nichols, Buhl Sons Co., Detroit, Mich.; R. S. Woodruff, C. S. Mersick Co. New Haven, Conn; Glover S. Colladay, Frank Colladay Hardware Co., Hutchinson, Kan.; W. R. Hay, Kelley-How-Thomson Co., Duluth, Minn.; P. L. Logan, Logan-Gregg Hardware Co., Pittsburgh, Pa.; Wm. E. Foskett, Albany Hardware & Iron Co., Albany, N Y.; H. W. Geller, Geller, Ward & Hasner Hardware Co., St. Louis, Mo.; R. V. Cusack, Richards & Conover Hardware Co., Kansas City, Mo.; J. W. Barlow, Blish, Mize & Silliman Hardware Co., Atchison, Kan.; George W. Ellis, Supplee-Biddle Hardware Co., Philadelphia, Pa.; Thos. R. Frazer, King Hardware Co., Atlanta, Ga.; S. Edward Rose, Barker, Rose & Clinton Co., Elmira, N. Y.; L. C. Webb, Lee Hardware Co., Salina, Kan.; G. S. Winders, Van Camp Hardware & Iron Co., Indianapolis, Ind.; L. C. Scheller, Union Hardware & Metal Co., Los Angeles, Cal.; W. M. Bonham, C. M. McClung & Co., Knoxville, Tenn.; J. D. Moore, Jr., Moore, Handley Hardware Co., Birmingham, Ala.; Edward R. Brayton, Belcher & Loomis Hardware Co., Providence, R. I.; H. A. Bremer, The Leutkemeyer Co., Cleveland, O.; R. W. Kinzer, Seattle Hardware Co., Seattle, Wash.

List of Exhibitors.

The following list of exhibitors has been given out by the show committee:

No.	Exhibitor
1	Auburn Ignition Mfg. Co.
2	Mayo-Skinner Mfg. Co.
3	K-D Lamp Co.
4	National Rubber & Specialties Co.
5	Jiffy Jack Co.
6	Valley Electric Co.
7	Sidel-Rattner Mfg. Co.
8	New Era Spring & Specialty Co.
9	Rajah Auto Supply Co.
10	N. A. Petry Co., Inc.
11	Mooers-Wright Co.
16	Essenkay Products Co.
21	Converse Rubber Shoe Co.
27	Advance Auto Accessories Corp.
32	Chicago Fuse Mfg. Co.
33	Elite Mfg. Co.
34	Gill Mfg. Co.
39	Packet Auto Specialty Co.
54	Sterling Manufacturing Co .
56	Las-Stik Patch Mfg. Co.
57	Vosburgh Miniature Lamp Co.
58	Sharp Spark Plug Co.
59	Mueller Electric Co.
60	Standard Corporation.
62	Frange Mfg. Co.
63	F. G. Ruddeman Co.
64	Star Rubber Co.
65	Clayton & Lambert Mfg. Co.
66	Frank Rose Mfg. Co.
67	Clucker & Hixson Co.
68	Coe-Stapley Mfg. Co.
69	Eberson-Lindsey Paint Co.
70	General Asbestos & Rubber Co.
71	Dryden Rubber Co.
72	F. W. Wakefield Brass Co.
73	S. C. Johnson & Son.
74	South Bend Lathe Works.
75	Marquette Mfg. Co.
76	Brocksmith Mfg. Co.
77	Star Specialty Mfg. Co.
78	Splitdorf Electrical Co.
79	Columbus Varnish Co.
80	Allord Reamer & Tool Co.
81	Kraeuter & Co.
85	Hart Bell Co., Inc.
86	Mazura Mfg. Co.
87	Presto-Felt Mfg. Co.
88	Judd & Laland Mfg. Co.
89	Bellevue Mfg. Co.
90	Cincinnati Auto Specialty Co.
91	Barcalo Mfg. Co.
92	Greb Co., Inc
93	Anthony Co.
94	Geo L. Holmes.
95	J. Wadsworth Staff.
96	Wm. Vogel & Bros.
97	Carburundum Co.
98	McCord Mfg. Co.
101	Lockrite Patch Co.
102	Templeton Kenley Co., Ltd.
103	Essex Rubber Co., Inc.
104	Milwaukee Tank Works.
105	Giant Grip Mfg. Co.
106	Inland Pump Mfg. Co.
107	Derf Mfg. Co.
108	Voorhees Rubber Mfg. Co.
109	Globe Machine & Stamping Co.
110	Corcoran-Victor Co.
111	F. A. Smith Mfg. Co., Inc.
112	Continental Rubber Works.

113..Imperial Brass Mfg. Co.
114..Anderson Co.
115..Fred G. Bremer.
116..E. Edelmann & Co.
117..Pennsylvania Piston Ring Co.
118..Gray-Heath Co.
119..Lockwood Ash Motor Co.
120..Haywood Tire & Equipment Co.
121..Moco Co. of America.
122..Howe Lamp & Mfg. Co.
123..Tuthill Spring Co.
124..Tuthill Sales Co.
125..U. S. Air Compressor Co.
126..Fernald Mfg. Co.
127..Metal Specialties Mfg. Co.
129..Jenkins Vulcan Spring Co.
130..Frank Mossberg Co.
131..National Standard Co.
132..Reserved.
133..Van Cleef Bros.
134..Victor Mfg. & Gasket Co.
135..Chicago Solder Co.
136..Jefferson Electric Mfg. Co.
137..Klaxon Co., Newark, N. J.
138..Edgar C. Guthard Co.
139..Casey-Hudson Co.
140..Iron City Products Co.
141..A. Nelson Mfg. Co.
142..F. W. Stewart Mfg. Co.
143..Arrow Grip Mfg. Co.
144..Higgins Spring & Axle Co.
145..Manhattan Electrical Supply Co.
146..Double Fabric Tire Co.
147..Outlook Co.
148..Sprague Tire & Rubber Co.
149..Corcoran Mfg. Co.
150..Apex Electric Co.
151..Gordon Radiator Co.
152..Stark Inland Machine Works.
153..Trexler Co.
154..Eclipse Mfg. Co.
155..Fitzgerald Mfg. Co.
156..Ideal Clamp Mfg. Co.
157..Schroeder & Tremayne.
158..Oakes & Dow Co.
159..Atlas Specialty Mfg. Co.
160..Flash Chemical Co.
162..Standard Parts Co.
163..J. & B. Mfg. Co.
164..Davies-Young Soap Co.
165..Bonney Vise & Tool Co.
166..B. & B. Mfg. Co.
167..Northwestern Chemical Co.
168..C. A. Shaler Co.
169..Apco Mfg. Co.
170..Pyrene Mfg. Co.
171.."X" Laboratories.
172..Moon Bros. Mfg. Co.
173..Bannet Accessory Mfg. Co.
174..Bussman Mfg. Co.
175..Badger Mfg. Co.
176..Badger Mfg. Co.
177..Motor Specialties Co.
178..Long Distance Spark Plug Co.
179..20th Century Tire Protector Co.
180..Bethlehem Spark Plug Co., Inc.
181..Walden-Worcester, Inc.
182..Spencer-Smith Machine Co.
183..Oliver Rim Co.
184..C. N. & F. W. Jonas.
185..American Grinder Mfg. Co.
186..Albertson Co.
187..Asch & Co., Inc.
188..Spencer Metal Products Co.
190..J. P. Gordon Co.
191..Cincinnati Ball Crank Co.
192..Hardware Mfg. Co.
193..Durkee-Atwood Co.
194..H. & D. Co.
195..Gates Rubber Co.
196..Reflex Ignition Co.
197..Hall Thompson Co.
198..Dover Stamping & Mfg. Co.
199..Will B. Lane Unique Tool Co.
200..Dayton Wire Wheel Co.
201..Moto-Meter Co., Inc.
202..J. H. Faw, Inc.
203..Culver Stearns Mfg. Co.
204..Clover Mfg. Co.
205..Columbia Tire & Rubber Co.
206..Stone Mfg. Co.
207..American Sponge & Chamois Co.
208..P. H. Webber Co.
209..Bemiller Foundry & Machine Co.
210..Bemco Mfg. Co.
211..Walter Eckhouse & Co.
212..Mayhew Steel Products Co., Inc.
213..McQuay-Norris Mfg. Co.
214..Paul G. Niehoff & Co., Inc.
215..Nu-Back Mfg. Co.
216..American Hammered Piston Ring Co.
217..E. Edelmann & Co.
218..Fulton Co.
219..Monroe Auto Equipment Co.
220..American Metal Parts Co.
221..Cooper Mfg. Co.
222..American Chain Co.
226..Reserved.
227..Curtis Pneumatic Machinery Co.
230..Bayne Mfg. Co.
231..Perkins Campbell Co.
232..Hill-Smith Metal Goods Co.
233..E. A. Laboratories, Inc.
234..Anderson Electric & Equipment Co.
235..Rosier-Howard Sales Co.
236..Packard Electric Co.
237..National Lamp Wks. of Gen. Elec. Co.
238..National Lamp Wks. of Gen. Elec. Co.
239..Braender Rubber & Tire Co.
240..Stiles Mfg. Co.
241..Bastian Blessing Co.
242..Reserved.
243..Champion Ignition Co.
244..Veeder Mfg. Co.
245..Polson Rubber Co.
246..N. J. Car Spring and Rubber Co., Inc.
247..Bergougnan Rubber Corp.
248..Gemco Mfg. Co.
250..Cooper Storage Battery Mfg. Co.
251..General Tire and Rubber Co.
252..Milwaukee Auto Engine & Supply Co.
254..Motor Spindle Corp.
256..Metal Stamping Co.
257..National Carbon Co., Inc.
280..McLean Tire & Rubber Co.
287..Bridgeport Brass Co.
288..Wm. R. Johnston Mfg. Co.
289..Walker Mfg. Co.
290..Simmons Mfg. Co.
291..Charles S. Monson.
296..Raybestos Co.
297..Motor Products Co.
301..No-Leak-O Piston Ring Co., Inc.
302..Mansfield Tire & Rubber Co.
303..Manley Mfg. Co.
304..Manley Mfg. Co.
320..Au-To Compressor Co.
321..Western Vulcanizer Mfg. Co.

The Season's Show Offerings

Jan. 3-8—New York, N. Y., Motor Truck Show, Motor Truck Association of America, 12th Regiment Armory. Theodore D. Pratt, Manager.

Jan. 4—New York City, Annual Meeting, Automotive Service Association of New York.

Jan. 4-7—South Dakota Implement Dealers' Association, Sioux Falls; Secretary, C. J. Bach, Sioux Falls.

Jan. 5-7—Midwest Implement Dealers' Association, Omaha; Secretary, James Wallace, Council Bluffs, Ia.

Jan. 7—Sydney, Australia, Australian Motor Show.

Jan. 8-15—New York City, National Passenger Car Show, Grand Central Palace.

Jan. 11—New York City, Meeting, Eastern Automotive Equipment Association.

Jan. 11-13—New York City, 11th Annual Meeting, Society of Automotive Engineers, Hotel Astor.

Jan. 11-13—Minneapolis, Minn., Annual Convention, Minnesota Implement Dealers' Association, West Hotel. C. I. Buxton, Secretary, Owatonna, Minn.

Jan. 11-13—Mississippi Valley Implement Dealers' Association, at St. Louis; Secretary, F. E. Goodwin, Kirkwood, Mo.

Jan. 16-22—Milwaukee, Wis., Annual Passenger Car and Truck Show, Milwaukee Automotive Dealers' Association, Auditorium. Bart J. Ruddle, Manager.

Jan. 16-22—Schenectady, N. Y., Show, Company E, F and Machine Gun Company, State Armory. J. J. Callahan, Manager, Box 1186, Pittsfield, Mass.

Jan. 17-22—Lowell, Mass., Sixth Annual Show, Passenger Cars, Trucks and Accessories, Casino. Dan O'Dea, Manager, 154 Moody Street.

Jan. 18-20—Pacific Northwest Hardware and Implement Association, Spokane, Wash.; Secretary, E. E. Lucas, Spokane, Wash.

Jan. 18-20—Western Retail Implement, Vehicle and Hardware Association, Kansas City; Secretary, H. J. Hodge, Abilene, Kan.

Jan. 18-20—Texas Hardware and Implement Association, Dallas; Secretary, A. M. Cox, Dallas.

Jan. 19—Milwaukee, Wis., First Annual Convention, Wisconsin Automobile Dealers' Association.

Jan. 22-29—Cleveland, O., Passenger Car Show, Cleveland Automobile Manufacturers' & Dealers' Association, Wigmore Coliseum. Fred H. Caley, Manager.

Jan. 22-29—Ceylon, India, Automobile Show, Ceylon Motor Show Syndicate.

Jan. 22-31—Sydney, Australia, Second Annual M. T. A. Motor Show. N. Kingsley-Strack, Secretary, Challis House, Martin Place, Sydney.

Jan. 23-29—Amsterdam, N. Y., Annual Automobile Show, Benefit Company H, State Armory. J. J. Callahan, Manager.

Jan. 24-29—Atlanta, Ga., Annual Convention, Georgia Automotive Dealers' Association. P. A. Magahee, Secretary.

Jan. 25-27—Kentucky Hardware and Implement Association, Louisville; Secretary, J. M. Stone, Sturgis, Ky. Exhibit.

Jan. 25-28—Oregon Retail Hardware & Implement Dealers' Association Convention, Portland. E. E. Lucas, Secretary, Hutton Building, Spokane, Wash.

Jan. 26-28—North Dakota Implement Dealers' Association, Fargo; Secretary, R. A. Lathrop, Hope, North Dakota. Exhibit.

Jan. 29-Feb. 4—Chicago, Ill., National Passenger Car Show, Coliseum, N. A. A. C.

Jan. 30-Feb. 5—Hudson, N. Y., Annual Automobile Show, Armory. J. J. Callahan, Manager.

Jan. 31—Chicago, Ill., Annual Meeting, National Automobile Dealers' Association, La Salle Hotel.

Feb. 2—Chicago, Ill., Winter Meeting, Society of Automotive Engineers, Hotel Morrison.

Feb. 5-12—Minneapolis, Minn., Annual Winter Automobile Show, Minneapolis Automobile Trade Association. Walter R. Wilmot, Manager, 709 Andrus Building.

Feb. 6-12—Newburgh, N. Y., Annual Automobile Show, Benefit Companies E and L, State Armory. J. J. Callahan, Manager.

Feb. 7-12—Columbus, O., National Tractor Show, Columbus Tractor and Implement Club, Ohio State Fair Grounds.

Feb. 7-12—Parsons, Kan., Fifth Annual Automobile and Accessory Dealers' Association Show, Passenger Cars, Trucks, Tractors and Accessories. W. N. Chapman, Secretary, 1818 Broadway.

Feb. 8-10—Oklahoma Hardware and Implement Association Convention, Oklahoma City. W. B. Porch, Secretary-Treasurer, Oklahoma City.

Feb. 10—Columbus, O., Tractor Meeting, Association of Automotive Engineers.

Feb. 12-19—Kansas City, Mo., Annual Passenger Car and Truck Show, Kansas City Motor Car Dealers' Association. Ed. E. Peake, Manager.

Feb. 14-19—St. Louis, Mo., 14th Annual Show, Passenger Cars, Trucks and Accessories. Robert E. Lee, Manager, 3124 Locust Street.

Feb. 18-28—San Bernardino, Cal., Show, Passenger Cars, Trucks, Tractors and Accessories. Fred M. Renfro, Manager, Chamber of Commerce Building.

Feb. 19-26—Newark, N. J., Passenger Car, Truck and Accessory Show, Newark Auto Trade Association, First Regiment Armory. Claude E. Holgate, Manager.

Feb. 20-26—Pittsfield, Mass., Annual Automobile Show, Benefit Company F, State Armory. J. J. Callahan, Manager.

Feb. 21-26—Deadwood, S. D., Eighth Annual Automobile Show, Auditorium, Passenger Cars, Trucks, Tractors and Accessories.

Feb. 21-26—Bethlehem, Pa., Seventh Annual Show, Passenger Cars and Accessories, Coliseum, Broadway and Montclair streets. J. L. Elliott, Manager, 1038 Norway Place.

Feb. 21-26—Elmira, N. Y., 11th Annual Passenger Car Show, Elmira Auto Club, State Armory. H. S. Bryan, Manager, 210 East Water Street.

FISK CORD TIRES

Sold Only by Dealers

FISK takes pride in continuing to make its relation with its dealers profitable and pleasant to them. It will pay you to sell Fisk Tires.

When a consumer wants a Fisk Tire he must go to a tire dealer for it—there's no other source of supply. The Fisk policy is strictly wholesale.

Fisk dealers everywhere are benefited by this Fisk policy of selling only to dealers.

Standing squarely behind our dealers, giving them twenty-four-hour service through one hundred and forty branches, stocked to meet any demand, Fisk dealers know they can always satisfy and serve their customers.

Next time—BUY FISK

Sold only by dealers

Trade Mark Reg. U S Pat Off.
Time to Re-tire?
(Buy Fisk)

Service a Vital Issue of Commercial Competition

(*By F. J. WELLS, Service Manager, Pierce-Arrow Motor Car Co.)

SERVICE is unquestionably the most vital issue of commercial competition today. It yields satisfied customers, creates good will, maintains prestige and breaks down sales resistance with consequent increased sales volume, which in turn means greater financial returns.

Competition in the automotive industry is certainly and rapidly resolving itself into one of service. Time was when competition in the sale of automotives was one of product alone. Today it is a competition of both product and service. In the future it may be a competition of service alone, and success in maintaining sales volume will depend upon the successful solution of the service problem.

It is not uncommon today for manufacturers of automotives and their sales representatives, knowing only too well that their future may be dependent upon the verdict rendered them at the bar of public opinion, to ask the question: "What changes or elements can we incorporate in our present service policy or organization that will enable us to meet the growing demands of the public and, incidentally, increase our business?" In the consideration of this question many in the industry fail to observe the fundamental principles involved and, therefore, their consequential failure to obtain the much desired results.

Service No Longer a Side Issue.

Service, as applied to automotives, is no longer a mere side issue established as a guise to conceal errors in manufacture or design or satisfy the whims of customers. It is a big, broad, vital issue and its possibilities are practically unlimited. Service developed along sane and legitimate business like lines is here to stay, not only because it is essential, but because of the equally good reason that it is an excellent business venture. Experience has demonstrated conclusively that it is just as essential in the successful marketing of an automotive manufacturer's product as any other branch of his distributing organization.

The events of the past several years have given automotive transportation a tremendous forward impetus. To sustain this impetus the public must be convinced of the reliability as well as the rapidity and economy of this particular mode of transportation. Reliability involves quantity, quality and availability of service and the successful solution of the problem depends to a large extent upon proper organization and a definite standard of high ideals.

The aim of a service organization should be every automotive operating uninterruptedly at the highest efficiency and at a minimum maintenance and operating expense. Purchasers of automotives today are not induced to buy through a desire to simply acquire a mechanism or satisfy fads or fancies, but for the convenience, pleasure or profit which the investment will yield. Any service rendered to the owner must, therefore, tend to insure him in securing the object of his purchase—continuous, efficient and economical transportation.

The Crux of the Service Problem.

The crux of the service problem is the availability of effective repair work at the lowest possible cost consistent with first class workmanship. Education and instruction in proper maintenance and operation methods and even the training and supplying of a skilled personnel are important adjuncts to successful service. In the last analysis, however, to secure satisfactory, continuous, efficient and economical transportation, whether for merchandise or passengers, it is imperative that every owner have ready access to a stock of repair parts of ample variety in addition to adequate repair facilities. The emphasis in automotive service is, therefore, placed on an efficient repair shop so organized and equipped as to carry on the work of instruction, adjustment and inspection in addition to its repair function. So organized a repair shop attains the dignity of a service station.

The objective of an automotive manufacturer's service activities should be to establish and maintain, wherever his product is used, a source of assistance to owners which embodies within it the four cardinal principles of first class service, efficient organization, effective personnel, adequate equipment and spirit of service.

Service, to be effective, must be properly and efficiently organized. Duplication of effort, idle time, misunderstandings, lack of cooperation and internal friction must be eliminated by a clear and concise definition of duties for each integral part of the service organization. An efficient and definite division of labor, however, is useless unless the duties devolving upon each integer are administered through an effective personnel.

The requirements of automotive service are such that every member of the organization should be most carefully and thoughtfully selected for the particular work for which he is peculiarly adapted, both by nature and training, to perform. Each individual should possess a thorough knowledge of the automotive both from a manufacturing and maintenance standpoint and also have special intensive instruction and training in the standards and methods peculiar to the product to be serviced. But even an efficient organization and an effective personnel cannot function properly without proper housing facilities and suitable and adequate equipment through which to express themselves. The buildings in which repairs are to be made should provide ample air and light and sufficient space for carrying on prompt and effective repair work. The interior arrangement should be such that service work can be carried on with a minimum of undue effort. The equipment, depending upon the size of the territory to be serviced, should consist of ample and suitable machine tools, small hand tools, jigs, fixtures, cranes and wash racks, and of such other items as may increase efficiency and reduce idle time.

Repair parts is another item of no less importance than any one already mentioned. Obviously it is quite impossible to render prompt and adequate service or maintain repair shop efficiency and give entire satisfaction to owners unless there is available at all times a stock of repair parts of ample size and variety.

Underlying all of these requirements of first class service, however, the entire organization must be permeated by the spirit of service. This spirit is the motive force animating any real attempt at assistance. It is the inner desire to unselfishly use knowledge and ability in the interests of another. It is the inner sense of obligation which prompts every member of the organization to cheerfully, willingly and courteously undertake each new problem as it arises and carry it through to a successful conclusion without regard to time, expense or his personal convenience. This spirit, instantly felt and powerfully effective, creates in the customer, who is the recipient of service, a feeling of confidence, gratefulness and satisfaction just as surely as the lack of it breeds suspicion and discontent. The spirit of service is the basic element in any successful service organization.

Indifference, lack of courtesy, incompetency, inefficiency, improper organization and lack of system and facilities have done more to retard the development of service in the automotive industry than any other factor.

It is very poor policy to minimize the importance of looking after customers. The public, profiting by past experience and knowing very well that the automotive is subject to wear and sometimes abuse, in which case repairs are necessary, prefers to deal with a manufacturer or his representative who, when selling a passenger car or truck, gives with it a guarantee of legitimate service. Such a guarantee means nothing more or less than a desire, coupled with ability, to meet what is fundamentally a moral obligation.

In conclusion, the purpose of every automotive manufacturer's service department should be to maintain, wherever his product is used, an effective service organization with properly trained personnel and adequate equipment—an organization thoroughly imbued with the spirit of service, eager to employ any means to assist an owner in securing efficient and economical transportation services.

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*Read at Factory Service Managers' Convention, Cleveland, O.

The ACCESSORY and GARAGE JOURNAL

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Boston Home of Noyes-Buick

Magnificent Structure, Unsurpassed by Any Commercial Building in the East, Backed by Powerful Organization, Has Five Acres of Floor Space Devoted Exclusively to the Distribution of Cars and Trucks.

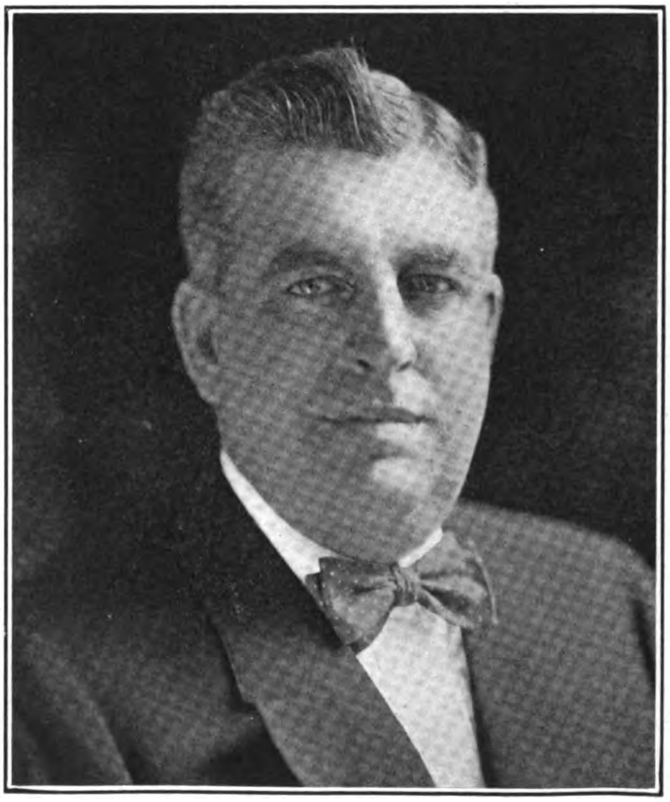
(*By* S. G. SWIFT)

WORK tinctured by faith is still the fundamental law of success, and achievement the remuneration for applied ambition. Today, as in countless days gone by, the busy world is ever ready to pause in its stride to pay homage to the institution which points new paths or progress, and the beautiful new home of the Noyes-Buick Co., 857 Commonwealth avenue, Boston, which overlooks the historic Charles river, emphatically proves the truth of the foregoing.

This modern building, which so logically combines the artistic and the practical, contains five floors, with a total area of five acres, every inch of which is devoted exclusively to the wholesale distribution of Buick automobiles and GMC trucks. In beauty of design and workmanship it raises the standard of automobile homes and strikes an original note which is bound to have great and far-reaching influence in the construction of buildings erected in the future for similar purposes.

At first glance the casual observer is most impressed by the wonderful beauty and grandeur of the edifice, but a careful study of the physical features shows that it is really a structure of rugged simplicity, while the ornamental finish has a dignity far removed from cheap and tawdry display.

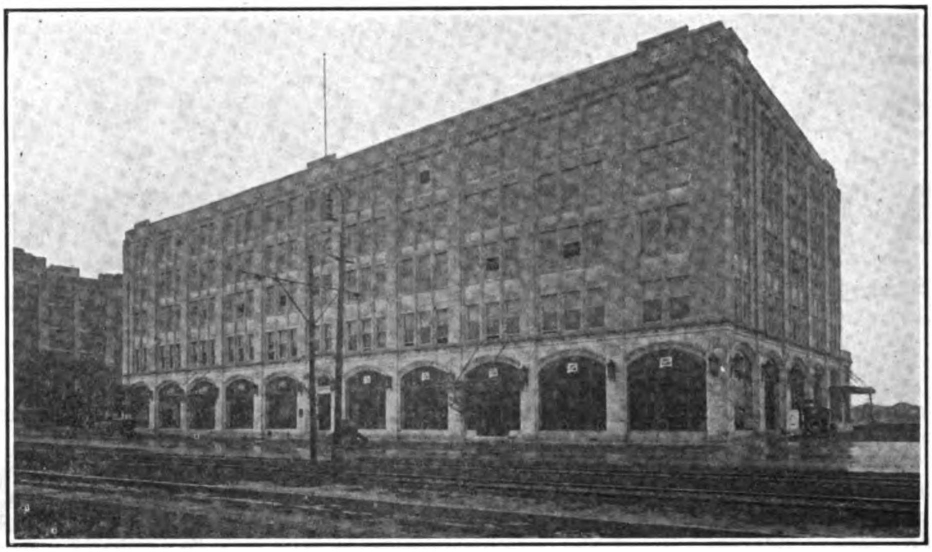
In general appearance the exterior is unsurpassed by any commercial building in the city.



Harry K. Noyes, President and Treasurer of Noyes-Buick Co.

The rough construction is of reinforced concrete, faced with Indiana oolitic limestone, laid slab style, which gives the appearance of solid blocks. On the Commonwealth avenue side of the building there are two immense ornamental marquises which overhang the two vestibules of the twin show rooms, and on the east, looking toward Cottage Farm bridge, another of even larger proportions juts out over the entrance on that side of the building. The impressiveness of the large column at the front of the structure, beautifully designed, is further enhanced by 21 wrought iron lanterns, pendant from the tops.

The entire front and sides of the ground floor are lighted with bays of heavy polished plate glass, with Kawners copper mullions, and colored leaded glass camber head transoms, in the blue and white panels of which the trade names, "Buick" and "GMC" appear. All of the window trim and frame is of cast iron, and the limestone arches above the leaded glass transoms are ornamented with rosettes carved in the



This New Building Supplies New England with Buick Cars and GMC Trucks. It Is a Striking Example of Modern Architecture and Is Strictly Fireproof.

gothic style, the same design predominating in the belt course. The parapet, in which two large Buick panels and a GMC panel are set, is decorated with terra cotta panels of blue and white, producing a pleasing effect.

The doors to the entrance of the show room vestibules, and the main lobby, are of heavy quartered oak with massive bronze trimmings, and were especially designed and made by hand.

The entire aspect gives the idea of harmony, so far as the exterior is concerned and as one passes through the ample doorway, he realizes that the same simplicity of harmonious design has been carried to the interior as well.

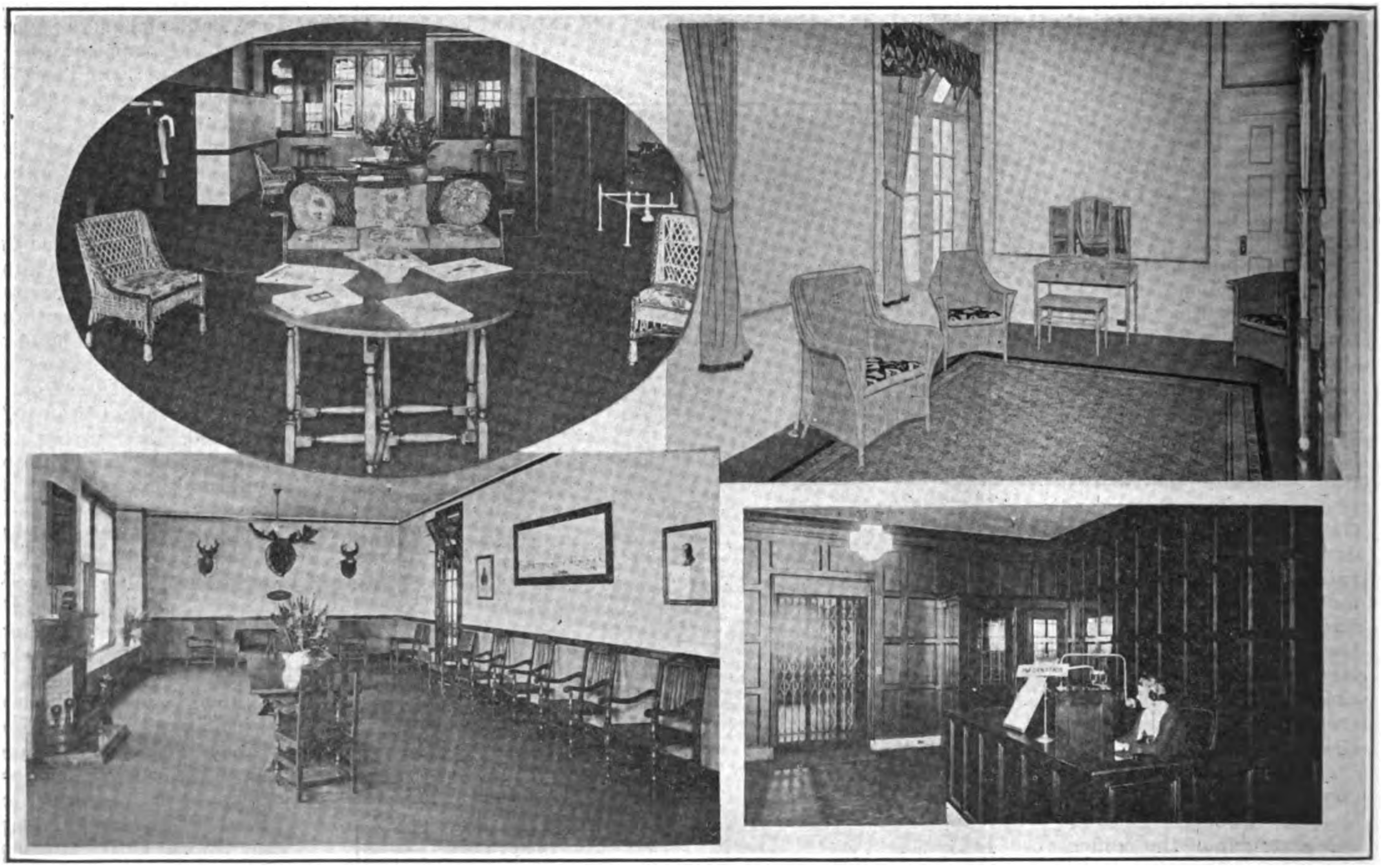
Interior Finish Has Touch of Old World.

The twin show rooms in the front of the building have 4500 square feet of floor space, which affords ample area for the display of trucks and automobiles. These rooms have a gray sanded tile floor, with a Holland brown border, and the windows have stools of gray Tennessee marble.

The walls are cast travertine, and laid up as ashlar, to match the limestone on the outside, the travertine running up to an old Roman ceiling on walls and pilasters. This travertine is believed to be mixed in exact proportion to that found in old world ruins and, while it would require one versed in the language of art to adequately describe it, it seems safe to employ a time-worn platitude, and say that it is especially beautiful in coloring and texture. It has the look of weathered fire brick, and this effect is furthered by artificial mars or blemishes, which appear to the eye to be the result of erosion and time.

A large fire place with a heap of white barked birch, contentedly awaiting the wintry days, also adds color to the sales rooms, and strikes a happy note in the general harmony of beautiful lines and tastefully designed furnishings.

In the center of the Buick show room, which is on the right as one enters, there is a grand stair case, 11 feet wide, which runs to the lobby on the second floor. In design and workmanship—both inadequate words when used in this connection—this stair case has been considered by competent art critics to be the most artistic in Boston, with the possible exception of one in the public library, and appears to have been transplanted bodily from some palatial mansion in the old world.

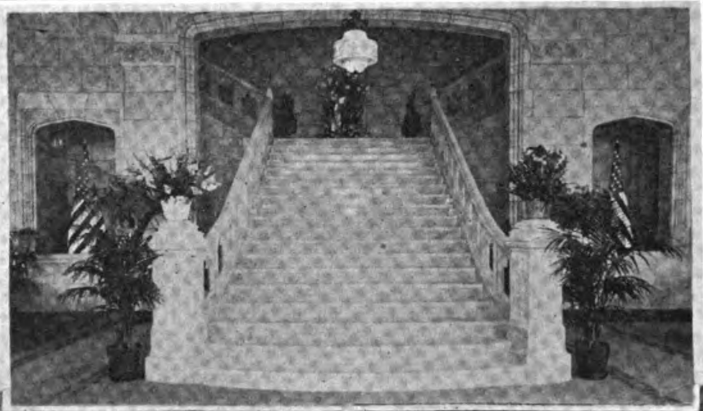


Upper Left—Women's Rest Room. Upper Right—Customers' Waiting Room. Lower Left—Dealers' Assembly Room. Lower Right—"Information."

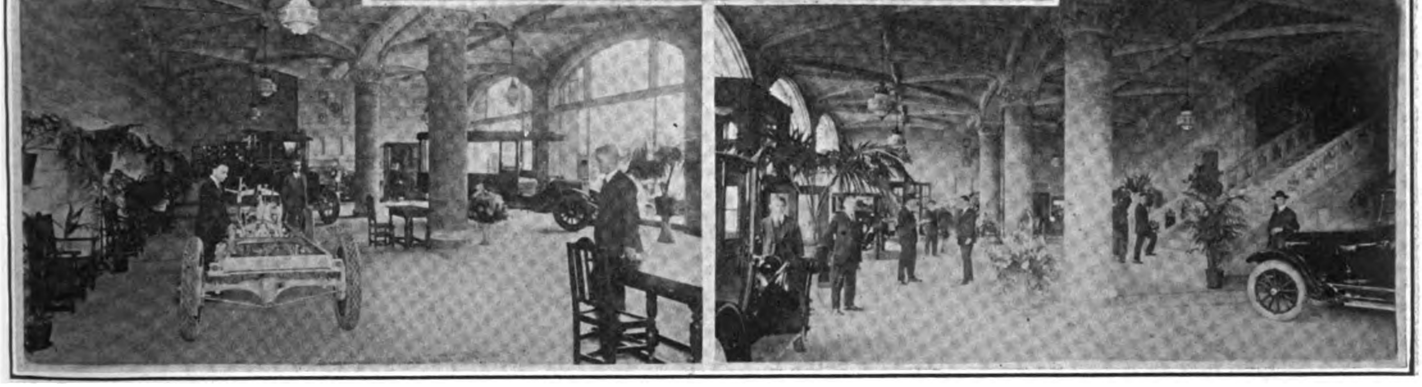
Of the finest gray Tennessee marble, with stone balustrade to match, it has a ruggedness and simplicity of outline which ranks with the best traditions of the Bay state, and art lovers of Boston have given it the seal of their approval, which means that it is right.

Executive Offices on Second Floor.

The 17 executive offices, accounting department, dealer's room and rest rooms, with space for another truck show room, are all on the second floor, which is constructed throughout with a hung ceiling. The offices line the front of the building and open on to the main hallway, the dividing partitions being finished in yellow tint, with large leaded glass doors. The wood trim on this floor is made up of plain oak, quartered oak, sycamore and chestnut, which is laid up with a simplicity of outline that approaches the severe.



Above—This Artistically Designed Staircase Is Made of Gray Tennessee Marble with Stone Balustrade to Match. It Has Occasioned Much Favorable Comment.



Below—Twin Show Rooms, Situated to Left and Right of the Main Entrance, Are Glass Enclosed on Three Sides and Have a Combined Floor Area of 4500 Feet.

With some few exceptions the furniture in the halls and corridors is of antique design and was planned by Irving & Casson, the decorator, who also attended to other details of interior finish. Filing cabinets, desks, telephone booths and all furniture and furnishings are of some shade or tint of brown, and the wall paneling, of walnut, also follows the general color scheme.

The telephone booth and information desk, located at the head of the stairs, is paneled waist high with walnut, and the busy operator is provided with an easy chair although, truth to tell, she has very little time to use the back of it.

Men Have Two Rest Rooms.

The men's rest rooms, two in number, are well furnished, and are at all times supplied with the latest fiction and technical magazines. One of these is for general office men, and the other for service station employees, the latter room being reached from the service station by a stair case constructed for that purpose. There is as yet no lunch room service and, as practically all of the 180 workers are enthusiastic boosters for the "carry-your-lunch" movement, the rest rooms present an animated scene during the noon hour.

Women's Rest Room Model of Comfort.

With all respect to other organizations, and other rest rooms, it is doubtful if any in New England can compare with the women's rest room in appointment. Tastefully furnished in wicker furniture with tapestry upholstering, it is the embodiment of comfort, and the wicker couches and reclining chairs invite the observer, almost against his will, to stop and rest awhile.

Growing things lend an air of outdoors to the quiet room, and the current books and magazines, dear to the heart of woman, are provided for those who would combine reading with rest. Ample drinking water, cool and refreshing, bubbles from an automatic fountain, and the retiring rooms and lavatory are examples of the architect's best mood. And if anyone wishes to know whether the young women appreciate this consideration for their comfort, he has but to look in at the open door during the noon hour.

As one practical minded dealer from Maine remarked, when being shown through the building, "The rest rooms you people have for employees is the best argument for the open shop I know of," and without discussing the ethics of the remark, one is inclined to agree with him in abstract.

The stock room, located in the rear of the first floor, makes one think that he is in the assembly room of a big factory. The large amount of parts carried invoices at one-half million dollars, and contains, in large quantities, practically everything needed to assemble a new Buick or GMC truck, with the possible exception of the body.

Piles of engine blocks, flanked by heaps of rear and front axles, lie close to barrels of hub caps, and some idea of the immense amount of stock can be gained from the fact that even in these days of efficient self-starters, the writer counted seven barrels of hand cranks. It doesn't seem possible that use could ever be found for so many of them, but there they are, and it is obvious that they aren't kept for show.

More than 15,000 cards were necessary to list this vast amount of materials, and 20 clerks under the direction of the advertising manager, comprise the personnel of this department. All small parts, such as springs, valves, nuts, bolts and washers, are dispensed from Durant steel cabinets. These are all arranged by "families," following the system adopted by the General Motors Co., and almost identical with the method of listing books used in the Congressional library at Washington. A new clerk, who had never been inside the department, would be able to start working immediately and, by following simple directions, would be able to locate any article asked for.

For instance, suppose he were looking for a valve spring collar key: He would glance down the aisle until he located the letter "V," the wing cards giving him the location alphabetically. Going to the cabinet so marked he would find "Valve Family" on another wing card, in the corridor, to the right of the aisle. Under

"Valve Family" he would find what he wished for listed alphabetically on another wing card, and the writer can testify to the ease with which he would be able to get what he was after. The illustration will serve to explain the working of the system, which is ideal and efficient.

"Parts" Salesman Keeps Dealers' Stock Complete.

In addition to the large stock carried by the home office, the 108 dealers are also supplied with a working stock of parts, apportioned to the size of their agency. There is no guess work as to whether a dealer is properly stocked either. A very efficient salesman attends to this phase of the matter and spends his entire time in calling on the agents. He doesn't say a word about cars, neither does he claim to know anything about them. He is an expert on parts, and parts alone, and knows exactly what stock each dealer in his territory has on hand at any given moment. He inventories their supplies, suggests ideas for better service and many busy agents have given him the entire charge of their stocks, all of which accounts for the fact that Buick dealers are always well supplied with parts.

No one realizes better than he the importance of at all times carrying as complete a stock as possible and, though the supplies carried by the different agencies total $300,000, it frequently happens that some part is missing, and the company is occasionally in receipt of letters from customers who claim to be unable to get proper service.

Trouble Department Backs Up Dealers.

When this happens the trouble department gets busy. This department is also under the personal direction of the advertising manager, who investigates all complaints personally, first referring them to the president. Endeavor is primarily made to supply the missing part. If neither the home office, nor any other dealer has it in stock in the New England territory, and this can happen with older models, the department tries to get it from other districts. Recently the department got a much wanted part for an old model from San Antonio, Tex., after having been advised of its whereabouts by the dealer at Dallas. All of these emergency inquiries are made by telegraph, frequently at much expense, but the company believes that "Service is service, only as it serves," and goes the limit to adjust matters.

Having supplied the necessary part required by the disgruntled customer, a letter is written telling him why the local dealer was unable to give the service asked. Particular emphasis is given to the fact that the dealer was not at fault, and explanation is made in a logical manner which does much to promote good feeling between owner and agent.

Service Station for Buicks and GMC's Only.

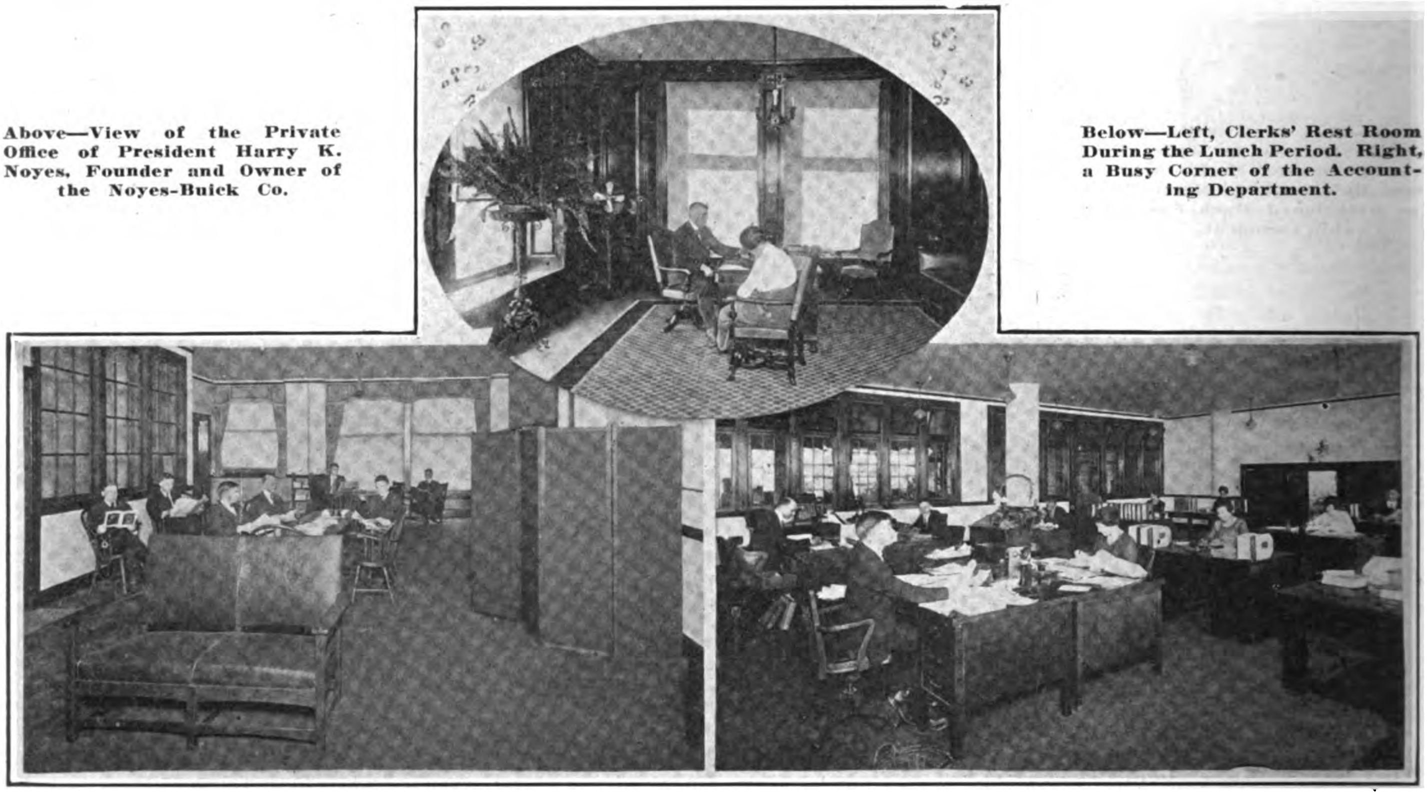
The service station employs 50 men. Practically all of this crew are skilled mechanics who have specialized on Buick and GMC service. They test the cars when they arrive from the factory, and tune them up to the highest degree of efficient operation. No repairs on customers' cars are made unless authorized by an agent, who sends them to the station and only Buick atuomobiles and GMC trucks are serviced. The charge for work not cared for under the guarantee clause in the contract is $1.25 an hour, which, considering the labor saving methods employed and the consequent saving of time, appears to be very reasonable.

A blacksmith's shop, in charge of a competent workman with a corps of helpers, attends to all frame alignment work, and makes a few small parts that are necessary from time to time. The writer was much interested in watching this department straighten out a truck frame that had been bent in nine places, and is prepared to state, from previous knowledge of the trade, that the work was done faultlessly, being exactly true when tried with straight edge and square. The machine shop, also a part of the service station, contains little equipment, as all parts come from the factory milled and ground, and little if any machine work is necessary.

Three Acres of New Buicks.

All cars and trucks, after having been received and tested in the service station, are taken by the twin A. B. C. elevators, which carry four automobiles or two trucks, to the third, fourth and fifth floor for storage. These three floors at present are filled with new cars, and one can get an idea of the number by thinking of a three-acre field parked with orderly rows of automobiles. The visitor hardly believes that so many cars can ever be sold in New England, but Buick is a staple—a necessity of life, so to speak, and the entire allotment for 1921 has already been marketed. Not only that, but the company is trying to get its allotment increased. Despite rumors of bad business in other lines, this concern looks forward to a year of the biggest truck and automobile business it has ever done and, if coming events still "cast their shadow," the view has substantial foundation.

All cars, at the present time, are received in Charlestown, as the company has been unsuccessful in getting a spur track from the railroad, but it is expected that this condition will soon be remedied and deliveries will be made by



Above—View of the Private Office of President Harry K. Noyes, Founder and Owner of the Noyes-Buick Co.

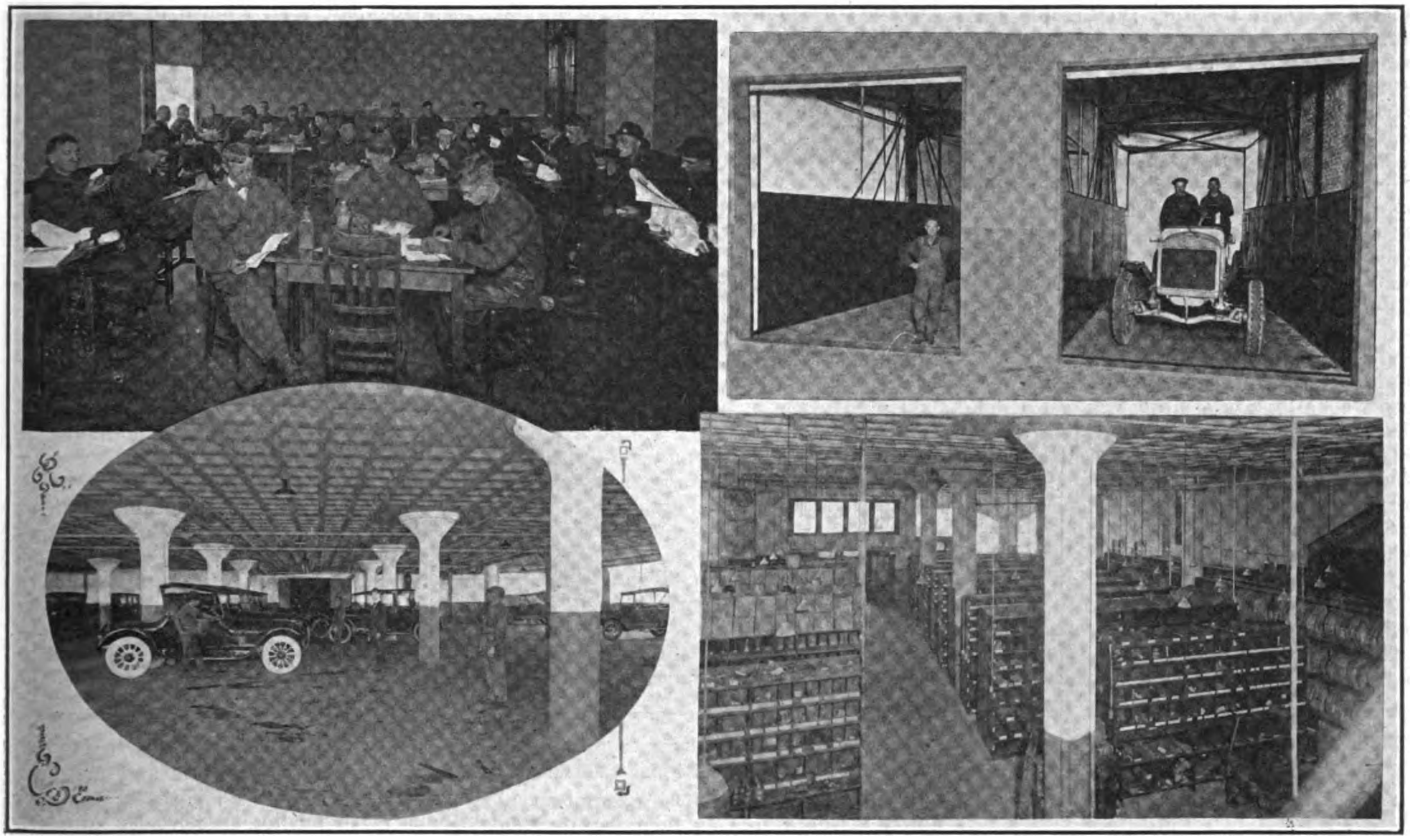
Below—Left, Clerks' Rest Room During the Lunch Period. Right, a Busy Corner of the Accounting Department.

freight, direct to the plant, which is within a few feet of the railroad track.

Garage and Heating Plant in Basement.

The entire basement is used as a storage garage, with the exception of a room for the heating unit, which is a Fess oil burner of the vapor type. Small and easily handled, this little machine heats 35,000 square feet with little effort, and appears to be very efficient. The radiation is all of the concealed, or indirect form, with the exception of certain work rooms, and much clever planning is apparent in the way in which the heat is distributed to the show rooms and offices.

The building has a wet sprinkler system with approximately 2450 outlets, and the piping is concealed. This was installed by the General Fire Extinguisher Co., Providence, R. I.



Above—Mechanics' Rest Room and Twin A. B. C. Elevators. Below—Car Delivery Department and Part of the Stock Room.

The type of construction used throughout the building, which was erected by the Fred T. Ley Co., Inc., Springfield, Mass., is known as "Grid," and the Noyes-Buick building is the largest that has been built in this manner, the main feature of which is the absence of pillars, and the added floor space, all suspension being made by a series of wires which run from the plates of the building at the floor heights to central columns. Roughly speaking, it embodies the principle of the suspension bridge, which permits the carrying of great weight.

The electric lighting system, with the exception of several large, hand-wrought lanterns, is of the indirect lighting type, with concealed wiring, and was installed by Bigelow-Kennard & Co.

Arthur H. Bowditch & Co. was the architect and the whole work of construction and finishing has been done under the personal supervision of Harry K. Noyes, president of the Noyes-Buick Co., the man who made the undertaking possible. Mr. Noyes is modest and retiring to a marked degree and has a wholesome dislike for ostentation in any form but, under the circumstances, it seems proper to print a very short paragraph of the man and his achievements.

He first started in the automobile business in Lowell, as a Buick dealer, and later became New England manager for the Buick Co., located at Boston. His unusual success in business is largely accounted for by his limitless faith which, coupled with his capacity to thrive on hard work, has made him an outstanding figure in the business world of Boston.

The entire personnel of the Noyes-Buick Co. is efficient to a high degree. Everything is done by team work, and there is no set organization. Each department is a unit of the "family" group. The head of the company, Mr. Noyes, has surrounded himself with cheerful, capable workers, and the worst grouch in the world would absorb the idea of good fellowship after working at the plant a few days. It fairly radiates, and the results of the "family" idea have been wonderfully successful.

Team work is the rule and not the exception. Everyone is called by his first name and titles don't go. There aren't any office boys, and even the president distributes his own mail and carries his own messages. The entire workings of the different departments are along lines as simple and plain as the beautiful architectural design of the building, and though said to be a distinct innovation in the conducting of a large business, have proved their value.

All welfare work is in charge of the advertising manager. This part of the organization is too young for much to have been done, but many plans for winter entertainment are being made and a bowling league is being formed. It is possible, too, that community buying of household supplies may come when prices get a bit more stabilized, and the employees feel that this part of the work will be well taken care of if detailed to the same person who picked out the half ton of turkeys which the company gave to the employees at Thanksgiving.

Entire Organization Formed to Aid Dealer.

The motive underlying the construction and intended use of the beautiful building is best described as "backing up the dealer." The management believes that the agent is in reality a salesman and, as such, is a component unit of the organization. It does not believe that he should be left to his own resources entirely, and has planned in many ways to give material aid, which shall result in closer cooperation.

With the return of normal conditions, with car production hovering around the saturation point, a new era has dawned in the automotive industry, and the company feels that the entire future of the business depends not only upon the quality of the product but, to a marked degree, upon the skill shown in marketing. With the boom attendant on war conditions and during the very early stages of the industry, the dealer needed no assistance in marketing his allotment, which frequently was sold without effort, but the future presents a different aspect, and the successful dealer must learn again the lost art of selling.

Efficient Programme of Sales Helps.

It is with this idea, long ago conceived, that the company prepared an efficient programme of sales helps for backing up the dealer. The most important item in the list is probably the new Buick sales room, and its organization of experienced salesmen, who are prepared to handle the trade of all prospective customers from all parts of New England. These purchasers receive the same attention that would be accorded them in the sales rooms of their local dealers, with the added advantage of very attractive surroundings.

Highly trained salesmen wait on the trade and close the sale, if possible, the dealer in whose territory they reside getting the full credit of the sale, at no expense to his account. All that remains is for him to deliver the car, and it is surprising to see the number of sales made in this way.

The resident salesman does not make any transaction involving the handling of a used car but, should the customer desire to make such a trade, takes his name and address on a blank provided for the purpose, which, with other details, are forwarded to the agent with instructions for him to call on the prospect and notify the home office of the result of his canvass. This is followed up in two weeks by a card filing system, which lists the prospect and the dealer in alphabetical and chronological order, and the dealer gets little peace until he has forwarded a report on the prospect.

Sales are frequently made to persons who have come to the place on a sight-seeing tour, and had no intention of purchasing. While such visitors are not solicited directly for their patronage, the shrewd salesman rarely scores a miss on a prospect, and many agents have been agreeably surprised at opening their mail to find an order from some one whom they had never thought of as a prospective buyer.

Special Retiring Room for Dealers.

A dealer can also bring a client to the sales room with the same feeling of confidence and proprietorship that he would assume in his own place of business. Convenient desks are provided for the transaction of business, and the agent is welcome at all times. To assure him of this feeling a very attractive dealers' room has been prepared on the second floor.

This room is large and well appointed, and is lighted by windows for one side of its entire length. It has a marble mantle and a practical fire place, and is furnished with carved antique furniture. Over the mantle is a picture of W. C. Durant, the founder of the General Motors Co., and, on the other side, flanking a large water color of the building, are pictures of H. H. Bassett, president, and E. T. Strong, sales manager of the Buick Co.

In this room the dealer may receive and entertain his customers and friends while in the city, and the organization stands ready and willing to furnish any assistance or attention desired.

Will Aid by Advertising Campaign.

For Buick dealers and prospective purchasers the company is issuing three forms of catalogues. There is a large booklet with a blue and gold cover, illustrated with a complete line of the 1921 product, and general descriptions are detailed in such manner as to be understood by the layman. Another small booklet, for those mechanically inclined, deals with the technical features of the car, and a folder, to be used as a file for the casual inquirer and catalogue collector, has also been prepared, which completes the list.

In addition to this there will appear from week to week large double-page advertisements, as well as smaller ones, in weekly and monthly publications. The form of advertisements to be supplied is of unique and attractive design, and the combined publicity, already planned, is especially forceful and commanding. The catch phrase, "Authorized Service," will be continually and strongly displayed, and the company plans to make every owner a satisfied customer, if service and advertising can be used to make this possible.

In addition to the forms of advertising planned, a system has been developed whereby each agent will have a weekly advertisement in his local paper, over his agency name. Mats and stereotypes will be sent direct to these papers and will appear simultaneously throughout the country, all at no expense or trouble to the dealer.

Management Well Known in Automotive Field.

The entire personnel of the Noyes-Buick Co. has been carefully selected from a long list of applicants, and the officers, especially, have been hand-picked, being men well known in the automotive field of New England, as a glance at the appended list will show. They are: President and treasurer, Harry K. Noyes; secretary and general manager, R. G. Clarke; district managers, W. S. Simonds. F. W. Nichols, H. E. Noyes (also assistant treasurer) and C. H. Richards (who is manager of the truck department); comptroller, C. D. Paige; advertising manager, F. W. Tucker, and assistant sales manager, H. J. Carlson.

With a wonderful new building, a competent management and an ideal product to market, the Noyes-Buick Co. should go far along the road to success. It has the right idea of cooperation and efficient service, and these factors alone will serve to make it one of the most highly developed selling organizations in the country.

THE QUESTION OF TAX REVISION.

The recent recommendations of Secretary Houston to Congress for what he characterizes as a more equitable and just distribution of America's $4,000,000,000 tax burden has occasioned unusual interest throughout the automobile industry and trade inasmuch as several of the proposed measures directly concern every manufacturer of, dealer in, owner or user of a motor vehicle. These specific recommendations are as follows:

A tax of two cents a gallon on gasoline for motor cars and all other purposes, to yield $90,000,000.

A federal license tax of 50 cents per horsepower on the use of motor cars to yield $100,000,000.

Secretary Houston also suggests in addition the following sources of increased income:

A tax of 20 per cent. on corporation profits. distributed or undistributed, in addition to application of a higher surtax rate to yield $690,000,000.

An additional tax of six per cent. on corporation incomes to yield $465,000,000.

Readjustment of surtax rates on incomes to yield an additional $230,000,000.

Abolition of the $2000 exemption allowed corporations on incomes, to yield $58,000,000.

An increase from the present four per cent. to six per cent. in the tax on incomes of $5000 or less, and from eight per cent. to 12 per cent. in the tax on incomes between $5000 and $10,000, the whole estimated to yield $150,940,000 annually.

A 10 per cent. additional tax on theatrical admissions to yield $70,000,000.

As might naturally be expected, Mr. Houston's proposal's to Congress have been received with strong protests throughout the industry. This feeling was well voiced by Alfred Reeves, general manager of the National Automobile Chamber of Commerce in an address to the members of the New York Automobile Dealers' association, immediately following the announcement of Mr. Houston's recommendations. He said, in part, that such measures, if incorporated in the tax laws, would increase by 100 per cent. the taxes now paid by motor car dealers and manufacturers. He added that the automobile industry is paying $143,000,000 annually to the federal government, with state fees of $64,000,000, and personal property taxes and other fees of $50,000,000.

He characterized as an injustice any additional taxes on owners, dealers and manufacturers of motor cars. Farmers own one-third of the 7,200,000 passenger machines in the country, he declared, and more than 100,000 doctors use the motor car as a means of conveyance.

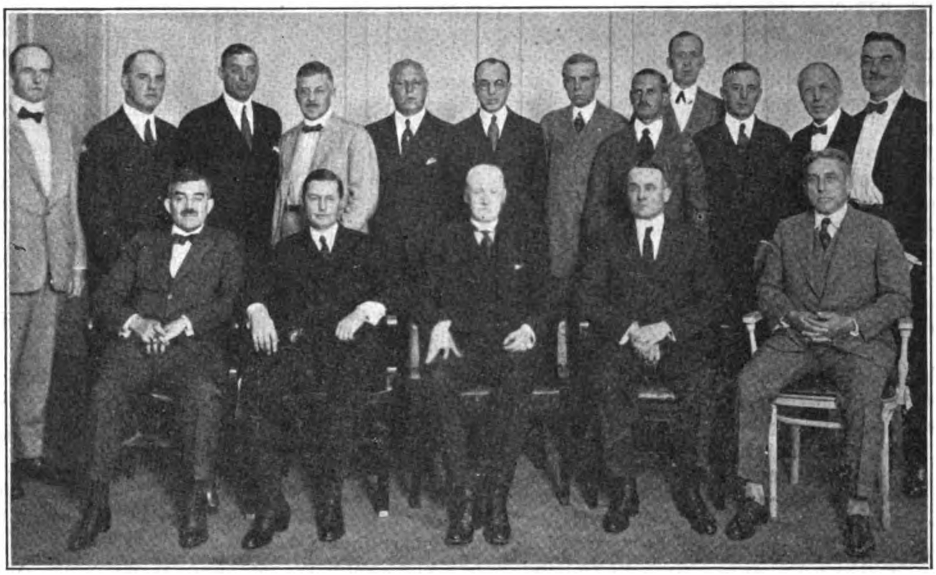
The speaker asserted that although the motor business is now running at less than a 50 per cent. basis, the full year's production will exceed all records, approaching 1,900,000 cars and 340,000 trucks.

Citing as proof of the necessity of the motor car to business and transportation, he said motor car mileage in 1919 exceeded 22,000,000,000 miles, with a total passenger mileage averaging three passengers per car in excess of 66,000,000,000 miles.

Interest in New York Show Presages Season of Prosperity

THE big annual national automobile shows may well be considered an index of the marvelous progress that has characterized the automotive industry in America. For instance, contrast in the mind's eye the first automobile show ever held in this country, in Madison Square Garden, on Nov. 3, 1900, when there were in all 66 exhibits, with the 21st annual New York show to be held in the Grand Central Palace, Jan. 8 to 15, at which there will be some 400 exhibitors of motor cars and accessories. Only those who attended that first crude exhibition can fully realize the wonderful development in all branches of the industry as compared with the latter day de luxe affairs comprising hundreds of beautiful car models shown in an elaborate decorative setting under such ideal conditions as are afforded at the spacious and elegant Grand Central Palace.

It should be remembered that two decades ago motor cars were considered almost as freaks and attracted fully as much attention as such, as from a realization of the tremendous latent possibilities involved in this, at that time unique, type of locomotion. And it is safe to say that not even the most ardent advocates of the future utility and ubiquity of the self-propelled vehicle could hardly have visualized the handsome creations upon which the eye may feast at the coming exhibition. There were no palatial limousines, stately sedans, rakish looking sport or touring models at the initial show, but only the, it might be said, experimental products of a few far-sighted manufacturers who were the pioneers in what has now become the third largest industry in the world.



Officers and Directors, National Automobile Chamber of Commerce:. Stand'ng, J. S. Marvin, Assistant General Manager; Alvan Macauley, Packard; Harry S. Jewett, Paige-Detroit; R. E. Olds, Reo; W. C. Sills, Chevrolet; J. E. Kepperly, Willys-Overland; Fred J. Haynes, Dodge Brothers; Alfred Reeves, General Manager; C. W. Churchill, Winton; J. Walter Drake, Hupp; S. A Miles, Show Manager; William E. Metzger, Columbia. Seated, A. J. Brosseau, Mack; Secretary; Roy D. Chapin, Hudson, Vice President; Charles Clifton, Pierce-Arrow, President; Windsor T. White, White, Vice President; H. H. Rice, G. M. C., Treasurer.

The coming exhibition, which will occupy four floors of the Grand Central Palace, each floor a city block square, will consist of 88 exhibitors, each representing a different make of car, which will bring the total estimated number of passenger cars to be seen up to at least 350.

The New York show will be again under the auspices of the National Automobile Chamber of Commerce, as will also its twin brother, the Chicago exposition, to be held later in the month, and again under the immediate general supervision of S. A. Miles, who may perhaps be said to have had an unusually difficult task this year in whipping the shows into form on account of adverse business conditions which have been reflected in the automobile industry during the past several months. Mr. Miles recently returned from a trip west, in the course of which he saw many automobile men, and expresses himself as confident and even optimistic regarding the outlook.

It already appears that despite the depression evident at certain periods of this year, next season will show a wholesome recovery. The weak spots have been found and, where not entirely eradicated, have been strengthened. Predictions are freely made that a large number of cars will be sold at the January show.

A Practical Side to Exhibits.

While at these events manufacturers of and dealers in every make of car vie with one another to stage an exhibit of beauty, there also is a practical side to each display. The latest models of cars are, of course, shown and, while body design makes a car attractive, it is the engine that now makes the appeal to the majority of present day motor car prospects. Motor car manufacturers have, in the past few years, paid more attention to the power plant. There have been many improvements in body designs, but automobile builders learned many lessons during the period factories were turned over to the government for the purpose of manufacturing war material. Some of the most improved features in engines came as a result of these experiences, and such betterments will no doubt attract attention at the coming exposition.

These refinements tend toward efficiency and economy, thus giving a buyer more for his money and at the same time adding to comforts and conveniences of motoring. No radical changes are expected in body lines, the basic principles of last year proving so popular that they are for the most part being retained. Here and there will be found improved hood and windshield designs, and where these have been made they will undoubtedly add to the attractiveness of a car.

A canvass of manufacturers reveals that more careful attention is being paid to the preparation of exhibits than ever before, and this, with the numerous new models that will be on display, is expected to stimulate interest in a degree that will cause all previous show records to be surpassed. In years gone by some shows have been open to the criticism that they were somewhat drab and colorless, most manufacturers displaying their standard models, finished in dark blue or black. This year, it is expected that the reverse will be true, with somber colors conspicuous by their absence.

General Manager Miles, moreover, predicts that some of the newer models to be on view at the January shows will open the eyes of those who thought the peak in automobile construction had been reached at the 1920 exhibitions.

Practically every make of automobile that has earned a place in the motor car industry will be represented, and there cannot fail to be found some model that will fit the pocket book of every possible prospective buyer as well as to suit the most fastidious taste.

Ten New Makes to Be Seen.

One of the features of the show in New York will be the appearance of 10 makes of cars which have never been seen at the New York show. These include the latest offerings of the Cortland Cart and Carriage Co., the du Pont Motor Co., the Friend Motors Corporation, the Gardner Motor Co., Inc., the Hanson Motor Co., the La Fayette Motors Co., the Lincoln Motor Co., the Lorraine Motors Co., the Noma Motor Corporation and the Piedmont Motor Car Co., Inc.

Another interesting point in connection with these national shows is the fact that the exhibits are made up of cars made in America through and through, and American-made cars only. This is evidence that is given every year that cars made on this side are fully equal to the high priced importations brought from abroad, and these expositions in recent years prove that there is no reason for going to Europe for the best that may be conceived in motor cars.

Accessory Exhibits to Break Record.

The list of accessory exhibitors at the New York show, as given out by the management, numbers 221 different concerns and will undoubtedly equal, if it does not exceed, the unprecedented representation of last season. It should also be borne in mind that as a truck and tractor exhibition was then held coincident with pleasure cars, the concomitant accessories swelled the total number of exhibits, while this season it is to be expected that this department will be more largely confined to passenger car fittings and equipment. All of the latest fads, as well as the many utilities, new and old, which are now demanded as adjuncts to the modern motor car, to say nothing of equipment for private and public garages, etc., will be comprehensively in evidence. The many new inventions appeal strongly to many motorists who are more or less mechanically inclined and always attract great interest.

Manager Miles has planned novel features for the decorative scheme at the palace this season, the details of which have not as yet been divulged. It is certain, however, that the lighting and color effects will be brilliant and will make a setting that will reflect the cars to wonderful advantage.

The fact that the interest in this 21st exhibition at New York is being manifested in a tangible way is shown in Mr. Miles' statement that the applications for exhibitors' invitations, up to the middle of December, showed an increase of approximately 50 per cent. over last year.

WINTER MEETING, SOCIETY OF AUTOMOTIVE ENGINEERS.

Unusual import is attached to the meetings of the Society of Automotive Engineers this winter, inasmuch as it is felt that any retrenchment of engineering activity when sales resistance is high is an unsound economic policy. It is not the time for the automotive engineer to rest on his oars; he must rather accept the responsibility of increasing the sales appeal of automotive products by effecting economies in their design that will justify price reduction. Operation costs must be decreased by increasing efficiencies and providing better accessibility for adjustment and repair. It is considered that the stabilization of the industry and the development of an active automotive market will be greatly dependent upon the work of the automotive engineer during the coming year.

N. A. C. C. OFFICERS AND SHOW COMMITTEE.

President,
CHARLES CLIFTON.

General Manager,
ALFRED REEVES.

Assistant General Manager,
J. S. MARVIN.

Show Manager,
S. A. MILES.

First Vice President,
HUGH CHALMERS.

Second Vice Presidents,
Passenger Cars—
R. D. CHAPIN.
Motor Trucks—
WINDSOR T. WHITE.

Secretary,
C. C. HANCH.

Treasurer,
H. H. RICE.

Passenger Car Show Committee,

Chairman, **JOHN N. WILLYS**
H. G. ROOT,
HARRY M. JEWETT.

Appreciating this fact, the meetings of the Society of Automotive Engineers are being planned to have a more comprehensive scope than ever before and to devote more time to beneficial round table discussion by the conduct of simultaneous technical sessions, an innovation in the proceedings of the organization.

The following programme has been arranged for the annual meeting, which will be held in the Engineering Societies' building, New York city, Jan. 11-13:

Tuesday, Jan. 11—Morning and afternoon, standards meeting, discussion of the revisions of and additions to prevailing S. A. E. standards and recommended practises which will be reported by the divisions of the standards committee. Evening, aeronautic session, technical meeting to consider recent engineering developments in air craft, such as variable camber wings, metal construction, internally trussed wings, retractable chassis and propellers, with the presentation of authoritative papers on these topics.

Wednesday, Jan. 10—Morning, annual business meeting, election of officers, finance, membership, meetings and other committee reports; "The Engineer's Place in the Industry," presented by three prominent executives of the automotive industry. Afternoon, simultaneous meetings: Body engineering session discussing the genesis of a closer cooperation between engineers engaged in automotive work, consideration to be given to tendency in design, construction and methods of production and encouragement of standardization in this field and reduction in body weight. Aeronautic session, discussing the development of commercial aviation using both lighter and heavier than air types, a presentation of the progress of air transport in Europe and study of its future possibilities in America. Chassis session, considering the increase of the efficiency of the automotive chassis to conserve fuel, study of mechanical losses, advisability of smaller engines and higher axle ratios, reduction of sprung and unsprung weight and the possibilities of European types of small cars in America.

Evening—The carnival, the social S. A. E. event of the year.

Thursday, Jan. 13—Morning, fuel session, discussion of the efficient utilization of the present high end-point gasoline in internal combustions, analysis of valuable research in the phenomena of combustion and detonation, and employment of increased compression pressure with knock eliminated. Afternoon, simultaneous meetings: Continuation of fuel session, including the consideration of combustion and flame propagation, distribution problems, the petroleum refiner's viewpoint, extent and effect of crank case dilution and a symposium of the present views of leading authorities; highway session, discussing the effect of the heavy automotive vehicle on highway surface, and the study of subsoil and its relation to surface durability—a meeting to further develop cooperative contact with the civil engineer who builds and maintains the road bed on which automotive products operate. Evening, annual S. A. E. dinner at the Hotel Astor at 7 o'clock.

Chicago Meeting.

On Feb. 2, at the Hotel Morrison in Chicago, the society will hold two technical sessions, morning and afternoon, one being devoted principally to the consideration of truck design trend, introducing a paper on an interesting steam truck development, and the other dealing with the operation of automotive vehicles from the viewpoint of the service man and the owner, offering an opportunity for the operator to constructively criticise engineering errors in design.

In the evening will be held the annual S. A. E. dinner of the Mid-West section.

Columbus Meeting.

Two technical sessions will be held the morning and afternoon of Feb. 10 at the Hotel Deshler, in Columbus, O., which will be devoted to the consideration of farm power engineering, trend of tractor design, plowing and belt speeds and the faults developed in the Nebraska state trials, and the adaptation of stationary farm engines for lighting, pumping and utility uses.

In the evening will be held the farm power wagon dinner, the annual get-together of the tractor, lighting plant and farm engine divisions of the automotive industry.

First Annual Exhibition of Ohio Automotive Trade Association at Cincinnati, O.

THAT the activities of the Ohio section of the accessory trade were well exemplified this year in the fourth annual convention and first annual exhibit held under the auspices of the Ohio Automotive Trade association in Music hall at Cincinnati, Dec. 7-10, is signified by the statement that there was a total of 141 exhibitors and that the records showed an official registration of 1080 people.

An improved business aspect was reported and the trade outlook was stated to be decidedly brighter.

The convention was called to order at 1:15 Tuesday afternoon, Dec. 7, the exhibit having already opened at 9 a. m. Mayor John Galvin extended the greetings of the city, and the welcome in behalf of the Cincinnati Automotive Trade association was given by its president, A. C. Mundew. These were fittingly acknowledged by A. E. Mitzel, president of the state organization. Then came a period for the transaction of routine business, the announcement and appointment of committees, the presentation of the report of Manager E. J. Shover, and the official address of President Mitzel. The remainder of the afternoon was taken up by papers on the "Intelligent Equipment of Garage and Service Stations," by Charles F. Hodgson, secretary of the Weaver Manufacturing Co., Springfield, Ill., and "Selling Service Intelligently and Its Relations to Sales," by P. E. Chamberlain, manager of the R. R. Hall Cadillac Co., Denver, Col.

The first day closed with an informal reception and dance at Hotel Sinton.

Papers of Second Day.

The afternoon of the second day was devoted to the presentation of papers on "The Future of the Truck," by A. W. Osborn of the White Co., Cleveland, O., in which were cited examples of how trucks have aided in the commercial development of the country and an even greater field of utility was forecast; "The Motor Vehicle Industry and Our Confidence in It," was discussed by W. O. Rutherford, vice president of the B. F. Goodrich Rubber Co., Akron, O.; H. B. Harper, who was scheduled for a paper on "What Constitutes Good Merchandising," did not arrive until late in the afternoon, his train having been delayed, and he was obliged to curtail his remarks on account of an engagement at another convention in the South. He made a number of pertinent suggestions on the used car question and offered, as a solution of some of the problems involved, for dealers to handle such cars on a consignment or commission basis.

Round table discussions were also held as follows: "Passenger Car Dealers," Warren E. Griffith, chairman; "Truck Dealers," Y. B. Jones, chairman; "Garage and Service Stations," Andy Auble, chairman; "Tires and Automotive Equipment," A. H. Draime, chairman; "Electrical Dealers," Don A. Parshall, chairman; "Tractor Dealers," F. M. Loomis, chairman; "Ohio Automotive Equipment Jobbers' Association," J. C. Hipp, president.

NEW OFFICIALS OF OHIO AUTOMOTIVE TRADE ASSOCIATION.

President, Warren E. Griffith, Landman-Griffith Co., Toledo.

First Vice President, Y. B. Jones, Mack International Truck Corporation, Columbus.

Second Vice President, Roy Faulkner, F. J. Santry Co., Cincinnati.

Directors:

Charles B. Ratterman, Ratterman & Co., Cincinnati.

Dr. R. T. Kennedy, Roberts & Kennedy, Bucyrus.

Howard G. Wiley, Springfield Motor Car Co., Springfield.

Leo J. Collier, Mahoning Buick Co., Youngstown.

E. J. Shover, manager, is appointed by the directors.

The evening was occupied with a theater party at B. F. Keith's.

Third Day's Discussions.

Several pertinent papers made up the discussions for the afternoon of the third day. Harry G. Moock, general manager of the National Automobile Dealers' association, talked on "The Need of Organization," and outlined what that organization is doing for the trade. In the course of his answer to the question, "What Are the Real Functions of a Dealer?" George C. Hubbs, vice president and general manager of the Grant Motor Car Corporation, Cleveland, O., made some criticisms of trade methods and suggested improvements. "What Is Going on in the Automobile Industry" was the topic assigned to Edward S. Jordan, president of the Jordan Motor Car Co., Inc., Cleveland, O., and he emphasized the need of more efficient methods in selling. While the speaker did not predict any enormous return of volume of business in a brief period, he was of the opinion that dealers should be foresighted enough to get stocked up sufficiently and in good season to be prepared for a brisk spring demand. A. R. Kroh of the Goodyear Tire & Rubber Co., Akron, O., gave a strong presentation of the relations between "The Banker, the Farmer and the Motor Vehicle.

The association's annual banquet was held in the evening at Hotel Gibson.

Activities of Last Day.

On Friday, the last day, the forenoon was devoted to various important matters of business, following an address on "This Year and Next in the Automotive Industry," by Ray Sherman of New York city.

It was recommended that a committee work for uniform state wide franchises for freight and passenger carrying vehicles.

Support was pledged to a uniform anti-theft automobile law.

Legislation was favored against obliterating the identification marks on storage batteries.

A uniform traffic bill was favored, with the reservation that it would be dangerous to change the present laws until cars are no longer taxed as personal property.

Disfavor was recorded in the case of factories which permit "national buyers" of trucks to secure parts at about the same discount as the dealer gets.

It was recommended that cash payments on trucks should not be less than one-third the list price, and that passenger car dealers consider the suggestion. Twelve months was favored as the limit for completing the time payments.

The consensus of opinion was in favor of holding the convention in Columbus next year.

The event came to a most enjoyable social climax in the evening when what was termed "A Session of Mystery" was staged in the dining room of Music hall under the immediate supervision of the Cincinnati entertainment committee. It is reported that especial credit is due E. P. Zachmann for the originality and success of this feature.

The retiring president, A. E. Mitzel, who has been prominently connected with the organization practically since its inception, was the recipient of a diamond Masonic ring as he turned the chair over to the new president, Warren E. Griffith.

The plan of devoting a half day each session of the meeting exclusively to the exhibits proved satisfactory to all interests, and there is no doubt that these displays will continue to be made a part of the annual conventions of the associations in the future.

List of Exhibitors.

The principal exhibitors were as follows:

Advance Automobile Accessories Corp., American Bureau of Engineering, Inc., Apco Manufacturing Co., Au-To Compressor Co.

Badger Manufacturing Corporation, Bantlin, Julius J. Co., Black & Decker Manufacturing Co., Buell Manufacturing Co., Buob & Scheu.

C. & D. Auto Supply Co., Canedy-Otto Manufacturing Co., Central Brass & Fixture Co., Champion Ignition Co., Champion Spark Plug Co., Cincinnati Automobile Co., Cincinnati Auto Specialty Co., Cincinnati Ball Crank Co., Cincinnati Screw Co.. Cincinnati Storage Battery Co., Columbus Varnish Co., Cooper Auto Supply Co., Cooper, I. J., Rubber Co., Cooper Storage Battery Mfg. Co., Corcoran Manufacturing Co., Corcoran-Victor Co.

Dayton Iron & Steel Co., Dayton Wire Wheel Co., Dole Valve Co., Dover Stamping & Manufacturing Co., Durkee-Atwood Co.

Eastern Rubber Co., Eclipse Manufacturing Co.

Fairbanks Co., Fleckenstein Visible Gasometer Co., Franco Electric Corporation.

Gates Rubber Co., General Asbestos & Rubber Co., Giant Grip Manufacturing Co, Gill Piston Ring Co., Gilmer, L. H. Co., Gordon, J. Co., Griswold-Sohl Co., Guthard, Edgar C. Co.

Hansen Manufacturing Co., Heller, W. C. & Co.

Indianapolis Air Pump Co.

J. & B. Manufacturing Co., Jeavons Co., Johns-Manville, H. W. Co., Inc., Justus & Parker Co.

K-D Lamp Co., Kellogg Manufacturing Co., Kruse Hardware Co.

Lawson, F. H., Co., Las-Stik Patch Manufacturing Co., Liberty Mfg. & Sales Co., Inc., Louden Machinery Co.

Macbeth-Evans Glass Co., McQuay-Norris Manufacturing Co., Metal Stamping Co., Mid-West Manufacturing Co., Mueller Electric Co., Multibestos Co.

National Jack Co., New Era Spring & Specialty Co., No-Leak-O Piston Ring Co., Northwestern Chemical Co.

Ohio Rubber Co., Outlook Co.

Pennsylvania Piston Ring Co., Inc., Pennsylvania Rubber & Supply Co., Polson Rubber Co.

Raybestos Co., Rosler Howard Corporation.

Shaler Co., C. A., Smith Bros. Hardware Co., Stanwood Equipment Co., Star Rubber Co., Security Manufacturing Co., Sterling Manufacturing Co., Storm Manufacturing Co.

Templeton, Kenly & Co., Thermoid Rubber Co., Thompson-Neaylon Manufacturing Co., Tide Water Oil Co., Toe Water, G. M. & Co., Trexler Co., Tuthill Spring Co.

Uniform Hood Lace Co., United States Air Compressor Co., Universal Tool Co., Inc.

Walker Manufacturing Co., Weaver Manufacturing Co., Wedler Shuford Co., Weindenhoff, Joseph, Westinghouse Lamp Co., Wilson, K. R., Wright Manufacturing Co.

York Supply Co.

X Laboratories, Inc.

OFFICERS OF OHIO AUTOMOTIVE EQUIPMENT ASSOCIATION.

During the annual convention of the Ohio Automotive Trade association at Cincinnati, O., the Ohio Automotive Equipment association also held a meeting at which officers were chosen:

President, H. H. Brenner, I. J. Cooper Rubber Co., Cincinnati; vice president, Curtis Sohl, Griswold-Sohl Co., Columbus; secretary, C. H. York, York Supply Co., Greenville; treasurer, Charles E. Justis, Justus & Parker Co., Columbus.

Cooperation the Keynote of Hardware Convention

THERE was a representative attendance at the big annual convention and exhibition of the Automobile Accessories branch of the National Hardware association in the St. Louis Coliseum, Nov. 30-Dec. 3, and cooperation was the keynote of what is reported to have been, without doubt, one of the most constructive meetings in the annals of the hardware trade. Jobbers and manufacturers were apparently vying with each other in an effort to boost the things that make for the more efficient distribution of automotive accessories, equipment and supplies. Throughout the sessions the interests of the retail hardware dealer were given constant consideration; his progress and development and the means for aiding and stimulating them were frequently and exhaustively discussed, and it seemed to be the consensus of opinion that the hardware channel is one of the most logical and legitimate outlets for the distribution of accessories.

In regard to the displays it is stated that the total number of manufacturers represented was well upwards of 300, and it resulted in a very comprehensive showing of everything pertaining to the equipment and upkeep of the modern motor car. The National Hardware association adheres to the policy of providing exhibition facilities free to manufacturers, and every inch of available space in the big Coliseum was utilized in forceful, instructive exhibits, and, at the same time, every booth was in charge of high grade salesmen, competent and eager to present, in an effective manner, every detail in the construction and use of the products displayed. It was a veritable revelation of the progress and possibilities of the industry to the hundreds of jobbers who attended.

The volume of sales is reported to have been fully up to the expectation of those versed in the business status of the trade at the present time, while the profitable relations established between the exhibitors and high class jobbers will doubtless be reflected on the order books of the manufacturers for years to come.

Pertinent Opening Addresses.

In his opening address as chairman of the Automobile Accessories branch, A. H. Nichols declared that "The automobile and its accessories are not confined to any particular class or location for the demand is everywhere, it being estimated that more than 2,500,000 automobiles are used by the American farmer." Mr. Nichols also stated that he often wondered if hardware jobbers fully realized the great opportunity and impetus the accessory industry has given both dealers and jobbers to increase the volume of their accessories business.

Mr. Nichols took charge of the meeting following a short address by A. H. Decatur of Boston, president of the National Hardware association, who extended the official greetings to all members and visitors present, and stated that he looked forward confidently to at least a normal business in 1921 in all branches of the hardware business.

Hon. Henry W. Kiel, mayor of St. Louis, extended a welcome from the city to the members of the convention and directed attention to the many points of interest to the guests.

H. G. Geller, chairman of the St. Louis general committee in charge of the entertainment features of the convention, introduced A. L. Shapleigh, who addressed the association on the business and financial outlook for 1921. "Keep the Green Light Burning," in the sense of proceeding with caution, but without fear, was the slogan he wished adopted and, after reviewing the general business situation he quoted statistics purporting to show that the conditions existing in the United States are fundamentally sound.

Charles F. Hatfield, general manager of the St. Louis convention bureau, spoke about St. Louis' advantages and resources.

H. E. Hulburd of the George Worthington Co., Cleveland, O., touched upon the growing tendency to recognize the hardware retailer as the logical accessories distributor, and considered the probable development in the accessories market from the wholesalers' viewpoint. This led to a general discussion in which the chairman, W. H. Terstegge, R. O. Smith and others participated.

J. H. Faw, in considering the accessories market from the standpoint of the manufacturer, epitomized the problem in the three words, Need, Value and Service.

"If we all succeed in carrying out these principles," he continued, "our various establishments will have justified themselves, and we will have the satisfaction of a duty well performed and the business world will be the better for our influence."

The present condition of accessory stocks was discussed by W. S. Isherwood, Champion Ignition Co., Flint, Mich., who said that as far as he had been able to find out live jobbers and the large dealers have their stocks in pretty good shape now. But he said he had also found many cases where they were subnormally low.

Secretary Fernley Urges Optimism.

T. J. Fernley, secretary of the National Hardware association, then addressed the meeting, expressing gratification at the auspicious opening of this third annual convention. After urging members to disseminate the optimistic spirit, he touched upon the question of the guaranteeing of prices, which provoked a somewhat general discussion, and an expression from the assemblage seemed almost unanimously in favor of a guarantee in some form. Mr. Fernley also touched upon the question of the classification of jobbers and dealers, and said it was up to the manufacturers to make their own classification of the trade.

W. B. Biggers, president of the American Hardware association, opened the Wednesday morning session by an address on the general outlook for 1921, in the course of which he made the following pertinent aphorisms: "Deflation is always painful, but it should be met fearlessly and in a business like way. Do not allow the accumulation of unwieldy stock. Frequent turnover is always important, but doubly so in a period of declining prices. Turnovers, not leftovers, are what yield a profit. We should all seek to increase efficiency in our sales departments and carefulness and watchfulness in our credit departments. This is a good time for affiliation with trade associations, as we will need all the information we can secure. This is a good time for cooperative competition, which should advance our whole industry instead of leading to demoralization. If we will have steadiness, sanity, confidence; if we will exercise common sense and ordinary business sagacity, then the present disorganization should be followed in the first half of next year by good, active, healthy business at moderate profits which, after all, are the best for all in the long run. There are three kinds of automobile dealers—the self-starter, the hand cranker and the trailer. Figure out which kind you want to be."

Rivers A. Peterson, editor of the National Hardware Bulletin, spoke on the subject of assisting the dealer, in the course of which he made the statement that quantity discounts are working to the disadvantage of the small town dealer who is not justified in buying large quantities of any one article at a time, and a discussion of quantity price schedules followed, which was led by a paper by J. T. Donohue based on the experiences of the Moto-Meter Co.

The matter of catalogue compilation was then considered at some length.

Thursday morning's session was opened with a discussion on "Developing the Dealer," by W. R. Hay of the Kelley, How, Thomson Co., Duluth, Minn., in which he pointed out that it is bad policy to try to overload the dealer at any time, but that the possibilities of large sales of accessories through the hardware dealer are unlimited.

Felix Van Cleef of Van Cleef Brothers, Chicago, delivered a significant address on the subject of stimulating dealer interest, which he summarized as follows: "I want to say that the dealers who come into direct contact with the ultimate consumer are the real salesmen of the industry and unless they know how to sell the goods the industry will suffer."

F. J. Tenk of the Tenk Hardware Co., Quincy, Ill., spoke on the subject of the compensation of salesmen, and it was followed by a general discussion.

Mr. Campbell of St. Louis, one of the large automobile accessory distributors of the country, outlined briefly some of the difficulties confronting large buyers today.

The subject of the cash premium was introduced by Edward O. Faeth of the Stowe Supply Co., Kansas City, Mo.

The first subject treated at Friday's session was on the improvement of methods of distribution of tires and tubes, and the initial speaker was F. R. Goodell of the Converse Rubber Shoe Co., Walpole, Mass. He stated that during the calendar year now coming to a close about 50 per cent. of the tire and tube product of his concern was distributed through hardware trade channels. He said that in every case that had come under his observation the successful jobber was the one who specialized; in short, the one who departmentized thoroughly, who had a capable and trained executive in charge and, perhaps, one or more specialty accessory sales men.

Glover S. Colladay of the Frank Colladay Hardware Co., Hutchinson, Kan., treated the same subject from the angle of the small jobber, and G. S. Shugart gave some interesting information on conditions in the tire industry.

H. A. Patterson addressed the convention on the subject of proposed legislation affecting automobile owners, which is coming up at the next session of Congress, and which will attempt to regulate the use of glaring lenses.

When the subject about the next place of meeting was brought up the majority seemed to favor Atlantic City.

Before adjournment President Decatur stated that in his official capacity he felt responsible for outlining briefly the attitude of the Jobbers' association. He said that the jobbers are not hoping and looking for lower prices. They do not want a depression in prices. That is the last thing that any sensible jobber would be looking for. There are high spots that should be changed; but do not get the idea that every jobber is wishing for or will be crowding you for lower prices. He also urged the manufacturers to go to jobbers who are not already in the accessory business and point out to them the fact that there is opportunity for them to maintain in this way the former inflated volume of business when business drops now to normal.

Entertainment Features.

In conclusion it should be mentioned that the entertainment features were of a particularly high order, including an informal dance at Hotel Statler, a smoker and one of the most enjoyable banquets of the season at which the vaudeville and musical programme was interspersed by toasts by men well known in business and political circles.

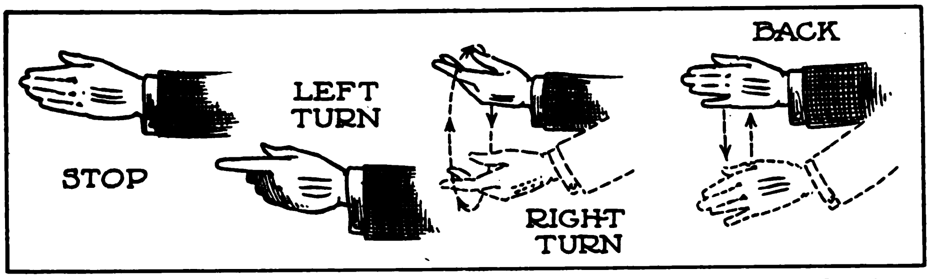
The committee chairmen were as follows: H. W. Geller, Geller, Ward & Hasner, general committee; R. H. Ogle, Shapleigh Hardware Co., finance; H. J. Hopkins, Geller, Ward & Hasner, entertainment; Alexander Witte, Witte Hardware Co., hotel; A. B. Berge, Coe-Stapley Manufacturing Co., programme; E. P. Hellmuth, Geller, Ward & Hasner, publicity; O. W. Witte, Witte Hardware Co., exhibits; T. Frank Wood, Shapleigh Co., reception.

CODE OF APPROVED SIGNALS.

Register of Motor Vehicle Frank A. Goodwin of Massachusetts has approved a series of hand signals for power vehicle drivers which are practically the same as have been approved by the state officials of Connecticut.

The imperative need of a system of signals is admitted. Hundreds of avoidable accidents happen daily that are the result of failure of one or more drivers understanding what seemingly is clear enough to the observer. The principal reason is that with no accepted code of signals the intention of the drivers is unknown or may be misunderstood. Massachusets and Connecticut have the largest number of vehicles of the six New England states, and with these two commonwealths approving the code there is reason to believe that the other states will approve them.

The signals are described as given by a driver seated at the left side of the machine, but they can be given quite as well with either hand. The code is as follows:



The Code of Hand Signals for Power Vehicle Drivers Approved by Massachusetts and Connecticut to Simplify Day Driving.

STOP: Extend the left arm and hold it stationary, with all fingers extended and close together.

LEFT TURN: Extend the left arm and hold it stationary, with the index finger pointing and the outer three fingers closed.

RIGHT TURN: Extend the left arm with the fingers extended and the palm upward and rotate it from the rear to the front.

BACK: Extend the left arm with the fingers open and close together and the palm vertical, and move it upward and downward from a horizontal position.

TURNING: Give the "Left Turn" signal and repeat it until the vehicle has been turned and can be driven directly ahead. When turning always drive forward and turn into and with the traffic moving in the direction opposite to line of original movement.

The arm of the driver should always be extended full length and held a sufficient length of time to justify observation of the drivers following.

The reader will note that the signal to stop is what has been very generally accepted for both turning and stopping, and there is little probability of confusion or accident in the event of the driver making the signal not being precisely understood.

NOTES OF INDUSTRY AND TRADE

Neu Metal Co. Moves to Binghamton

The Neu Metal Products Corporation has just been organized for the purpose of manufacturing in Binghamton, N. Y., the several products of this company that have already become well known. The new concern takes over the business of the concern of the same name that has been manufacturing "neu metal" in New York city for several years.

This product is designed to mend leaks in all kinds of materials, including iron, steel, enamel and aluminum, without the use of heat. It is said to be a remarkable invention.

A second product to be manufactured is C-Cleer, a substance to be used to keep rain and snow from automobile windshields and to prevent steam from forming on windows.

Several other specialties are to be included in the company's lines of manufacture, including an automobile polish.

The officers, recently elected, are: President, Fay E. Spawn; vice president, Archibald Howard; secretary and treasurer, H. H. Hathaway. A factory is in operation at 221-223 Washington street.

KLAXON PLANT CHANGES HANDS.

The Klaxon Co.'s plant, situated in Newark, has been sold to the Wallace-Tierman Co. of New York city according to a recent announcement by the Kraemer agency, which acted as agent in the transaction. The Klaxon firm, which was originally organized as the Lovell-McConnell company, manufactures automobile horns. It is now a subsidiary of the General Motors Corporation, which purchased the Bloomfield plant of the International Arms and Fuse Co. The General Motors Corporation decided to move the Klaxon organization from Newark to Bloomfield, and the work of transferring equipment from the Wright street factories is now under way. It will be completed before Dec. 31, when the Wallace-Tiernan company will take possession.

The Wright street plant covers 23 city lots, with groups of buildings numbered from one to six.

NEW OFFICERS OF RICHARDS CO.

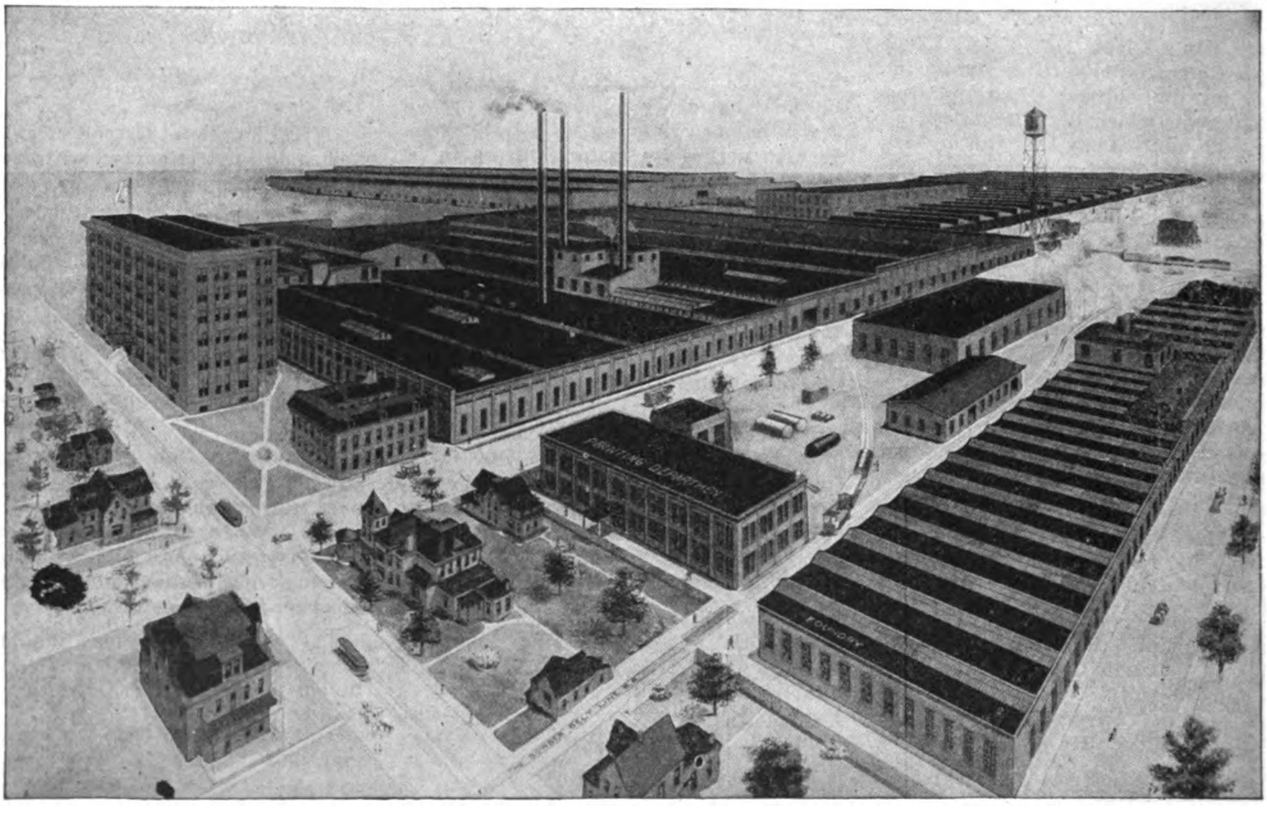
The Richards Motor Co., Chattanooga, Tenn., distributing Locomobile, Briscoe, Mercer, Maibohm and Sayers, elected the following officers at a recent meeting: President, J. C. Richards; vice president, D. Minard Shaw; treasurer, Stephen E. Wade; secretary, Sydney H. Vaught. E. H. Cornes was re-elected sales manager and Marshall Kratzer cashier. For the last two years Mr. Shaw has been Nashville manager for the Herff Motor Corporation, wholesale distributor for Fiat and Briscoe.

Hercules Corp. Forms Big Merger

Announcement has been made of the merger of five Evansville, Ind., manufacturing plants more or less directly allied to the automotive industry, into one organization known as the Hercules Corporation. The concerns involved are the Hercules Buggy Co., the Hercules Wheel Co., the Hercules Gas Engine Works, the Hercules Body Manufacturing Co. and the Indiana Color & Varnish Co. The new corporation will have an authorized capital of $8,000,000, $6,000,000 of which will soon be issued. William H. McCurdy is president.

FALLS RIVET CO. BUYS AKRON CONCERN.

The Falls Rivet Co. of Kent, O., has purchased the machinery, patents and patterns relating to the manufacturing of cotter pins and flat spring keys from the Ohio Wire Goods Manufacturing Co. of Akron, O., and will add the business to its established products of rivets, bolts and nuts. Department heads formerly in the employ of the Akron company have all been added to the personnel of the Kent company and the machinery, having been moved to its new location, is already at work.



The Magnificent Plant of S. F. Bowser & Co., Fort Wayne, Ind., Built on the Site Where S. F. Bowser, the Founder and President, Conceived the Idea Which Has Proven So Potent in Modernizing the Present Oil Storage and Distributing System. A Subsidiary Company Is Located at Toronto, Canada.

NOVEL TEST OF CAR'S RIDING QUALITIES.

Goldfish in South Dakota have a soft time of it apparently. They are cared for as carefully as the most valuable Pekinese dog, and report comes of a bowl full of the shining beauties which has just been taken on a 573-mile automobile trip in a new Overland sedan. The demonstration was made to test the riding qualities of the car, which was driven by Miss Lois Bauch, champion high diver of the state, and ample proof of the ease and comfort of a journey in this car was given by the fact that although the trip was made in 54 hours the bowl containing the fish was as full at the end of the run as at the start. The gold fish apparently enjoyed the ride and that they were much interested in the scenery is not contradicted. They frisked around in dashes of red and gold and never a drop of water splashed overboard.

HAYNES AUTOMOBILE CO. NOT SOLD TO FORD INTERESTS.

Alton G. Seiberling, vice president and general manager of the Haynes Automobile Co., Kokomo, Ind., is authority for the statement that rumors to the effect that Henry Ford or associates have bought or are negotiating for the purchase of the company are false. There is said to be absolutely no intention of changing the policy, or selling any of the stock, and the management has outlined an extensive programme for future business which promises to be good.

OLD FASHIONED DEMONSTRATION SELLS BRISCOES.

A. J. Shorey, president of the New England Velie Co., distributor of Briscoe and Velie products for New England, in a recent statement said that there are now 42 Briscoe dealers in the Pittsburgh, Pa., section, over 30 of whom maintain a complete stock of Briscoes. They have resorted to the original sales tactics of demonstrating cars and, even though business has shown a falling off in many lines, has, nevertheless, succeeded in moving a large number of cars.

TEXAS ASSOCIATION'S NEW ORGAN.

The Texas Motor Car association has decided to supercede its original house organ, the Texan, with a new publication to be known as the Motor Monthly, which will make a direct appeal to the company's stockholders and the general public as well, as it is intended to broaden its scope so as to discuss and disseminate news relating to the automotive industry. It will be conducted by a competent publicity man, assisted by a board of editors.

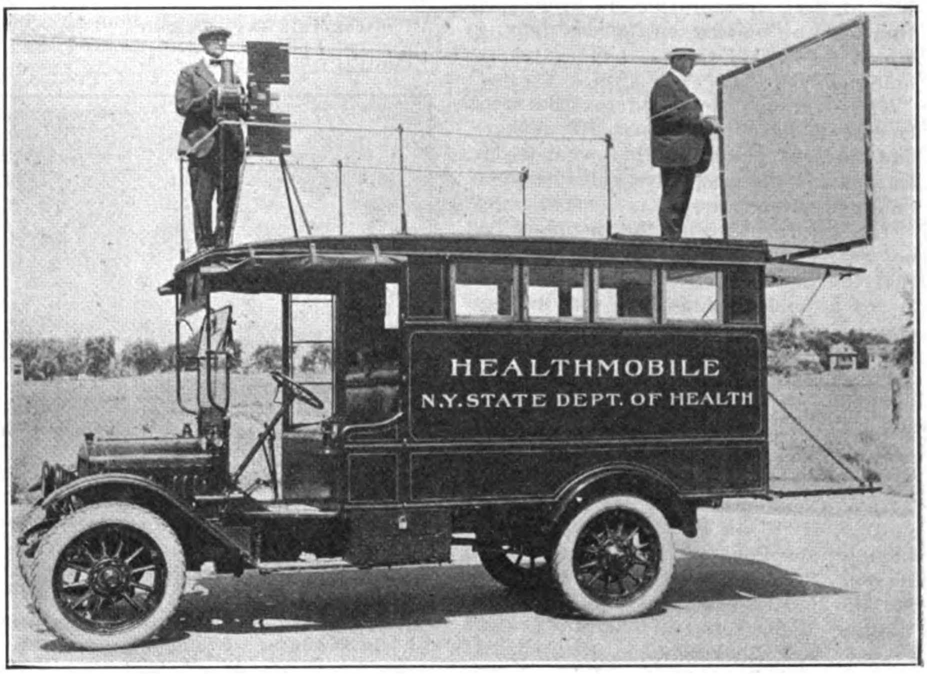
The yearly sales for the General Electric and Westinghouse companies, based on the new business during the last six months, are estimated to reach $550,000,000.

Fighting Disease with Healthmobile

The Department of Health of the State of New York is using a Healthmobile as a weapon to carry the fight against disease into the rural districts. This move is taken advisedly, as figures show that there is more disease in the country than in the city.

This Healthmobile is one of the latest utility outlets for the motor truck. The machine is a ¾-ton GMC truck, with a special body. In the truck have been installed a Delco ¾ kilowatt generator and a Powers projector, fitted to run on this current, which makes the travelers independent of local sources of electricity. A large variety of screens and a big assortment of films are carried.

This machine has been used the past summer in an intensive Child Welfare campaign. One day stops are usually made at each point. The morning is usually given over to moving and setting up and children are examined in the afternoon. Three physicians and two nurses conduct these examinations. Youngsters from six months to six years are examined and an effort is made to have their physical condition remedied by local physicians.



Healthmobile, with Projecting Movie Screen, Used by the New York State Department of Health in Child Welfare Campaign.

In the evening a public meeting is generally held in a church or grange hall. The projector is set up indoors and the current carried from the generator in the Healthmobile by means of a long electric cable. Motion pictures are shown and health talks given.

It is planned to make five stands a week. Saturdays and Sundays are days off, except that a meeting called off during the week is usually held on Saturday.

The outfit will be kept on the road as long as weather conditions permit.

While the accompanying illustration shows the projection of the pictures on the roof of the car and this is possible, it is generally found more desirable to set up the projector in a hall and show indoors. When it is necessary to exhibit outside the usual method is to erect a large screen in the open and mount the projector in the rear of the truck.

WILLYS-OVERLAND ORGANIZATION NOT TO MARKET CHRYSLER.

The new Chrysler automobile will be distributed by the manufacturer, and not by the Willys-Overland sales force, as was formerly understood. General sales offices have been opened at the home plant in Elizabeth, N. J., and the selling organization, which was recently incorporated under the name of the Chrysler Motor Co., has made specific plans which will absorb the 500 or 600 cars a day which will be manufactured by the new plant. It is understood that no Overland distributors will handle the car, although there are said to be certain trade connections between the two companies.

APPERSON MOVING OUTFIT.

Perhaps the smallest complete moving picture laboratory in the world is operated by the Harris Film Co., Beaver Falls, Pa. Mounted on an Apperson Eight, the machine takes all kinds of commercial motion pictures such as machinery in operation, and the various operations connected with various kinds of manufacturing. The car carries the complete apparatus for finishing, printing and projecting the pictures, and O. C. Healy, business manager of the outfit, is highly pleased with the performance of the Apperson, finding it ideal for the work.

General Motors Corp. Taken Over by du Pont

THE incorporators of the newly organized du Pont Securities Corporation, which was formed to take over from William C. Durant, president of the General Motors Corporation, about 3,000,000 shares of that company's common stock, are Pierre S. du Pont, George H. Gardner and John J. Raskob. They will hold respectively the following positions: President, vice president and secretary-treasurer.

The deal came as a culmination of one of the most violent stock market declines in recent years, extending over a longer period, if not as acute, as that which occurred on the stock exchange in the dark hours immediately preceding the outbreak of the great war. According to gossip in Wall street the actual cash involved in the deal was $27,000,000.

It is announced that Mr. Durant has started on a long vacation, although it was at first thought that he would continue in the employ of the company, in which he is said to still have extensive holdings.

The average price paid for the stock is said to have been about $13 a share, and current rumor intimates that Mr. Durant and his associates unloaded their holdings without monetary loss.

The future policy of the company has not yet been disclosed, but it is expected that the new organization will act merely as a holding company and that no change will be made in the manufacturing end of the business.

Directors of General Motors.

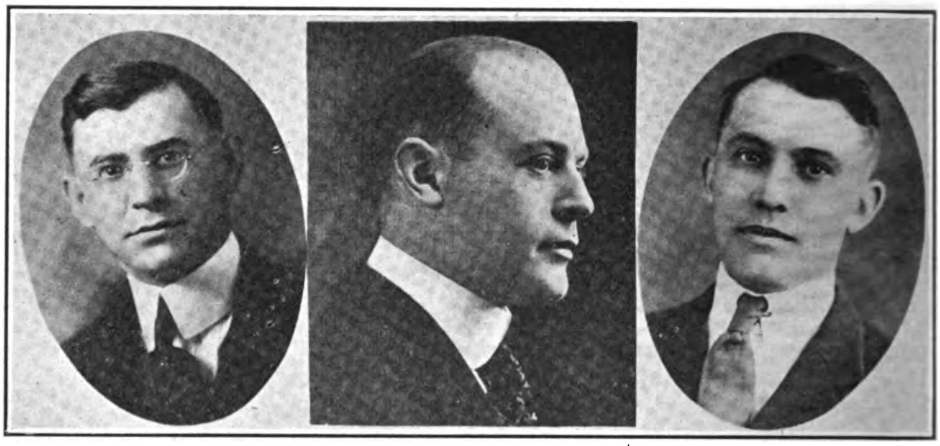
The board of directors of the General Motor Corporation is made up as follows: P. S. du Pont, chairman; G. F. Baker, Jr., H. H. Bassett, A. G. Bishop, Arthur Chamberlain, R. H. Collins, W. L. Day, H. F. du Pont, Irenee du Pont, Lammot du Pont W. C. Durant, J. A. Haskell, F. W. Hohensee, L. G. Kaufman, Sir Harry McGowan, R. S. McLaughlin, William McMasters, C. S. Mott, Seward Prosser, J. J. Raskob, A. P. Sloan, Jr., J. T. Smith, E. R. Stettinius, Edward Ver Linden, F. W. Warner, W. H. Woodin, C. M. Woolley, O. D. Young.

A statement of the various units, representing every phase of the automotive industry, which is comprehended in the General Motors organization, is of especial interest in this connection. Divided into groups, they are as follows:

- General Motors Group—
  - Buick Motor Div., Flint.
  - Cadillac Motor Car Div., Detroit.
  - General Motors Truck Div., Pontiac.
  - Oakland Motor Car Div., Pontiac
  - Olds Motor Works Div., Lansing.
  - Scripps-Booth Corp., Detroit.
  - Sheridan Motor Car Co., Muncie.
- Chevrolet Group—
  - Chevrolet Motor Co. of Mich., Flint.
  - Chevrolet Motor Co. of N. Y., Tarrytown.
  - Chevrolet Motor Co. of St. Louis, S. L.
  - Chevrolet Motor Co. of Texas, Ft. Worth.
  - Toledo Chevrolet Motor Co., Toledo.
  - Chevrolet Motor Co. of Bay City, Bay City
  - Chevrolet Motor Co. of Kansas City, Kansas City.
  - Chevrolet Motor Co. of Atlanta, Atlanta.
  - Chevrolet Motor Co. of Minn., Minnesota.
  - Chevrolet Motor Co. of Cal., California.
- General Motors of Canada, Ltd.—
  - Canadian Products, Ltd., Div., Walkerville.
  - Chevrolet Motor Co. of Canada Div., Oshawa.
  - McLaughlin Motor Car Div., Oshawa.
  - Olds Motor Works of Canada Div., Oshawa.
- Tractors and Implements—
  - Samson Tractor Div., Janesville.
  - Samson Tractor Co. of Cal., Stockton.

Accessories.

- United Motors Group—
  - Buffalo Metal Goods Co., Buffalo.
  - Dayton Eng. Laboratories Co., Dayton.
  - Harrison Radiator Corp., Lockport.
  - Hyatt Roller Bearing Div., Newark.
  - Jaxon Steel Products Div., Jackson.
  - Klaxon Co., Newark.
  - Lancaster Steel Products Corp., Lancaster.
  - Remy Electric Div., Anderson.
- Miscellaneous—
  - Champion Ignition Co., Flint.
  - Dayton-Wright Co., Dayton.
  - Delco-Light Co., Dayton.
  - Frigidaire Corp., Detroit.
  - General Motors (Europe), Ltd., London.
  - General Motors Export Co., New York.
  - Sunnyhome Electric Co., Detroit.
- Central Products Division—
  - Central Axle Div., Detroit.
  - Central Forge Div., Detroit.
  - Central Gear Div., Detroit.
  - Northway Motor & Mfg. Div., Detroit.
- Muncie Products Division—
  - Muncie Parts Div., Muncie.
  - T. W. Warner Plant, Muncie.
- Saginaw Products Division—
  - Central Foundry Div., Saginaw.
  - Central Motor Div., Saginaw.
  - Jackson-Church-Wilson Div., Saginaw.
  - Saginaw Malleable Iron Co., Saginaw.
- General—
  - Michigan Crank Shaft Div., Lansing.
  - St. Louis Mfg. Corp., St. Louis.
  - Dayton Metal Products Co., Dayton.
  - Domestic Engineering Co., Dayton.
  - Doylestown Agricultural Co., Doylestown.
  - Fisher Body Corp., Detroit.
  - General Motors Acceptance Corp., New York.
  - Industrial Terminal Corp., Detroit.
  - Janesville Machine Co., Janesville.
  - Lancaster Steel Products Corp., Lancaster.
  - Bearings Service Co., Detroit.
  - Brown-Lipe Chapin Co., Syracuse.
  - Doehler Die Casting Co., Brooklyn.
  - Durant Building Corp., Detroit.
  - Flint Varnish & Color Works, Flint, Mich.
  - Independent Lamp & Wire Co., Weehawken.
- Consumers Power Co., Durant Hotel Co., House Financing Corp., Hyatt, Ltd., Lansing, Home Building Co., Modern Housing Corp., Novelty Incandescent Lamp Co., Wisconsin River Power Co.



Officials of Ray Battery Co., Ypsilanti, Mich.: At Left, Roger P. Fisher, President; Center, Daniel B. Jack, Sales Manager, and at Right, Thomas Lavier, Vice President and Chief Engineer.

RAY BATTERY CO. MOVES TO NEW PLANT.

The Ray Battery Co., formerly of Detroit, has moved to its new plant at Ypsilanti, Mich. This company makes batteries which contain, in most highly perfected form, the Lavier formula plates. It is claimed that by unusual chemical and manufacturing processes these plates are given a very high porosity with a more than usual toughness, and that harmful sulphation is minimized by the use of the formula, which is said to generally increase the efficiency of the battery.

N. A. A. C. COMPILING FOREIGN TRADE SUPPLEMENT.

The foreign trade committee of the National Automobile Chamber of Commerce is preparing a supplement to the hand book which will be of help to foreigners in determining approximate charges for insurance, consular fees, ocean freight and customs duties. The supplement will accompany the hand book when sent abroad. All members have been forwarded blanks to fill out, which will give the chamber committee the necessary information in compiling the supplement.

MAXWELL-CHALMERS APPOINTS ADVERTISING COUNSEL.

A. E. Baker, general sales manager, announces the appointment of MacManus, Incorporated, as advertising counsel for the Maxwell-Chalmers interests. Theodore F. MacManus is known throughout the United States as the exponent of a definite type of advertising which helps good products to establish themselves firmly in the mind of the public as entitled to a good reputation.

In addition to acting as counsel for the Maxwell-Chalmers, MacManus, Inc., serves in the same capacity for the Cadillac, Remington Typewriter, Dodge Brothers, Hupmobile, Liberty, Republic, Torbensen Axle and Hayes Wheel companies, Hamond-Standish & Co., Stroh Products Co. and Victor-Vassar Knitting Mills.

Ace Car to Be Placed on Market

Preparations are being completed for the supplying to a broader field of the Ace car, which has been manufactured for about a year past by the Apex Motor Corporation, Ypsilanti, Mich. The Ace car has heretofore been marketed through one distributor on the Pacific coast, who took the entire output for distribution in the great northwest. O. W. Heinz, president and general manager of the Apex Corporation, has associated with him a strong organization, the personnel of which is as follows: Secretary and treasurer, T. S. Mathews; vice president and chief engineer, Fred M. Guy; sales manager, F. E. Earnest; production manager, W. R. Wiley; office manager, James E. Croak; advertising manager and assistant to the sales manager, Robert T. Walsh.

To prepare for a wide distribution of the Ace car the Apex Co. is adding to its factory a large two-story structure of the most modern design, which will give 30,000 square feet of floor space.

New Plant of Ray Battery Co., Ypsilanti, Mich., Into Which Removal Was Recently Made from Detroit.

It is announced that the Ace car will be shown for the first time at the national shows in New York and Chicago, space having been secured at Hotel Commodore in the former city and at the Auditorium hotel in the latter.

VAN DORN ELECTRIC DRILL MOTOR.

The Van Dorn electric drill, manufactured by the Van Dorn Electric Tool Co., is a portable, electrically operated drill, hand built on the same lines as an electric railway motor, and is constructed to take care of varying loads and sudden stops and starts. These drills are adaptable for drilling wood, iron or steel, and are used by a great many of the large automobile manufacturing plants.

The company, formerly the Van Dorn & Dutton Co., also makes portable electric grinders, heavy duty bench or pedestal type grinders and various sized grinding wheels and buffers.

ADDITION TO LAMINATED SHIM PRODUCT.

The time is not so far past when, in order to make a shim, it was necessary to take a piece of sheet metal and cut it down to a shape more or less approximating that of the bearing and punch or drill holes in it for bolts. And when this had been accomplished the result was ordinarily far from ideal to say the least. Among the many shims which have appeared from time to time designed to remedy this condition, the laminated shim, made by the Laminated Shim Co., New York city, has had a conspicuous success.

This company now announces a new addition to the laminated stock shim family in the Fit-All, "the laminated shim that can be cut to fit." The Fit-All shape was decided on after a study of over 100 different forms of shims.

As the name implies, it will fit nearly all shapes of bearings, either as is or with the help of a couple of snips with a tinner's shears. In short, it is claimed the new Fit-All shim combines the advantages of the laminated shim with the universality of the old fashioned sheet brass shim. The Fit-All, like its brothers in the laminum family, comes in different thicknesses with holes punched in two different diameters.

UNIVERSAL POWER DRIVE.

The Universal Tool Co., Inc., Detroit, Mich., with main factories at Garwood, N. J., is bringing out a new Universal power drive for use with the Universal cylinder reboring tool. The Universal power drive can be operated by one-half inch portable electric or air drill and by bench drill or floor type drill press. Attaching the drive to the reboring tool is but the work of a few seconds and it can be used with all models of the improved Universal cylinder reboring tool.

The wholesale value of the motor car and truck output in 1919 in the United States was $1,885,112,546.

Ford Breaks Day Production Record

The world's record for automobile production in a single day was broken recently at the plant of the Ford Motor Co. at Detroit, Mich., when 5673 cars were turned out. Of this number 4061 were assembled as completed cars at the close of the day. It was announced that production was to be continued at the Ford plant at an average of 4000 a day.

BUSINESS SHOWS LARGE GAIN IN YEAR.

In eight months of this year the net sales of the Black & Decker Mfg. Co., Baltimore, Md., have been almost two-thirds greater than the net sales during the 12 months of last year and, according to a statement sent out by the company, the total sales for this year, as compared with last, will probably show an increase of 100 per cent. The company, which was organized in 1910, has enjoyed steady growth and, for the last two years, the sales have shown decided acceleration and, though the firm states that sales resistance for the last few months has been felt, this condition has been overcome to a great extent by increased efficiency throughout the whole organization. This company claims to build more portable electric drills than any other manufacturer in the world.

SCHRADER'S VALVE CAP SETS.

It is stated that in a recent survey of 1309 motor cars parked along Broadway, New York city, valve caps were found missing on no less than 455 valve stems. This means that 455 tires were being run with the valve stem open to the admission of dirt and dust and mud. Such abuse of a tire valve is nothing short of criminal. A valve may be ever so perfect, but it cannot be expected to remain so if all kinds of foreign matter are permitted to enter it.

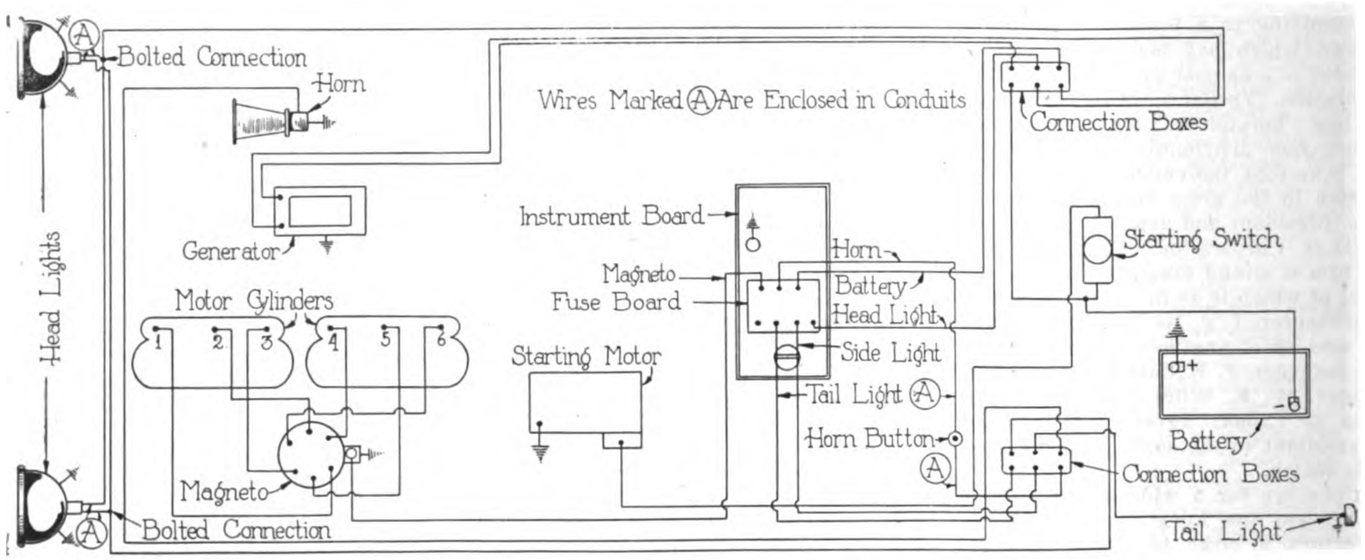
The difficulty found by a great number of motorists in replacing valve caps lost in the process of changing or pumping up tires has prompted the firm of A. Schrader's Son, New York city, to put up five of these very essential valve adjuncts in a small metal box at 40 cents.

INFRINGEMENT SUIT SETTLED.

It is reported that the Connecticut Telephone and Electric Co. of Meriden, Conn., has obtained a settlement from the Eastern Parts Co. of New York on the ground of patent infringement involving United States letters patents Nos. 1,029,914, 1,113,850, 1,204,104 and 1,266,811.

Under the agreement it is stated that the Eastern Parts Co. acknowledges the validity of these patents and in accordance discontinues the manufacture and sale of parts affected and surrenders to the Connecticut Telephone & Electric the process of manufacture, as well as the tools and dies used in production.

Monthly Wiring Diagram, No. 11


Bolted Connection
Horn
Wires Marked Ⓐ Are Enclosed in Conduits
Connection Boxes
Instrument Board
Generator
Magneto
Fuse Board
Horn
Battery
Head Light
Starting Switch
Motor Cylinders
1
2
3
4
5
6
Side Light
Starting Motor
Tail Light Ⓐ
Horn Button
Ⓐ
Battery
Connection Boxes
Head Lights
Magneto
Bolted Connection
Tail Light
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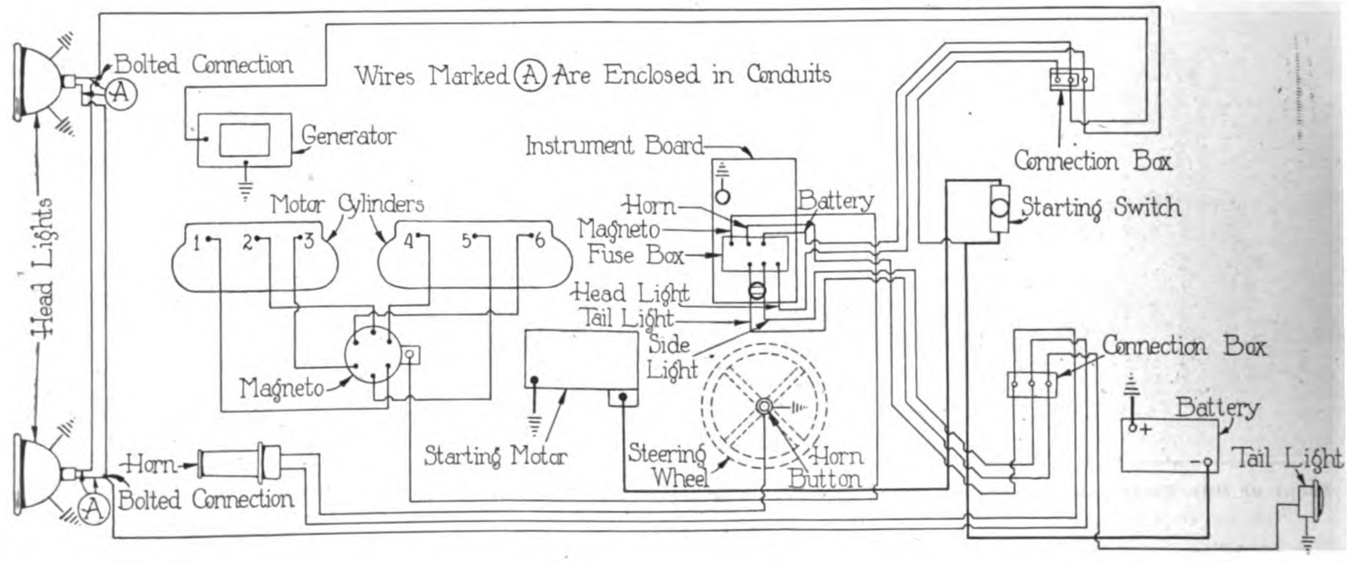
Chandler 1917 Models Nos. 15,0001 to 35,000.


Bolted Connection
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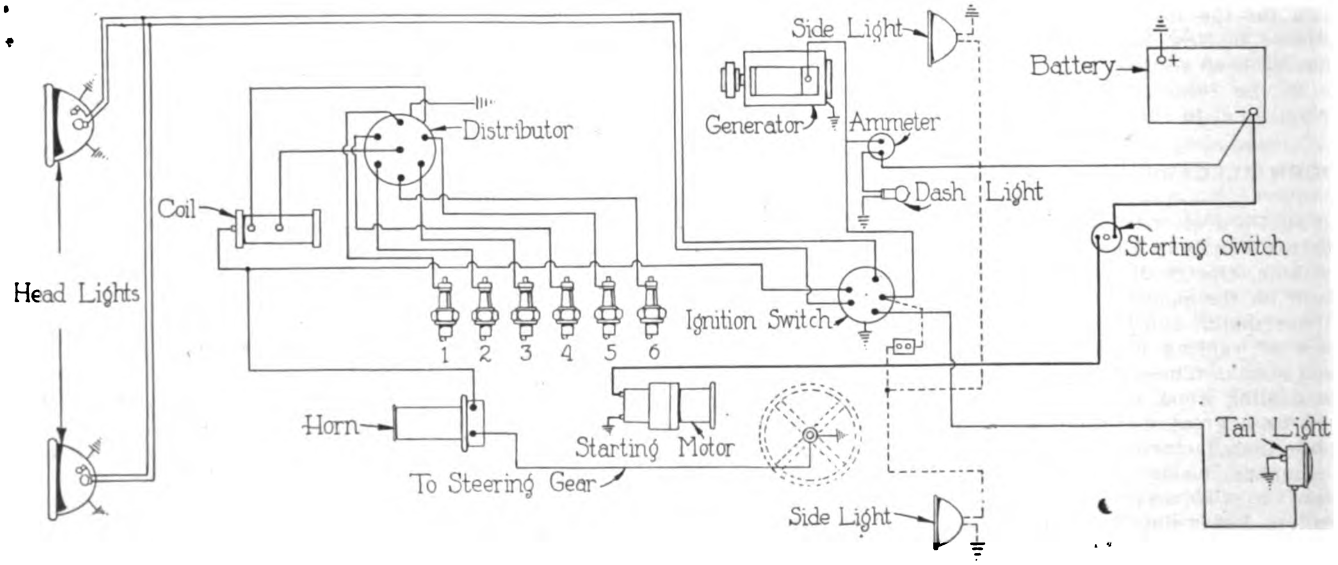
Wires Marked Ⓐ Are Enclosed in Conduits
Generator
Instrument Board
Connection Box
Motor Cylinders
Horn
Battery
Starting Switch
Magneto
Fuse Box
1
2
3
4
5
6
Head Lights
Head Light
Tail Light
Side Light
Connection Box
Magneto
Battery
Starting Motor
Steering Wheel
Horn Button
Tail Light
Horn
Bolted Connection
Ⓐ

Chandler 1918-19-20 Models from No. 35,001 Up.


Side Light
Battery
Generator
Ammeter
Distributor
Dash Light
Coil
Starting Switch
Head Lights
Ignition Switch
1
2
3
4
5
6
Horn
Starting Motor
Tail Light
To Steering Gear
Side Light

Columbia Six, 1920.

Personal News of Industry and Trade

Harvey Becomes Sales Manager for Koehler

Samuel C. Harvey, formerly sales manager of the Indiana Motor Truck Co., has been appointed general sales manager of the H. J. Koehler Motors Corporation, Bloomfield, N. J. His connection with the automotive industry dates back some 20 years, and from the inception of the motor truck he has been specializing on that branch. He has had a ripe experience in the sales, export and advertising field.

Charles S. Clark, who has been connected with the H. J. Koehler Motors Corporation for the past three years in the capacity of sales, advertising and export manager, severed his relations with that concern on Dec. 1 and is at his home, Malvern Hill, Va., for a brief vacation before taking up work again. Mr. Clark's experience covers 16 years as an executive in the retail, wholesale and manufacturing ends of the automobile and truck industries, during which time he has handled salesmen, advertising and dealers and has become familiar with the intricate details of the export business.

J. H. Behr, widely known in advertising, publishing and kindred lines, has joined the Akron Advertising Agency Co. as director of purchases. Mr. Behr was for years associated with the old Werner Printing Co., after which he was on the advertising staff of the Goodyear Tire & Rubber Co. and later was in charge of sales for the S. & O. Engraving Co.

Joseph Goldring announces that he has severed his connection with the King Tire Co., 1987 Broadway, New York city, for which concern he has acted as purchasing agent for the past 8½ years and is now engaged in business as a manufacturers' agent distributing equipment at 250 West 54th street, New York city.

Frank E. Bohn has been elected president of the Noble Heater Co., Ft. Wayne, Ind. Mr. Bohn has had a wide experience with corporation companies as a managing executive. At the present time he is general manager of the Home Telephone Co. of Fort Wayne.

C. R. Stowell has become manager of the Fresno, Cal., branch of the Bearings Service Co. He has served in the capacity of traveller, working out of the San Francisco branch of that company.

A. F. Ward, recently assistant service manager of the Timken-Detroit Axle Co., has been appointed manager of the Omaha branch of the Bearings Service Co. This concern acts as the service department of the Timken and Hyatt Roller Bearing and New Departure Manufacturing companies, has 33 branches in the principal cities and an organization of approximately 1000 authorized distributors.

Earl W. McGookin, after an absence of two years, has again joined the William R. Johnston Manufacturing Co., 451 East Ohio street, Chicago, Ill., as factory representative in the states of Michigan and Ohio.

J. E. Long is in charge of the new battery station at the Central Garage, Hot Springs, Ark.

Messinger Promoted to Responsible Office

Clifford F. Messinger has been appointed general sales manager of the Chain Belt Co., Milwaukee, Wis., manufacturer of Rex chains, concrete mixers and elevating and conveying machinery. Mr. Messinger, for the last two years assistant to the vice president, is a Yale graduate and has been connected with the Chain Belt Co. since 1911. He is perhaps best known in his capacity as manager of Rex mixer sales, which he held for three years, and has also been advertising manager. Mr. Messinger was recently elected chairman of a group of nationally known construction machinery manufacturers.

Owen D. Young, vice president of the General Electric Co., New York city, and **A. T. Van Scoy**, vice president of the International Harvester Co. of America, Milwaukee, Wis., have been appointed by President Joseph H. Defrees of the Chamber of Commerce of the United States, as members of that organization committee on immigration. This committee will hold its first meeting in the near future in Washington, D. C., when it will consider the question of a national immigration policy.

A. J. Raples, who was for a number of years in business in Tescott, Kan., has purchased the Salina Motors Co., 215 North Santa Fe street, Salina, Kan., where he will conduct a general automobile repair business beginning Jan. 1.

New Officials of National Association of Truck Sales Managers

Vice President, E. T. Herbig, Service Motor Truck Co.

Secretary-Treasurer, A. E. Schaefer, Gramm-Bernstein Motor Truck Co.

President, Hal T. Boulden, Selden Truck Corporation.

Packard Car Co. Promotes Chamberlain

R. E. Chamberlain has been promoted by the Packard Motor Car Co., Detroit, Mich., to the position of general assistant sales manager. His experience with the Packard organization dates back to 1916 when he assumed the duties of truck sales manager of the New York Packard Co., and he later became truck sales manager of the Detroit factory. Prior to joining the Packard organization Mr. Chamberlain was identified with the Garford Motor Truck Co. as manager of the Philadelphia branch and before this with the Wilcox Truck Co. of Minneapolis, Minn.

Dan Gilkey, who has been Pacific coast representative of the Acason Motor Truck Co., Detroit, Mich., has been made vice president of that company in charge of sales and advertising, with headquarters in the Michigan city.

C. F. Folkman, Director, Four Wheel Drive Auto Co., Clintonville, Wis.

W. O. Browne has been appointed general sales manager of the Southern Motor Manufacturing Association, Ltd., Houston, Tex. He comes to Southern Motors with an excellent record in the sales end of the automotive industry, having been connected with several of the leading automobile concerns of the country as factory representative and branch manager. Just previous to joining Southern Motors he was district manager and special representative of the Bethlehem Motors Corporations, Allentown, Pa., associating himself with that concern upon leaving the United States air service, in which he served as an enlisted man and later as an officer in the United States and France, from April 22, 1917, to March 31, 1919.

George McGee, formerly service manager of the Herman Motor Truck Co., New York city, has gone into the sales department of the same company.

William W. Rennick has become service manager of the Vim Motor Truck Co., New York city.

Dan Gilkey, Vice President of Acason Co.

W. A. Olen, President, Four Wheel Drive Auto Co., Clintonville, Wis.

R. E. Chamberlain, New General Assistant Sales Manager of Packard Motor Car Co.

Death of Head of Dodge Brothers Co.

Horace E. Dodge, who has been the head of the Dodge Brothers automobile interests since the sudden death early in the year of his elder brother, John Dodge, died on Dec. 10 at his winter home, Palm Beach, Fla. Although his health was impaired by a severe attack of influenza, his serious illness had not been reported. The Dodge brothers founded the automobile business that bore their name at Detroit, Mich., eight years ago, after manufacturing automobile parts since the early days of the industry, when they were associated with Henry Ford.

Walter G. Hinnau is now the acting branch manager at New Orleans, La., of the United Motors Service, Inc., Detroit, Mich. He succeeded T. H. Fonda, resigned. Mr. Hinnau joined United Motor Service in July, 1919, as special representative for the distributor department, and later took over the sales of the merchandise lines. In October of this year he went to Atlanta, Ga., as assistant to Branch Manager Schuyler.

D. J. Rohrer, Director, Four Wheel Drive Auto Co., Clintonville, Wis.

W. B. Neff, sales manager of the Automobile Supply Co., Chicago, Ill., who was in charge of the party of salesmen of the company who recently inspected the plants of the concerns manufacturing the products handled by that company, was killed in an automobile accident at Bridgeport, Conn., during the visit of his party to that city.

E. G. Soward was recently made special district supervisor for the Liberty Motor Car Co., Detroit, Mich., in the west central states. He was formerly general sales manager for the Jeffrey Motor Truck Co.

George C. Murray, formerly of the Aluminum Castings Co., Detroit, Mich., has gone to San Francisco to assume charge of the sale of Fruehauf trailers on the coast.

Equitable Motor Truck Officers

E. Leindorf and A. H. Mollenhauer, Jr., hold the offices of president and general manager and sales manager respectively of the Equitable Motor Truck Co., 136th to 137th streets, on Madison avenue, New York city. Mr. Leindorf has an enviable record in the motor truck sales field in and around New York. He managed the metropolitan branch of the motor truck division of the Studebaker corporation, having the title of assistant sales manager, and for nearly four years was the retail sales manager for Rainier trucks. Mr. Leindorf also heads the Leindorf Motor Sales Corporation, which handles the Signal truck in addition to the Ace and is also to manufacture a truck of its own, the Lion, a 1500-pound model.

Mr. Mollenhauer has been for more than seven years prominently associated with the retail and wholesale truck trade. He was formerly with the Union Motor Truck Co. and was also vice president and treasurer of the Marvel Motor Truck Co. The Equitable service manager is Leonce Raboin, who was for seven years on the experimental staff of the Knox Motor Car Co., had charge of the fleet of trucks of the Porto Rico Transport Co. and was service manager for the Rainier truck. The advertising and publicity work is in charge of Putnam Drew, for 25 years a writer on automotive topics and advertising manager of truck concerns.

W. A. Carpenter, Advertising Manager, Acme Motor Truck Co.

L. Logie, formerly general sales manager of the Chalmers-Maxwell companies for Canada, and more recently associated wih the tractor business in Toronto, has been appointed district supervisor of Canada for the Liberty Motor Car Co., Detroit, Mich.

Clinton W. Atwood, president and treasurer of the Williamsville Buff Manufacturing Co., Danielson, Conn., died Dec. 1.

Joseph F. Dineen, Former Auto Editor, Boston Record, Now Executive Secretary Motor Truck Club of Massachusetts.

A. H. Mollenhauer, Jr, Sales Manager, Equitable Motor Truck Co.

E. Leindorf, President Equitable Motor Truck Co.

Conlon in Charge of Paige Sales

Harry A. Conlon, a former director of the Acason Motor Truck Co., has been appointed sales manager of the truck division of the Paige-Detroit Motor Car Co. and will supervise an intensive educational and sales campaign. He has been connected with the industry for 10 years in the work of organization and retail sales.

W. J. Foster, formerly assistant truck sales manager of the New York branch of the Packard Motor Car Co., has been appointed by W. G. Toland, general truck sales manager of Hare's Motors, transportation engineer and assistant to the truck sales manager. Mr. Foster has specialized in automotive engineering for eight years, supplementing the education he received in America with more advanced study in France, Switzerland and Germany. Upon his return to the United States he was made an instructor and subsequently principal of the New York School of Automobile Engineers. Later he became principal of the Stewart Automobile school, and was a member of the New York Public School Board of Lectureship. During the war he was appointed an aeronautical mechanical engineer with the United States Signal Corps. Later he was commissioned a lieutenant in the air service and assisted in the designing, development and testing of the famous Gnome, Hispano-Suiza and King-Bugatti engines. Upon being mustered out of the service he joined the Packard Motor Car Co. of New York as transportation engineer.

Harry A. Conlon, Veteran in Industry, Heads Paige Truck Division.

W. T. Whalen has taken over the management of the New York branch of United Motors Service, Inc., Detroit, Mich. He is a graduate of Iowa State college, and has for many years been associated with the Westinghouse Electric Co. in Philadelphia.

John M. Frayler, formerly with the Flushing Avenue Auto Co., New York city, is now with the Rainier Motor Co.

Smith President of Midwest Co.

Lon R. Smith, general sales and advertising manager, at a recent meeting of the directors of the Midwest Engine Co., Indianapolis, Ind., was elected vice president of that company. Mr. Smith will remain in full charge of sales of the Hill Pump division of the company at Anderson, Ind., and of the Indianapolis plant which is making the Midwest Utilitor and a complete line of truck and tractor engines. He was, for many years, with the Eisemann Magneto Co., and before going to the Midwest was sales manager of the Buda Co., Harvey, Ill.

Otis Hacker, formerly a member of the firm of Hacker & Co., Bethany, Mo., recently sold to the Crossan Motor Co., has again engaged in the automobile business in the building on Central street, recently vacated by Orley England.

A. F. Wisel has purchased the interest of R. E. Fletcher in the Fletcher-Means Co., El Paso, Tex., and the company has been reorganized with the election of Robert Boyle as president and E. R. Means, secretary and treasurer.

C. W. Ferguson is the new manager of the Delaware Supply Co., 1114 North Broadway, Oklahoma City, Okla., which has the state distribution of Gillette tires and tubes and Dural tubes and handles Marlan gasoline and oils.

Leigh Smith, who has been in charge of the service department of the Fisher Body Co., has been made service manager of the Fleetham-Buick Co., Wyandotte, Mich.

Fred D. Rice has joined the forces of the Eaton Axle Co., Cleveland, O. He was formerly with the Hess Steel Corporation.

Ernest P. Lash has joined the Philadelphia Locomobile branch of Hare's Motors as sales and service representative, with headquarters at Reading, Pa.

Celsus Durrett and **A. L. James** have bought the Tucker-Page garage at Marshall, Mo. They are agents for Hudson and Essex cars.

C. W. Doble of Kansas City, Mo., has leased the Davis & Durret garage at Marshall, Mo., and has purchased Henry Hyob's stock of supplies and equipment.

H. R. Henry has been appointed general manager of sales by R. C. Frampton, Motor Car Co., St. Louis. Mo.

Arch Moore of Kansas City, Mo., is now in charge of Benning's Garage, Second and Main streets, Odessa, Mo.

W. A. Evans is now in charge of the New York service station for the Cunningham car, 130th street and Broadway.

G. T. Broughnau of Dubuque, Ia., has opened an automobile repair shop at Pleasanton, Kan.

Perle Chartier has purchased the battery business of W. S. Abbott at Clyde, Kan.

T. C. Moon has purchased the plant and business of the Hardin & Halter garage at Bonne Terre, Mo.

Lon R. Smith, General Sales and Advertising Manager, Midwest Engine Co., Has Been Elected Vice President.

E. J. Krause, Jr., has been made manager of the service station equipment division of the Fairbanks Co., Broome and Lafayette streets, New York city. He is well known in automotive circles in the Middle West, having been eight years in St. Louis, and recently general sales manager of the Service Station Equipment Co., for which the Fairbanks company is now exclusive sales agent. Mr. Klause's headquarters will be at the Service Station Co.'s factory in Chicago, known as the service station equipment division of the Fairbanks company.

W. S. Phillips, manager of the Uneeda Car Wash Station, Third and Thockmorton streets, Fort Worth, Tex., has opened a garage, which he will operate in addition.

K. W. Robinson is in charge of a direct factory branch of the Packard Motor Car Co. in St. Joseph, Mo., with headquarters at 218 North Sixth street.

J. G. C. Wayland, Vice President, J. I. Case Plow Works Co., Racine, Wis.

Cole Executives Have Served Long

J. J. Cole, S. J. Kuqua and **J. F. Morrison**, president and general manager, vice president and secretary-treasurer respectively of the Cole Motor Car Co., Indianapolis, Ind., have served continually in these capacities since the inception of the company in 1908. This would seem to be an unusual record in the industry.

K. W. Zimmerschied has been appointed general manager of the Chevrolet Motor Co. by Pierre S. du Pont, president of the General Motors Corporation, to succeed W. C. Durant. **F. W. Hohensee** is, it is understood, to continue as general manager of production, and **W. C. Sills** as general manager of sales. Mr. Zimmerschied has been identified with General Motors since 1911, for the past two years as assistant to the president of the corporation. His first connection with that company was as metallurgist at Flint, Mich. During the war he served the government at Washington and at its close went to General Motors headquarters at New York city.

Lieut.-Col. Theodore Roosevelt, Jr., recently made a rather remarkable run from Los Angeles to Santa Barbara, Cal., in a Cole Aero-Eight, made by the Cole Motor Co., Indianapolis, Ind. He left Los Angeles three-quarters of an hour after the "Lark," the fast railroad special had departed, and made the 96-mile run in two hours and 22 minutes, reaching Santa Barbara ahead of the "Lark."

H. G. Spangler has been appointed manager of the Boston station of the National Chain Motor Service Corporation, and Charles Colstat has been promoted to the office of chief engineer, with headquarters at the main office, 811 Boylston street. Mr. Spangler has been in business for himself in Boston for 20 years and is recognized in the trade as an authority on automotive repair service.

H. W. Avery, Jr., has been made director of Marmon sales by the W. D. Block Motor Co., distributor in Detroit. He was, for 10 years, with the Packard Motor Car organization as sales manager at Cincinnati, O., and Buffalo, N. Y., and as special representative for the Packard-Detroit branch.

Thomas F. Moore has become executive secretary of the Automobile Dealers' association of New York, vice Harry Gardner, who has become sales manager of the passenger car division of the Packard Motor Car Co. at Detroit, Mich.

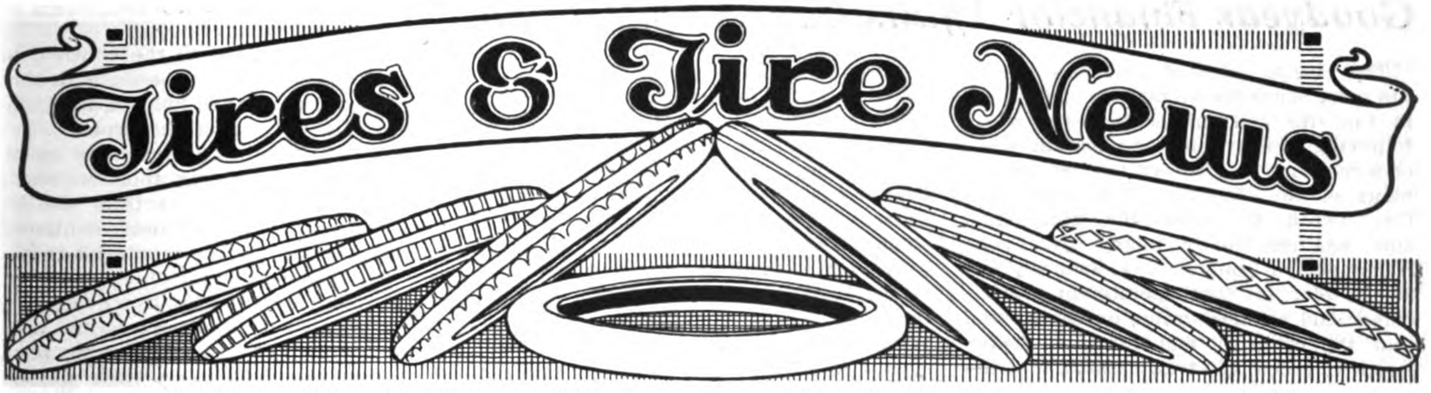
C. L. Dunning, who has been assistant superintendent at the White company's Long Island plant, has been transferred to the Chicago branch of the same company.

J. M. Harris of Kansas City, Mo., has been placed in charge of the entire sales organization of the Ardmore-Akron Tire & Rubber Co., Ardmore, Okla.

C. R. McDonald has opened a new garage on South Main street, Strong City, Kan.

F. C. Lowry is the manager of the Sayre Auto Supply Co., Sayre, Okla.

Tires & Tire News



Weston Elected President of Ajax Co.

Announcement is made of the election of Joseph C. Weston as president and general manager of the Ajax Rubber Co., Inc., 218-22 West 57th street, New York city, to succeed Horace DeLisser, who has been discharging the duties of the active presidency in addition to those of chairman of the board of directors. President Weston came to the Ajax company as vice president about a year and a half ago from the United States Rubber Co., with which organization and its subsidiaries he was connected in executive capacities for more than 20 years. Few men are so well known in the tire industry or in the larger automobile field.

Chairman DeLisser stated on the occasion of the company's 15th anniversary that no changes in policy or personnel were suggested in Mr. Weston's election to the presidency.

GREAT BRITAIN PROTESTS AGAINST TIRE IMPORTS.

It is reported that a large number of protests have recently been made in the House of Commons of Great Britain against the continued importation of large quantities of tires of American manufacture to that country. Particularly strong is this sentiment in view of virtual stagnation in the English rubber industry. One member even goes so far as to state that thousands of British rubber workers were swelling the ranks of the unemployed, although 90,000 American tires were imported in September.

CHANGES IN UNITED STATES RUBBER PERSONNEL.

The United States Rubber Co., Akron, O., recently made the following additions to its personnel: George W. Seiberling has been made general manager of the company's tire factories and Erwin Meyer, chief consulting chemist. John J. Shea, at one time a director of the Hartford Rubber Works Co., has been made factory manager, Colt plant, Revere Rubber Co., Providence, R. I., and A. P. Delahunt has been appointed chief accountant of the same plant.

Joseph C. Weston, Recently Elected President and General Manager of Ajax Rubber Co.

BENEFITS OF KANSAS CITY ORGANIZATION.

The Kansas City, Mo., Tire Dealers' association, which was organized in October, is to open permanent offices in that city with a secretary in charge of the work of the association, which consists, in part, of credit work, service to dealers toward betterment of methods and elimination of bad business practises, etc. It is reported that a marked improvement has been created in the trade since the formation of the association, including regular hours for opening and closing stores and shops, Sunday and holiday observance, and the matter of free service, which has been eliminated.

The association at present numbers 47 representative dealer members, with the following officers: President, Charles A. Peake, Jr.; vice president, Herbert Ford; secretary, H. A. Winters.

TIRE DEALERS TO ORGANIZE.

During the week of the Chicago automobile show, Jan. 29-Feb. 4, a meeting will be held for the formation of a national tire dealers' and vulcanizers' organization to foster interests of dealers and repair men in West and Middle West.

No Changes in Present Tire Standards

At a conference of interests, primarily affected by a proposed change in tire standards, recently held in Cleveland under the auspices of the Society of Automotive Engineers, after a long and exhaustive discussion it was almost unanimously resolved that the present standard of pneumatic tire sizes be continued.

The conference was composed of representatives of car, truck, tire and rim manufacturers, the Society of Automotive Engineers, the Rubber Association of America and the National Automobile Chamber of Commerce. It was decided to refer all suggestions as to changes to a joint committee representing all interests, which could make a study of the subject as it may be affected by future developments.

Representatives of tire manufacturers favored a proposed standard based on a 24-inch wheel on the ground that a great economy of production could be expected by reducing dealers' stocks many thousands of dollars and factory equipment proportionately. These savings, it was pointed out, were bound to be reflected in reduced prices and other advantages to the owners and operators of motor cars.

Car makers, engineers and representatives of the National Automobile Chamber of Commerce, on the other hand, while clearly indicating a desire to further standardization in every practicable way, put forth several reasons why the change was not desirable at this time. Among the arguments they presented were: The trend of automobile design toward wheel diameter smaller than the 24-inch size; the very large production using and planned for 25-inch wheels; added expense to car manufacturer for tire equipment in some cases; disturbance of the export situation, etc.

It was pointed out particularly that the present standard has been operating only since Jan. 1, 1920, and that from now on the use of tire sizes discarded at that time will decrease and eventually enable tire manufacturers to reduce by one-third the number of tire sizes made.

The Mason Tire & Rubber Co., Kent, O., has opened branches at Portland, Ore., and Los Angeles, Cal.

Goodyear Financial Affairs Cause a Sensation

The closing days of 1920 saw one of the most sensational episodes of the year in the tire and rubber industry when, following closely on the announcement of a meeting to consider the refinancing plans of the Goodyear Tire & Rubber Co., Akron, O., came the filing of a suit against the company by Frank S. Monnett, a Columbus, O., attorney and stockholder, for the appointment of a receiver and an accounting, on the ground that the company had sustained heavy losses in recent big transactions, that the fall stock dividend was unwarranted, etc.

The Goodyear company filed a motion to quash the service summons, which was later allowed.

The stockholders' meeting, which was originally called for Dec. 24, was to consider a plan to be voted upon by the stockholders which, it is understood, will call for the authorization of a mortgage or deed of trust to secure the payment of not to exceed $50,000,000 eight per cent. bonds or notes which will be issued. Under the reorganization, it is reported, the company will have an authorized capital of $100,000,000 seven per cent. preferred stock, which will be exchanged, share for share, for present preferred, and not to exceed 1,500,000 shares of common stock of no par value, which will be exchanged, share for share, for the present $100 par value common stock.

In a letter to stockholders President Seiberling said in part:

"Sales of the company falling $45,000,000 below the $250,000,000 which had been estimated for the 1920 fiscal year, and the necessity for carrying considerable raw material with the curtailment of banking credits, resulted in a strained financial condition.

"The company, however, has been able to arrange, through a banking syndicate, for temporary loans of $28,800,000, maturing Feb. 15, 1921. Negotiations are under way looking to an agreement in regard to a plan of permanent financing.

"Pending final agreement on such plan, however, it seems necessary to call a meeting of stockholders. Unless necessary action is taken by stockholders before the end of December, it will not be possible for the company to pay dividends accruing Jan. 1 on preferred stock. It is expected that before the date of the meeting final arrangements will have been made with bankers for a definite financing plan which will be presented to stockholders for approval."

The commercial and banking creditors of the Goodyear Tire and Rubber Co., it is stated, are trying to come to some form of comprehensive agreement with regard to their claims, and if the agreement is broad enough, bankers say, there may be no necessity for new financing. The company, reports from the West say, has debts amounting to about $28,800,000, which it will be called upon to meet or fund by Feb. 15 next, and if these claims are funded the company will not have to raise new money immediately.

The adjourned meeting, set for Dec. 29, was again postponed until Jan. 12, the finance committee reporting that plans for refinancing were still incomplete.

Illustration Showing One Corner of the Factory of the Akron Rubber Mold Machine Co., Akron, O.

TIRE MANUFACTURERS AND DEALERS.

C. A. Swinehart, assistant general manager and sales manager of the Victor Rubber Co., Springfield, O., is of the opinion that some very pronounced changes are soon to occur affecting the attitude of tire manufacturers toward their dealers.

"In the past," says Mr. Swinehart, "it has been the policy of some companies to sell to any dealer who would handle their tires. No matter how poor his location, how unscrupulous the man, or how unfair his methods of competition, he could handle the product of many manufacturers.

"Not only have some manufacturers placed their line with a varied assortment of dealers in a community, but they have even gone farther and sold direct to large consumers and fleet owners in direct competition with their own dealers.

"This is unfair to the real dealer, the reliable merchant who takes an actual interest in the sale of the tire he represents, and expends energy and money in developing its sale."

He called attention to the contrast in this method of doing business with that adopted in some other lines of merchandising, notably the clothing trade.

"It is my firm belief that tire manufacturers now following those methods so manifestly unfair to their dealers must revise their policies," continued Mr. Swinehart. "I am convinced that a new era is dawning for the aggressive, business-like dealer who has dealt honestly and fairly with customers and competitors alike. The time is coming when tire companies will select their dealers with a view of their prestige and ability rather than a haphazard appointment of every Tom, Dick and Harry who wants to sell tires, and protect him through an exclusive sales arrangement, so that he will not have to fight unscrupulous competition in his own line."

NATIONAL ASSOCIATION TO BE FORMED AT CLEVELAND.

At a recent meeting of the Cleveland Retail Tire Dealers' association at Hotel Winton in Cleveland, it was decided by the officers and members to organize a national association of tire dealers with its probable headquarters in that city.

E. L. Green, chairman of the Better Business Commission of the Cleveland Advertising club, spoke of the influence that a strong national organization has on the welfare of the particular industry or trade represented, and urged dealers to adopt a policy of charging a fair price for goods, neither reverting to cut-throat reductions or adhering to profiteering methods.

SEAMAN ELECTED PRESIDENT OF SPRINGFIELD CO.

At the recent meeting of the directors of the Kelly-Springfield Tire & Rubber Co., F. A. Seaman, vice president and secretary, was chosen president to succeed Van H. Cartmell, who retired on account of ill health.

Arthur Sachs of Goldman, Sachs & Co., was elected a director.

A quarterly dividend of $1.50 a share on the six per cent. preferred stock of the company was declared and will be paid Jan. 1.

NEW DEPARTMENT HEADS FOR SYRACUSE RUBBER.

George C. Mecklin has joined the organization of the Syracuse Rubber Co., Inc., maker of Syra-Cord tires, as head of the calendar department, having left a similar position with the Miller Rubber Co.

W. F. Fiske, who has had an extensive experience in the tire building and curing department with both the B. F. Goodrich Co. and the Miller Rubber Co., is the new head of this work at the Syra-Cord factory.

Trenton, Mo., Tire Co., has moved to 14th and Main streets.

PRICE REDUCTIONS STILL CONTINUE.

Announcement is made by President E. F. Jones of the Republic Rubber Corporation of Youngstown, O., of a reduction in the price of Republic, Grande cord and fabric pneumatic tires and tubes and solid and pneumatic truck tires. Contracts for next year's business are based on this reduction in price.

The Syracuse Rubber Co., Inc., Syracuse, N. Y., announces a reduction of 12 per cent. in the price of Syra-cord tires and 15 per cent. on tubes.

The company also announces the addition to its line of the Canton cord pneumatic truck tire built to the high standard of its regular Canton cord tires.

The Michelin Tire Co., Milltown, N. J., has reduced the prices of casings and tubes at approximately following rates: Fifteen per cent. on all soft bead clincher fabric casings; 10 per cent. on the larger size fabric casings; 7½ per cent. on all cord casings and 10 per cent. on all Michelin Ringshaped tubes.

New Syra-Cord Ford Tire.

The Canton-Blackstone Co., Youngstown, O., through its sales manager, H. J. Woodward, announces a reduction in prices on its line of Blackstone fabric and Canton cord tires.

The Bergougnan Rubber Corporation, Trenton, N. J., made a reduction in the prices of Bergougnan fabric and cord tires effective Dec. 1. On fabrics the cut ranges from eight to 15 per cent., and on cords from 10 to 12½ per cent., according to size. No reductions are made in inner tubes.

Two more tire manufacturers who announced substantial cuts, effective the middle of November, are the Gordon Tire & Rubber Co., Canton, O., and the Pennsylvania Rubber Co., Jeannette, Pa.

NEW SYRA-CORD FORD TIRE.

The Syracuse Rubber Co., Inc., Syracuse, N. Y., announces the addition to its line of Syra-Cord tires a size for the Ford car in which it is claimed that a new method of making beads is utilized which eliminates the common trouble of rim jumping. Exhaustive factory tests of these tires have been substantiated by trials by private owners.

Salt City Tire Co., Hutchinson, Kan., has moved to 12 Fifth street.

Financial Notes of the Industry

FISK CO. VOTES TO PASS DIVIDEND.

The Fisk Rubber Co., Chicopee Falls, Mass., has voted to pass a dividend of 75 cents a share on the common stock of the company, which was due for declaration at this time. This action was deemed advisable notwithstanding the fact that the company had more than earned an amount equal to this disbursement.

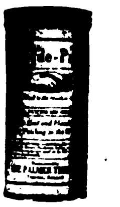
The regular dividend of 1¾ per cent. on its preferred stock was declared, payable on Feb. 1 to stock of record on Jan. 21.

"Sales of the company for the year," said H. T. Dunn, its president, "will be approximately $42,000,000 net, which compares with $43,000,000 in 1919. While inventories are larger than during normal times, the finished product is composed of standard salable sizes. The company intends to mark down its stocks of all cotton fabrics, rubber and other materials at the end of the year to sound values, and will be able to effect such readjustment out of 1920 earnings and without drawing on the surplus."

FIRESTONE DROPS DIVIDEND TO SIX PER CENT.

The directors of the Firestone Tire & Rubber Co., Akron, O., have decided to cut the rate of dividend on common stock from eight to six per cent. a year, this affecting the dividend payable Dec. 30. This is in line with the conservative policy adopted by the company to conserve its cash resources during the present readjustment period. Coincident with this announcement, it was likewise revealed that the company would reduce all salaries 10 per cent., effective at once, it being pointed out that salaries were increased 20 per cent. during the past year to meet rising living costs, and now that living expenses were coming down, adjustment in salaries must be made. The wage rates of factory workers have not been reduced, it is said, but the hours of work have been to apportion employment so far as this was at all possible.

PALMER "HAN-DE-PACH" OUTFIT.



A new, quick tire repair outfit called "Han-de-Pach" has been trade-mark patented by the Palmer Tire Co. of Topeka, Kan., and is now being offered to the trade. One of the outstanding features is the manner in which it is put up for the benefit of both retail and distributing trade. The retail boxes make a neat, silent salesman and the shipping boxes are specially made in dimensions so that they stack compactly in the jobbers' shelves. The outfit retails for $1. The company is now open for exclusive territory with manufacturers, sales agents and jobbers, or state agents.

NORWALK'S PROFITS FOR EIGHT MONTHS.

The Norwalk Tire & Rubber Co., Norwalk, Conn., reports its gross sales for the eight months ending Aug. 31, 1920, to be $3,048,800, from which there were net profits, after all charges but before federal taxes, of $703,807. This is at a rate of nearly 10 times the dividend requirements on the $1,500,000 seven per cent. preferred outstanding. There is also $1,000,000 common stock outstanding. Balance sheet as of Aug. 31, shows total assets and liabilities of $4,684,337, the surplus being $1,328,325.

LEE RUBBER FINANCES.

In a balance sheet, as of Sept. 30, the total assets of the Lee Rubber & Tire Corporation, Conshohocken, Pa., were shown to be $6,642,211, a gain of $1,045,942 over the year previous. The surplus for the year was stated as $1,039,470, and the net assets applicable to dividends on capital stock $5,203,061, or $34.69 a share.

L. C. Rockhill. Sales Manager. Elected to Goodyear Directorate.

PENNSYLVANIA RUBBER DIVIDEND.

The Pennsylvania Rubber Co., Jeannette, Pa., has declared a regular quarterly dividend of 1¾ per cent. on preferred and 1½ per cent. on common stock, payable Dec. 15.

ROCKHILL A GOODYEAR DIRECTOR.

At the recent annual meeting of the stockholders of the Goodyear Tire & Rubber Co., Akron, O., L. C. Rockhill, sales manager, was elected a member of the board of directors, succeeding J. P. Loomis, retired.

The I. J. Cooper Rubber Co., Cincinnati, O., tire distributor, has opened branches at Birmingham, Ala., Louisville, Ky., and Atlanta, Ga.

PLATE V.

MODEL SERVICE STATION AND SALES ROOM.

Two-Story Fireproof Structure Complete with Show Room, Machine and Repair Shops—Generous Spacings and Modern Equipment

Designed by the Architectural Department of the Automobile Journal Publishing Co.

THE accompanying plans offer a suggestion for an ideal automobile building to be used by an up-to-date, progressive dealer, and its arrangements permit of its use for practically every branch of the trade in which he can conveniently engage.

Facilities are provided for handling the agency for one or two new cars, and the appointments are such that the dealer may handle used cars and take live or dead storage. Space is also provided for the care, renovation and repair of cars. In fact, an examination of the plans will reveal that a careful survey has been taken of the progressive dealer's requirements, which has been taken into consideration in the design offered.

Having provided for all the practical needs of such a structure, the architect has taken into consideration the value of nice appointments where customers are received and accommodated in addition to providing a suitable facade, which is valuable as an advertising feature, a fact testified to by the thousands of dealers throughout the country who have gone to considerable expense in having highly decorative fronts erected to their buildings whenever their means would warrant it.

This structure, of course, is primarily for a dealer in a fairly large city where business would pay for its erection, maintenance and a profit. It is designed to go on a corner lot 50x100 feet. On the ground or first floor plan is an entrance vestibule, leading off the main street. To the right of the entrance is the show room, where several cars may be exhibited and an accessory case set up with other stock displayed in glass cases on the walls. On the left side of the entrance is the office, which has an entrance leading into the garage floor and shops.

On the side street there is a service door leading directly into the garage and in front of the turn table. This arrangement enables the operator of the car to turn his machine in any direction and run it to any position in the garage, onto the elevator or into the repair shop. The latter room is fitted with two repair pits, although there is sufficient room to handle three cars at a time or possibly four.

Manoeuvering cars about inside of a building has always been found a troublesome problem, but the arrangement given in these plans, in relation to the layout of the building, seems to offer a simple and easy solution.

In one corner of the garage, out of the way of the passages from the entrances to the other points in the room, is a wash stand conveniently located near both the turntable and elevator, thereby facilitating the washing and storage of a car with little trouble.

A machine shop of ample dimensions is walled off in the rear left hand corner of the building and lighted by a huge skylight in the light shaft extending through the second floor to the roof. There is an entrance to the machine shop from the garage; also one to a passage back of the elevator, which leads across to the repair shop for the convenience of the machines.

On the second floor are toilet accommodations for customers, office employees, salesmen, a large floor area devoted to new and used car storage, supply and locker rooms and toilet for the employees. Entrance to the front of the second floor is reached by the main staircase, which leads into a hall similar to that on the first floor. To the right of this hall is a rest room and toilet for ladies and on the right similar accommodations for gentlemen.

In the centre of the rear end of the second floor is the elevator well, which divides the skylight over the machine shop from the locker and supply rooms and employees' toilet. These rooms may be reached from the repair shop by stairs.

The exterior of the building is of terra cotta with tile inlay, backed with brick. Steel is used for the frame, large girders in the floor and roof supported on steel "H" columns in piers that are spaced as shown by dotted lines on plans. Reinforced concrete floors and roof slab are necessary to make it a fireproof structure.

Lighting and heating equipment must be of standard make and complying with insurance underwriters requirements. Fireproof specifications would also include steel sash throughout and an automatic roller door at the service entrance on the side street.

The gas tank and service pumps are located outside the entrance on the side street and are connected up so that cars may be filled either from the inside or transient customers may be accommodated at the curb. Lubricating oil reservoirs or tanks may be placed where found most convenient.

The construction cost of such a building with all modern improvements, of course, would vary according to labor conditions and material supplies in different localities, but a minimum estimate of $25,000 and a maximum of $30,000 would cover the costs approximately.

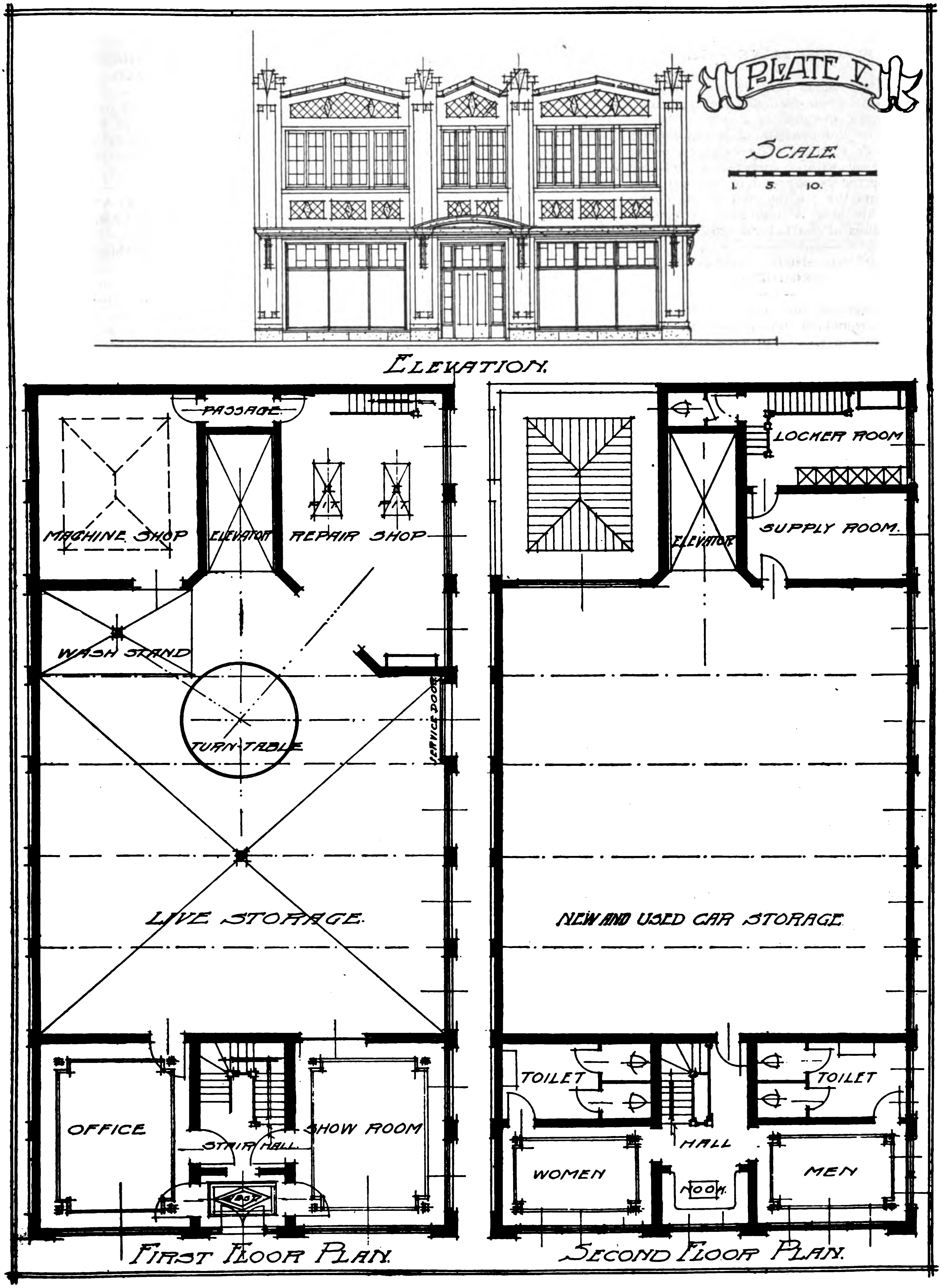


PLATE V.

ELEVATION.

FIRST FLOOR PLAN.

SECOND FLOOR PLAN.

SCALE
1. 5. 10.
PASSAGE
MACHINE SHOP
ELEVATOR
REPAIR SHOP
PIT
PIT
WASH STAND
TURN-TABLE
SERVICE DOOR
LIVE STORAGE.
OFFICE
STAIR HALL
SHOW ROOM
LOCKER ROOM
SUPPLY ROOM.
ELEVATOR
NEW AND USED CAR STORAGE
TOILET
TOILET
HALL
WOMEN
ROOM.
MEN

Mechanical Hints for Garage and Repair Shop

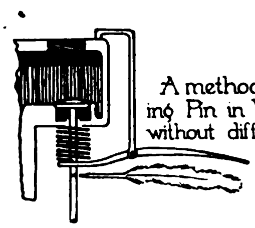
PLACING VALVE PINS.

A device which may be used to good advantage when fitting valve pins into valve stem openings is shown in the illustration and consists of a small quill feather or a straw. The valve spring is compressed with a compressor and the pin inserted in the end of the quill or straw and the pin inserted in the opening. This idea is applicable especially for engines of the L head type.

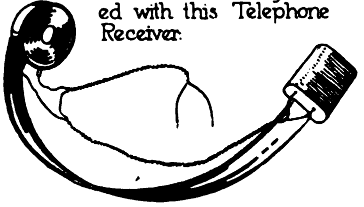
DETECTING SHORT CIRCUITS OR GROUNDS.

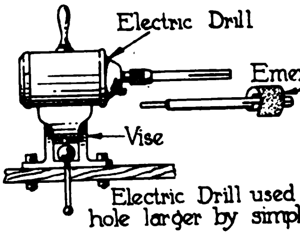
An apparatus for detecting short circuits or grounds in the lighting and starting units can be easily made from a 70-ohm telephone receiver, a head band and a flash light battery as shown in the cut. No. 1 is the telephone receiver, No. 2 the head band, No. 3 the flash light battery, No. 4 the wire connections and No. 5 the testing wires.

It is stated that the battery will detect grounds and short circuits in the units that will not show on a voltmeter or ammeter. By use of the battery one of the test wires is connected to the frame of the automobile and the other on a grounded wire. If any of the electrical connections of the units are short-circuited, sharp clicks will be heard in the receiver by making and breaking the connection on the frame of the automobile.

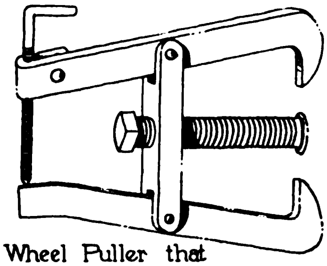

A method for replacing Pin in Valve Stem without difficulty

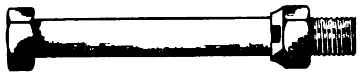
Knocks in a Motor are easily detected with this Telephone Receiver.

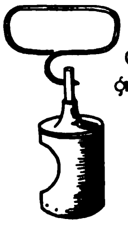


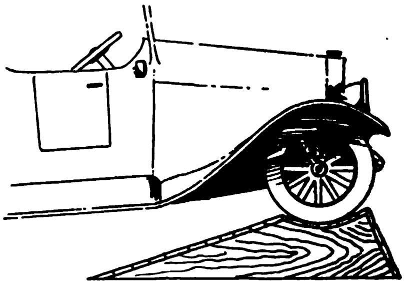


Electric Drill used to grind hole larger by simple method.


Wheel Puller that will not slip from Wheel.


Simple method of making additional Threads.


Convenient Tool for grinding Cage Type Valves.


Handy device for elevating Wheels.

TO ENLARGE DRILL HOLE.

A simple method of enlarging a drill hole is shown in the cut. An electric drill is fastened between the jaws of a vise and a special spindle fitted to the chuck having a split in the end. In this split or slot is fitted a strip of emery cloth wound around the spindle several times. Insert the spindle and emery cloth in the drill hole and start the electric drill. It is stated that this method will quickly enlarge a hole, at the same time smoothing it inside, to the desired size.

CUTTING ADDITIONAL THREADS.

In many cases it is necessary to cut a few more threads on a bolt in order to set the nut up tight. The illustration shows how this may be done when the proper size die is not at hand. Steel castellated nuts are generally considerably harder than bolts or studs and, when inverted and screwed down with a wrench they will cut as true a thread as a die. This method will also facilitate the clearing out of worn or jammed threads and will many times enable the motorist to make a repair on the road that would otherwise have to wait till a repair shop was reached.

SIMPLE WHEEL PULLER.

A wheel puller that it is said cannot slip off the wheel when in use, consists of two arms provided with claw ends that fit over the brake drum, a cross member to which the side members are hinged and a screw which passes through the center of the cross member, having a pointed or square end which fits against the end of the axle shaft. To prevent the puller from slipping, a second screw is fitted across the top ends, which holds the jaws of the puller an equal distance apart regardless of the strain being put upon the axle by the center screw.

Such a device may be made easily in spare time and many uses will be found for it around the garage for pulling wheels, gears, pulleys, etc.

TOOL FOR GRINDING CAGE TYPE VALVES.

By bending a piece of round steel wire as shown and flattening out one end to fit the valve stem slot or hole, a tool is made which is very useful when grinding cage type valves.

PLATFORM FOR ELEVATING FRONT END OF CAR.

A platform for elevating the front end of the automobile or light truck is shown, which can be made easily in spare time by the garage repair man, and with which can be done such work as taking up bearings, etc., without lying in a cramped position on the floor.

The device consists of two end pieces of wood cut in the shape shown, with strips battened across the top and the bottom, making an inclined platform with a curved rack to hold the wheel. The rack should be about one foot in width, which is about right to hold one wheel. However, it is advisable to have two sets of racks, so as to permit of elevating both the front wheels or rear wheels at the same time.

EMERGENCY CARBON BRUSHES.

The small carbon rods, which are part of the ordinary pocket lamp battery, can be filed and trimmed down to make a very acceptable temporary replacement for worn out carbon brushes in the magneto.

BATTERY MARKING TOOL.

An old star drill, bent roughly in the form of a U, with a plus sign ground on one end and a minus sign on the other, makes an ideal tool for marking battery terminals on storage batteries.

EXPORT DEPARTMENT
W.

DENMARK IDEAL COUNTRY FOR AUTOMOBILES.

Denmark, although a small country, is an ideal place for automobiles. The roads are good, the land quite flat and the country interesting and attractive to the motor tourist. It is stated that no other land on the continent has so many automobiles in comparison to the number of inhabitants. In view of the general topography of the country it is ideal for the cheaper grades of trucks, tractors and automobiles, and combinations that can be used for pleasure and freight. This last type won considerable favor during the war, while the car of luxury plays a somewhat smaller part.

Despite cars sent in by other countries, the American product has the first call, and the general attitude of the people is favorable towards the manufacturer from the states. Harbor strikes delayed the unloading of the American shipments in 1919, and the increase in the dollar value has also restricted trade. The customs duty on motor vehicles has also been increased, but business men, familiar with all sides of the question, incline to think that this condition will be speedily adjusted and state that Denmark offers a rich field for the American car manufacturer.

AUTO TIRES SCARCE IN GERMANY.

Berlin streets resound to the rattle of iron-tired automobile wheels today, much the same as they did during the war. Automobile tires are at a premium throughout Germany, and even the very low priced grades imported into the country find a ready market at a much appreciated value.

Only the wealthy can afford to purchase even the poorer sort of tire, and the average car owner is content to jog along on the rim of his rattling car. Taxi drivers alone seem to find this condition satisfactory, as there are no troublesome punctures to repair, and if the passenger murmurs when the car jounces over some particularly bad bump in the road, the operator merely laughs and applies more power for the next bump.

Hundreds of old horse cabs have made their reappearance at the railway stations, in front of the hotels and along the principal thoroughfares. They have taximeters and their drivers multiply their totals by eight when charging for a ride.

AUTO CENSUS SHOWS GREAT GAIN IN NEW ZEALAND.

The use of motor vehicles in New Zealand has grown rapidly. Figures for 1910 totalled 2000, as compared to 30,000 in 1920. There were more than 6000 automobiles imported during the first six months of the current year, and future orders booked indicate that the average for the first six months of 1921 will be even larger. It is estimated that imports of bicycles, automobiles, trucks, accessories and parts for 1920 will amount to more than $15,000,000, and the demand is said to be greater than the supply.

Motor vehicles entering the kingdom from Great Britain and possessions pay a duty of 10 per cent., with 10 per cent. additional from all other countries. Motor fuels pay no duty other than the war tax of one per cent., which is charged on all imports.

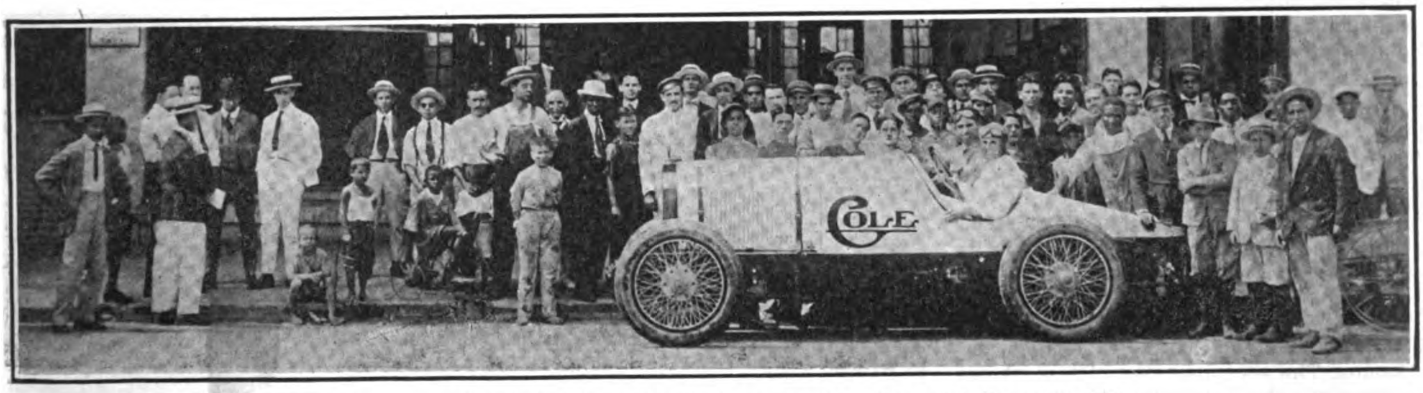
SOUTH AFRICANS FIND SUBSTITUTE FOR GASOLINE.

The South African car owner is apparently somewhat up against it as regards gasoline, the price being fixed by the government at $1.12 a gallon. This condition has resulted in extensive experimentation in an endeavor to find a substitute for the high priced fuel, and "natalite," a by-product of the sugar cane mills, has been used extensively with marked success. In addition to this substitute, "acetol," a secret compound in which alcohol and ether figures, has recently made its appearance.

Many claims of superiority have been made and substantiated for acetol, one of the most interesting being the assertion that it burns absolutely without carbon sediment, and is non-injurious to the carburetor and engine. Its use is said to solve the question of the air-cooled engine, and extensive tests have been made along this line with marked success. It is selling for 60 cents a gallon at this time and it is understood that it can be produced to sell at lower price.

RACING IN CUBA.

The Cole stock chassis, in racing regalia, shown in the picture, recently made a new record in a 10-mile road race staged in a mile track in Havana, Cuba. The Compania Nacional de Commercio, Cole distributor at Havana, report the track as having been in very poor condition and the resulting time of nine minutes and 10 seconds is considered unusually good. The previous Cuban record for the distance was nine minutes and 36 seconds.



Cole Stock Chassis Which Recently Made a New Race Record in Havana, Cuba.

Typical Dutch Village in Which the 17th Century Town Hall Is in Strong Contrast to the Modern Motor Car in the Fore ground.

AMERICAN AUTOMOBILE BUSY IN TURKEY.

In the midst of the hundreds of carriages, creeping ox carts, camel trains and mule packs which constitute a lively traffic scene in Constantinople, the American motor car, flying the American flag, offers an interesting contrast. And the contrast seems to be in favor of the automobile. These cars, many of them ambulances and trucks, are bound for Russia, but on account of the difficulty of securing local transportation facilities the American Red Cross has pressed them into service for the time being, in moving supplies from the docks to the three immense warehouses which the society owns. These busy cars are housed in the Red Cross garage and expert mechanics, many of them former service men, keep them in first class condition.

HUNGARIANS LIKE AMERICAN AUTOMOBILES.

The 11th Annual Hungarian Industrial exposition, recently held at Budapest, covered a surprisingly large range of products, and the interest taken in the exhibition by the Hungarians was keen. Presumably the greater part of the products shown was intended for home consumption, but there were many of the exhibitors who announced their intention of catering to the foreign markets. American automobiles were featured at the show and occasioned much favorable comment, as did several accessory lines of American manufacture.

THE DIXIE FLYER ABROAD.

The Dixie Flyer, manufactured by the Kentucky Wagon Manufacturing Co., Louisville, Ky., is fast building up a reputation with the foreign buyer, and many lucrative sales have been made by branches located in England, Scandinavia, Iceland, Holland, Switzerland, Portugal, Greece, Egypt, China, South Africa, India, the South Sea Islands and Samoa. The accompanying picture shows a foreign shipment in line for the dock.

COLE IN HOLLAND.

During his recent visit to Europe, the export manager of the Cole Motor Car Co. travelled in a Cole Aero-Eight through Holland. The red brick highways impressed him as being especially fitted for automotive traffic, and he found travelling delightful. The accompanying picture shows a typical Dutch village scene with the 17th century town hall in the background. Although the automobile is not much used in Holland, he reported that interest in the Cole was keen, and it is probable that sales will be made in the near future.

Foreign Trade Opportunities

(Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from district or co-operative offices.)

34,118—An electric power company in East Africa desires to receive catalogues on Diesel oil engines.

34,120—A mercantile company in Argentina desires to secure an agency for the sale of draperies, silks, cotton goods, general dry goods, knitting machines, dyes, agricultural implements and machinery tools. References.

34,125—A commercial agent in the Netherlands desires to secure an agency for the sale throughout Europe of binder twine, manila and sisal cordage, farm machinery, wire rope, cotton goods and motor trucks. Quotations should be given c. i. f. European ports or f. o. b. New York. References.

34,128—A commercial agent in South Africa desires to secure the sole agency for the sale, in the Belgian Congo, of various lines of machinery, including agricultural implements, hardware and tools.

34,134—An inquiry has been received from a man in England wishing to secure the representation of firms for the maintenance of a permanent exhibit of American goods, such as motor fittings of all kinds suitable for English motor cars, electrical goods, fancy goods, toys, small interior fittings, kitchen appliances, locks, tools of all kinds, trimmings for motor cars, farm and garden implements, boots, collars, dental goods, surgical goods, pens and accessories, and advertising signs. References.

34,136—A merchant in Maderia desires to receive catalogues of any good make of automobiles, with a view to securing an agency for their sale in that island. No references offered.

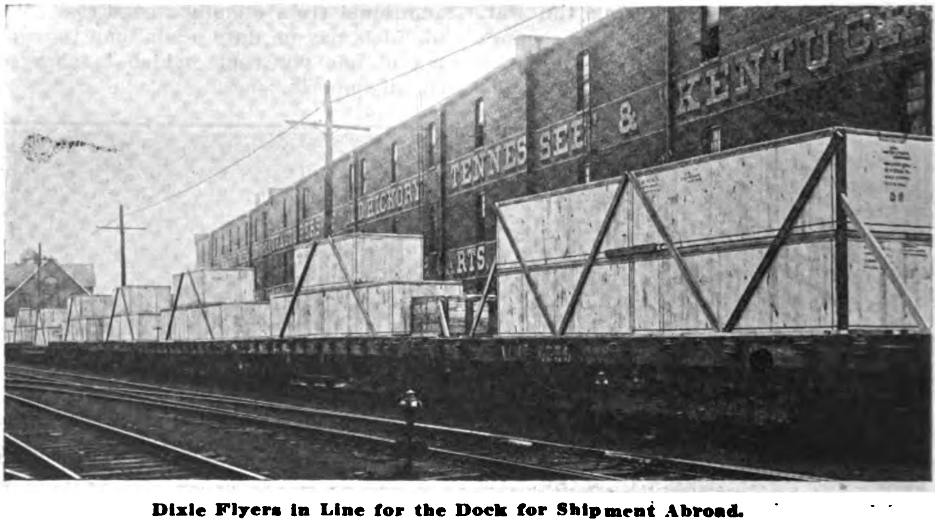
34,154—A mercantile company in India desires to secure an agency and purchase motorcycles and side cars, motor cars and lorries of different capacities, rubber tires and tubes of good quality and other motor car accessories; motor boats, launches and accessories; electric appliances and electrical goods. Quotations should be given c. i. f. Karachi or Calcutta preferred, also f. o. b. American ports. Payment to be by draft at 60 days sight through any exchange bank. References.

34,156—An engineering and trading company in India desires to be placed in communication with manufacturers only of direct and semi-direct lighting fixtures, switches, motors, farm lighting plants, centrifugal pumps, fans and heating appliances.

34,183—The partner in an import firm of South Africa is in the United States and desires to secure an agency for the sale of equipment for coal mining plants, house lighting plants, household refrigerating machines, high speed steam generating sets, briquette making machinery, concrete mixers, centrifugal pumps used for removing gravel, stone crushing machinery and electrical household contrivances. Reference.

34,189—A mercantile firm in France desires to secure an agency for the sale of a medium priced automobile. Quotations should be given c. i. f. docks, Bordeaux. Correspondence should be in French. Reference.

34,192—A manufacturing company in Greece desires to be placed in touch with manufacturers of waterproof cloth for automobile covers. No reference offered.



Dixie Flyers in Line for the Dock for Shipment Abroad.

CARANZA CONCLUDES REIGN BY INSPECTING ACASONS.

It is stated that the last official outdoor act of President Caranza of Mexico previous to losing his job was the inspection of a new shipment of American-made trucks, the product of the Acason Motor Truck Co., Detroit, Mich. The accompanying illustration shows the ex-president just after he had finished the inspection of part of the shipment. The trucks were intended for military service, but are now employed for commercial purposes.

IMPORTS OF TIRES INTO SOUTH AFRICA.

The value of all rubber tires, including inner tubes, imported into the Union of South Africa during the years 1918 and 1919 was as follows:

	1918	1919
United Kingdom....	$1,090,066	$963,903
Canada	44,875	242,288
France	76,983	400,703
Italy	50,822	78,313
Japan	10,873	3,319
United States........	548,562	714,719
Total..............	$1,822,181	$2,403,245

The customs duty on rubber tires imported into South Africa is 20 per cent. ad valorem. A rebate of three per cent. is granted on the products or manufactures of the United Kingdom and reciprocating British colonies.

At the close of the year 1919 there were approximately 9000 motor cars of all descriptions registered in the Cape Province. Most of these consisted of pleasure cars.

Most of the motor cars in use here are of American make, consisting of the lighter and medium priced cars. Most of the British cars used here are also of the lighter and cheaper models. Roads in the rural districts are very poor and the cars used are essentially employed for travelling in the cities and short runs nearer the larger centers, and the cars used are of a type particularly suited for this purpose. Few trucks or heavy touring cars are used. Roadsters and five-passenger cars whose consumption of gasoline per mile (the present price of which is $1 per gallon) is not too great are most popular.

ROBERTS RE-ELECTED PRESIDENT ST. LOUIS DEALERS.

The St. Louis Tire Dealers' association at its recent annual meeting re-elected Joseph Roberts of the Roberts Motor Tire Co. as president. The other officers chosen are as follows: Vice president, Art B. Mooney, Art B. Mooney Tire Co.; secretary, Robert E. Lee; directors, G. F. Poertner, Majestic Tire Co.; Joseph Kuemmerle, B. & K. Tire and Equipment Co.; I. Riefler, Independent Tire Co., and Auguste Chouteau, Lee Tire Service Co. New members elected were: Field-Lippman Co. and Zerwek-Grayson Co.

W. G. TOLAND TO DIRECT KELLY-SPRINGFIELD AND RIKER SALES.

William G. Toland has been appointed general truck sales manager for Hare's Motors, Inc., and will proceed to strengthen the sales organization for the distribution of Kelly-Springfield and Riker trucks. This announcement has been made by Vice President Henry Landsdale, who is in charge of distribution for Hare's Motors.

Following his school days Mr. Toland had two years of business life on the Coast and then came East. He sold advertising for the New York Herald, was in the ship building business and then became assistant New York manager for the National Cash Register Co., his duties in the latter post being to analyze and develop new fields for his wares.

In 1917 he joined the truck sales organization of the Packard Motor Car Co. of New York, of which E. S. Hare was then president, and was placed in charge of truck sales for the Springfield, Mass., branch of that company. His success led to his promotion to be truck sales manager for the New England territory and to his subsequent transfer to the larger field of the New Jersey district.

Mr. Hare's idea of selling motor freight transportation, rather than merely trucks, found ready acceptance with Mr. Toland and he was one of the most successful of the executives in Packard, New York, in working along that line. He thoroughly believes that an analysis of the prospect's transportation problem is essentially the first step to be followed by intelligent and impartial advice as to its solution and his appointment makes sure that Hare's Motors plan for merchandising trucks will be based on this substantial foundation.

AUTO SUPPLY SALESMEN VISIT HAMMERED PISTON PLANT.

The salesmen of the Automobile Supply Co., Chicago, Ill., in the course of a tour of the plants of all the automotive equipment manufacturers whose products are sold by this concern, were recently entertained by the officials of the American Hammered Piston Co., Baltimore, Md., at dinner, theater and supper. The morning following the theater party, the Chicago salesman made a very thorough inspection of the American Hammered Piston Ring Co.'s model plant. They also inspected the shops of the Bartlett-Hayward Co., the George Oldham Pneumatic Tool Co. and the Campbell Metal Window Co. A baseball game and luncheon at the Bartlett-Hayward Co. followed these tours of inspection.

After luncheon the advertising, manufacturing and sales plans of the American Hammered Pistcn Ring Co. for 1921 were the subject of a general discussion, which proved mutually beneficial.

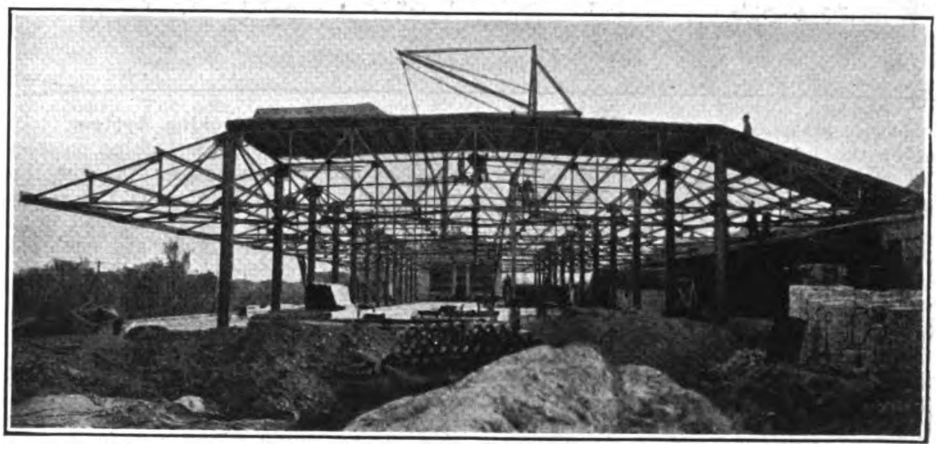
TRANSPORT STORAGE DOCK AT MT. PLEASANT, MICH.

The scope of the expansion plans under way by the Transport Truck Co., Mt. Pleasant, Mich., may be gleaned from the accompanying illustration, which was taken when work on the roof of the plant's giant new storage dock was commenced. It is now nearing completion. The photograph gives an excellent view of the frame work, which is supported by two rows of steel columns.

The dock is 90x240 feet and has a total floor area of 21,600 feet. It will add materially to the facilities for handling the business of the Transprt Truck C.,. which is reported to have been on the up grade throughout the so-called depression period.

A complete switch track system will be operated on either side of the building. The place will have facilities for export crating. This latter equipment will give fresh impetus to the business this concern is rapidly building overseas.

Detroit Steel Products Co. has increased its capitalization to $5,250,000 and declared a common stock dividend of 300%.



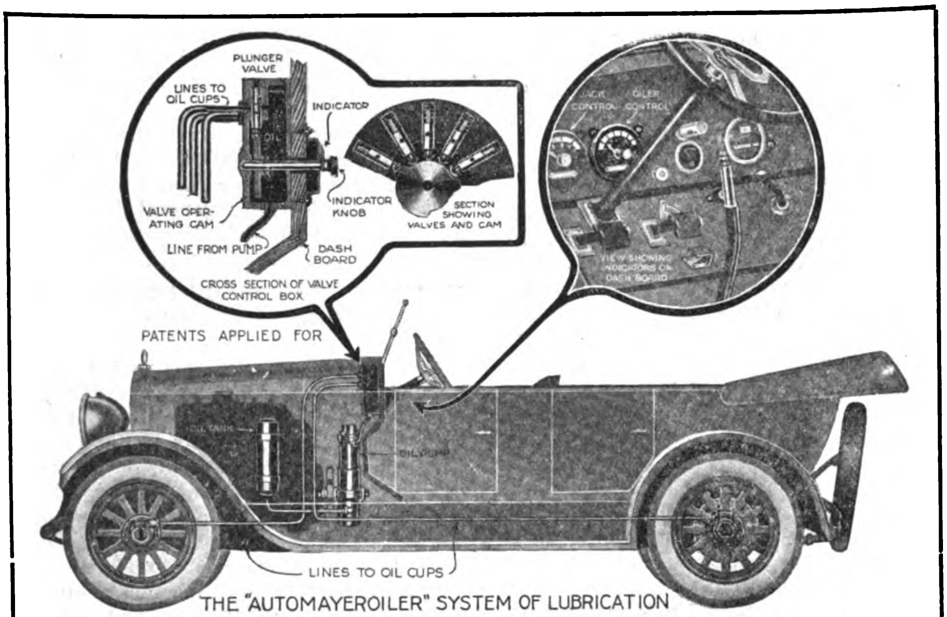
Immense New Storage Dock of Transport Truck Co., Now Nearing Completion.

Automayer Lubrication and Jacking System

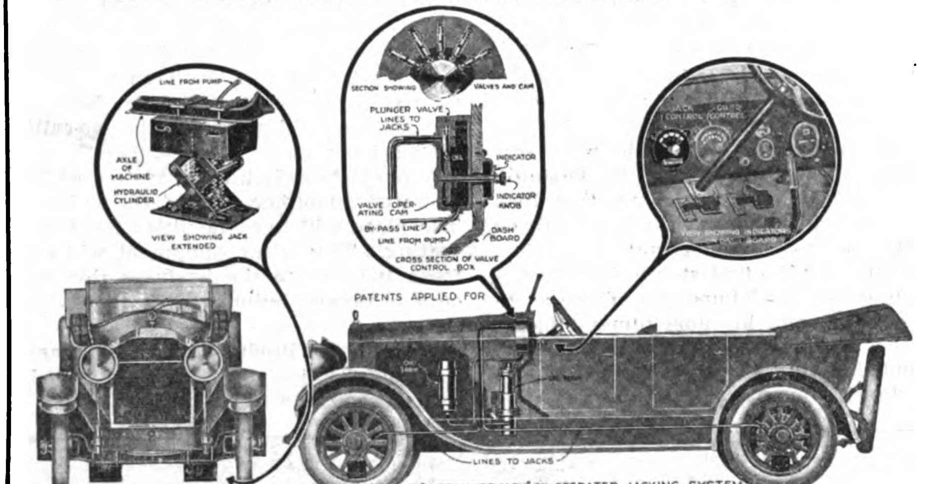
AMONG the novel devices recently brought out for automatically oiling motor cars from the dash, as well as for automatically raising a motor car off the ground is the Auto-Mayer system invented by F. D. Mayer, president of the Essenkay Products Co., 220 West Superior street, Chicago, Ill. In describing the Auto-Mayer oiling system, attention is called to the fact that ordinary lubricating oil is used, carried in the tank under the hood of the car, and drawn therefrom by a single-cylinder pump operated by gears from the magneto shaft, the oil being forced into a reservoir attached in front of the dash, under the hood, under pressure. From the reservoir ordinary brass or copper tubing forms leads to the various grease cups on the car, these grease cups being self-closing and of ball-and-socket type.

When it is desired to lubricate any part of the car, the indicator knob on the dash is turned to the number corresponding with the particular cup to be filled or, in the event that it is desired to oil all parts of the car at once, the indicator knob may be turned to a specified point and, in two minutes, every cup will be filled with oil under pressure. Turning the indicator knob actuates the cam which is located on the back of the dash and this raises the plunger of the valve, or by-pass, permitting the oil to be forced out of the reservoir into the line or lines leading to the cup or cups.

Oiling the car in this way daily may possibly entail a small waste of lubricant, but perfect and constant lubrication is insured even to the point of forcing out old oil, it is claimed, which may contain dirt or grit, and replacing it with new oil. Movable parts on the car may be served with flexible tubing.


PLUNGER VALVE
LINES TO OIL CUPS
INDICATOR
OIL
VALVE OPERATING CAM
INDICATOR KNOB
SECTION SHOWING VALVES AND CAM
LINE FROM PUMP
DASH BOARD
CROSS SECTION OF VALVE CONTROL BOX
JACK CONTROL
OILER CONTROL
VIEW SHOWING INDICATORS ON DASH BOARD
PATENTS APPLIED FOR
OIL TANK
OIL PUMP
LINES TO OIL CUPS

THE "AUTOMAYEROILER" SYSTEM OF LUBRICATION


LINE FROM PUMP
AXLE OF MACHINE
HYDRAULIC CYLINDER
VIEW SHOWING JACK EXTENDED
SECTION SHOWING
VALVES AND CAM
PLUNGER VALVE
LINES TO JACKS
OIL
INDICATOR
INDICATOR KNOB
VALVE OPERATING CAM
BY-PASS LINE
LINE FROM PUMP
DASH BOARD
CROSS SECTION OF VALVE CONTROL BOX
JACK CONTROL
OILER CONTROL
VIEW SHOWING INDICATORS ON DASH BOARD
PATENTS APPLIED FOR
OIL TANK
OIL PUMP
LINES TO JACKS

THE "AUTOMAYERJACK" OIL OPERATED JACKING SYSTEM

Operation of Jacking System.

The operation of the jacking system is practically the same as that of the lubricating system insofar as the reservoir, pump, valves, cams and lead lines are concerned. The jacks are enclosed in dust-proof cases and are attached behind the front and rear axles at four points on the car. When it is desired to raise a particular wheel, the indicator knob is turned to the number corresponding to "right rear," or "left front," as may be necessary. Oil is then forced into the hydraulic cylinder, through the line from the oil reservoir, by engaging the clutch attached to the pump, thus extending the jack and lifting the car. The jack may be closed again either by opening a by-pass or by springs, fitted for the purpose.

The car may be entirely raised from the floor by turning the knob on the dash indicator to a fixed point, thereby opening the four by-passes, after which the car may be locked in its jacked-up position, making it impossible to move the machine and taking all strain off the tires.

Both systems are controlled by safety valves and are stated to be practically fool-proof, and can be locked with a Yale key. They are protected by a number of patent claims covering all operations, attachments and use.

HARVEST TIME FOR AUTOMOBILE TRIMMERS.

The time is now ripe for automobile repair men to inaugurate a lucrative annex to their regular line of business in a trimming and top department. This work of retopping and other repairs of this nature is ordinarily best done when the cars are laid up for the cold weather.

The best way to book this class of trade is by circularizing automobile owners, using a good form letter or a nicely printed folder. The circularizing should suggest that if the owner of the car intends driving it through the winter the time is now at hand when a torn, worn, or leaky top should be replaced or repaired; worn or damaged curtains renewed and broken window lights replaced. The best time to have this done is before the rush starts just before extreme cold weather sets in.

The circularizing should also suggest that if the car is to be laid up for the winter it is an advantage to book an order early for necessary repair and replacement work, repainting, reupholstering, or whatever needs to be done to put the machine in good condition for an early spring start.

The fellow who is annoyed by having to wait for his car to be refitted in the spring is the chap who delays ordering his work until the last minute and then expects the repairman to finish his job in a couple of days.

Some well planned solicitation along these lines ought to make a busy fall and winter season for auto trimmers, top makers and painters.

REMOVING INSULATION.

In removing insulation from stranded wires be careful not to cut any of the fine threads. These are so small that it is an easy matter to slice off five or six with the insulation, but each does its share in carrying current to the lamps.

TO PROTECT WIRE FROM RUST.

Melt mineral pitch and add to it 1/15th part by weight of coal tar and 1/20th part by weight of very fine quartz sand, and immerse the wire in the mixture. The coating becomes hard in 24 hours.

Ingenious Weaver Wheel Alignment Indicator

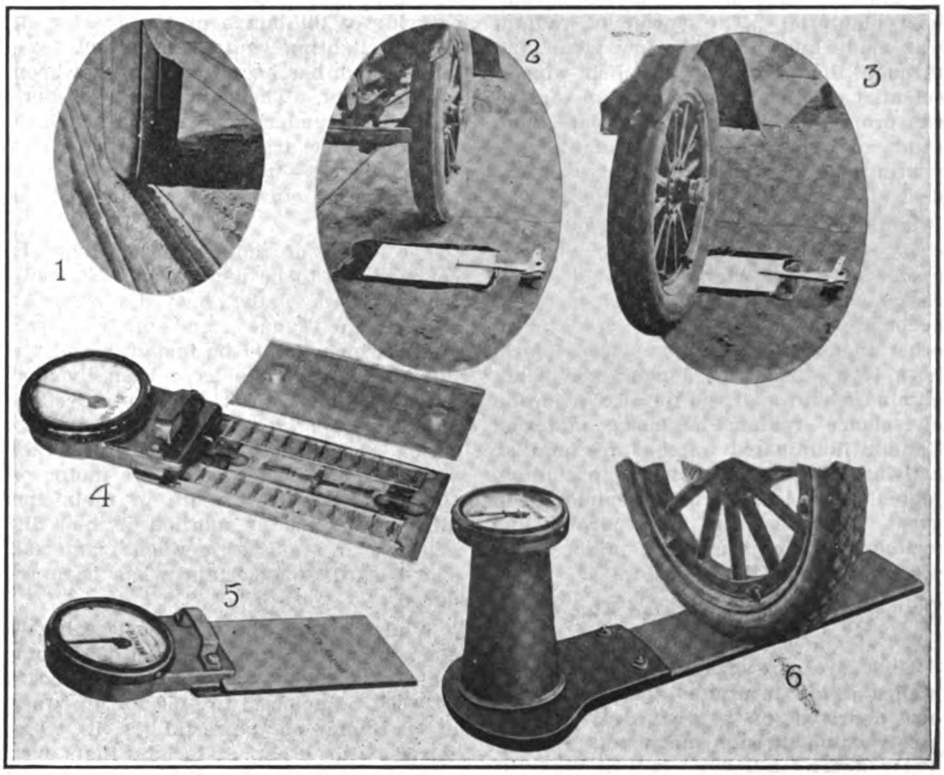
IT IS stated that the greatest single factor responsible for unnecessary wear on tires is misalignment of wheels, front or rear. It is perfectly evident that when the wheels are parallel the wear on the tires is at a minimum, since the wheels simply roll along the road or pavement with no friction. Any deviation from this parallelism, however, develops a side thrust or "drag" on the tires that is very destructive, especially when driving over pavement or hard surface roads. To be more explicit, if the front wheels of a car are out of true alignment one inch, it naturally follows that the tires must be dragged sideways three inches in every revolution. Figuring upon this basis, a 30-inch tire would be dragged sideways 168 feet in every mile that the car is driven. Therefore, when one considers that statistics show that from 50 to 75 per cent. of the cars being driven today have their wheels out of alignment to a greater or lesser degree, it is not difficult to understand what is causing the enormous consumption of tires, and also that by properly aligning the wheels, millions of dollars could be saved the motoring public each year.

It may be asked why it is that this condition has continued year after year without attracting more attention, and the only answer seems to be that up to this time it has been difficult for the car owner to detect the misalignment of the wheels on his car unless it existed to a very excessive degree.

The Weaver Manufacturing Co., Springfield, Ill., has brought out an ingenious and at the same time comparatively simple device by which any misalignment of wheels may be detected, measured and recorded. This is the Weaver wheel alignment indicator, illustrations of which are shown herewith, at 4, 5 and 6. The inventor of this device noted that a car having the wheels in perfect alignment left a perfectly clean, evenly balanced impression in sand or oil, while one having its wheels more or less out of alignment constantly pushed the soft surface of the road to the side towards which the wheels inclined. This effect of a properly aligned and misaligned wheel is shown at 1.

This condition convinced the inventor that the amount of the side thrust on the tire could be measured in some way so as to accurately record the actual misalignment of the tire while the car was in motion.

His first real experiment consisted of placing a piece of card board on a heavily greased spot on a cement road with a mark on the card board to indicate the amount of travel as the misaligned wheel passed over it. He then drove a car with the wheels quite radically out of line over this card board with the result that the card board was drawn sideways a distance corresponding to the misalignment of the wheels. It will be readily understood that in view of the fact that the other wheel was still in contact with the rigid surface of the road, the side thrust on the tire caused by the misalignment of the wheel was instantly relieved as soon as the one wheel passed on to the greased card board, which would not offer the same rigid resistance as the hard surface of the road. The instant the wheel passed on to the card board the wheels were immediately relieved of all side thrust and consequently endeavored to assume a normal position. It is plain to see, therefore, that the movement of the card board indicated the degree to which the wheels were out of true alignment. This experiment is illustrated at 2 and 3.



Wheel Alignment Indicator Brought Out by the Weaver Manufacturing Co., Springfield, Ill.: Fig. 1 Shows Track of Properly Aligned and Misaligned Wheel; Figs. 2 and 3 Illustrate Initial Experiments Leading to Perfection of Weaver Indicator; Portable Type Is Seen at Figs. 4 and 5, While Fig. 6 Is the Larger or Stationary Type.

It, therefore, remained for the inventor to perfect a means for accurately recording these measurements and the Weaver Wheel Alignment Indicator is the result. The principle is simple in the extreme. The instrument consists only of two flat steel plates with roller bearings between, the upper plate being accurately connected with a recording mechanism which registers the movement of the plate on the dial. The construction of the portable type of Weaver Wheel Alignment Indicator is shown at 4 and 5.

The method of recording by means of the hand on the dial, the misalignment of the different sizes of wheels was, of course, a somewhat more complicated undertaking, but this has been carefully worked out by the manufacturers of this instrument and they are prepared to stand back of their claim that the reading of these instruments is accurate to the minutest fraction of an inch.

The advent of this device, therefore, makes it possible for the car owner to run his car slowly over the plate of this instrument and a glance at the dial will show him with perfect accuracy the misalignment of his car wheels while the car is in motion or, in other words, the true running alignment which it has heretofore been absolutely impossible to record.

The Weaver Wheel Alignment Indicator is made in two sizes. At 6 is shown the larger or stationary type designed for installing in the runway of the garage so that cars passing in or out will pass over it. This type is equipped with an electric bell which rings if the wheels are out of alignment more than the minimum degree which the garage man chooses to establish. Ordinarily, it is considered that three-eighths of an inch misalignment is not serious and the alignment indicator can be set so that the bell will not ring unless the misalignment is more than this.

The smaller or portable type of instrument, shown at 5, is designed for use in the shop in aligning the wheels after the stationary instrument has shown that the wheels need attention. Both types, however, are stated to be sufficiently rugged for service under the heaviest passenger car or commercial truck.

Utility of Radium as a Safety Element

(By ARTHUR ROEDER, Radium Information Service, New York City.)

RADIUM, the most mysterious and most powerful element known to science, which has the greatest power of all discovered sources of energy, has now been linked with the safety movement and will lend its power to the prevention of avoidable accidents. So great is its power that one gram is sufficient to raise a ton of water from the freezing to the boiling point. If one ton of it were harnessed to a ship equipped with 1500 horsepower engines the ship would be propelled at the rate of 15 knots an hour for 30 years.

Radium is best known to the world through its curative properties in the treatment of cancer and through its commercial value in making radium luminous material The power of radium was made known only a few years ago through the efforts of a Polish woman scientist, and a French and an American professor. Radium now treats thousands of cases of cancer annually, preventing death and eliminating a great deal of suffering.

Radium's role in industry as a life saver is less spectacular, but perhaps even more important than it is as a therapeutic agent. The great mass of accidents in factories, in mines and in other industrial institutions where darkness is a creator of danger, are being eliminated through the newest invention of science—radium luminous material. Radium illuminated watches are familiar articles. The same material that illuminates these is now being employed in great factories on all power line switches where fumbling might mean electrocution to the operator.

Gauges; Electric Switches, Etc., Illuminated.

High pressure gauges, which are installed as an insurance against dangers are deprived of a great deal of their safety value through inconstant lighting. Their dependability as indicators is increased tremendously through making them safe 24 hours a day by the application of radium luminous material, which is invariably luminous in the dark. Steam gauges and water gauges of all sorts are making use of radium to increase safety.

Electric switches are often set in places which are unlighted. This includes electric lighting equipment, which is usually visible only after the light it controls has been turned on. A spot of radium luminous material on the bottom of switch makes them easily located in the dark, so that in emergency they may quickly be made use of.

Likewise, a fire alarm or a fire extinguisher is deprived of a good deal of its efficiency through being invisible in the dark. Radium luminous material acts as a quick locater for them. Telephones which are often necessarily found quickly in the dark in emergencies, various emergency call bells and revolvers are made more useful through the application of "Undark." Gun sights, illuminated, insure accuracy of aim in the dark. The need of luminating poison bottles, so that they may stand out warningly in the dark has been demonstrated too often to need further dwelling on. An interesting safety device is the safe combination whose dial is radium luminated, so that no artificial light need be used for it.

The industrial uses of radium luminous material are many. Bolts that are necessarily attached to the dark under portions of machines and equipment are being touched with dabs of this luminous material with a consequent great saving of bloodshed. In mines where the carrying of oil lamps or the placing of electric lighting equipment is not feasible, radium has been found to be a boon to humanity. There are dark corners in the dark underground channels which miners must traverse, corners where danger lurks—these are made safe through the unvarying luminosity of radium.

The value of radium to mariners is commencing to be recognized. Not only the compass dials, but the steering wheels, the gauges, and other instruments which should be instantly and uninterruptedly visible have been touched with radium. Motorists, motorcyclists and the operators of any machinery which has indicating dials, or gauges which tell of the speed of the motor or the quantity and mixture of fuels and oils, are finding the solution of their difficulties in radium luminous material. The hazard of uncertainty has been reduced.

While radium is the most valuable element in the world—a gram of radium, which is about a thimbleful, costs $120,000, as opposed to $150 for an ounce of platinum—so powerful is it when mixed with other materials that even the minutest particle is effective in making material self-luminous for years. It is this quality which makes radium luminous commercially possible.

The great value of radium is due to its scarcity, and to the great difficulty in isolating it after it has been found. Much of the radium of the world is now found in America, in carnotite fields. A great portion of this comes from the Undark Radium mines in the Paradox valley of Colorado.

The ore is found in narrow seams in the ground. It is sorted and packed in 100-pound sacks and transported 60 miles to the nearest railroad station on the backs of burros and mules. Thence it is shipped in carload lots 2900 miles across the continent to an extraction plant in Orange, N. J. Two hundred fifty tons of ore treated with an equal amount of chemicals and water yields one gram, which is about the size of a pin head.

The power of radium lies in the penetrating character of its rays, which disintegrate and travel at the rate of 3000 miles a quarter of a second.

In addition to the use of radium luminous material on machinery in industrial plants, it is used extensively for the marking of any corner or spot which should be visible in the dark. Angles of tables and chairs, corners in rooms, numbers to indicate cubby holes or doorways on which there is no other illumination are touched with a spot of "Undark." Even the valuable electric torch increases its efficiency when it has a touch of radium on it so that it can be reached instantly in an emergency in the dark.

When other lights fail, when fuses blow out, wires break down—radium will glow dependably without danger of explosion or of burning.

The employment of radium to help solve our medical and industrial problems of life safety is as yet in the first stages of its development. What the future will bring, no one knows.

IMPORTANCE OF CRANKCASE LUBRICATION.

A recent test showed that to prevent excessive engine wearing the oil in the crankcase should be changed at least every 1500 miles, preferably every 1000 miles.

A new engine that was run 6000 miles with the oil changed at proper intervals, upon being disassembled, showed no signs of wear. The same engine, reassembled and run 6000 miles with the old oil plus new oil as needed, upon inspection, showed a wear of .015 inches.

Truck and passenger car manufacturers recommend that for better performance and longer life, crankcases be drained every 1000 miles, the engine flushed with kerosene and new oil added.

TAR REMOVER FOR TAKING PAINT OFF GLASS.

The tar removers which are designed to clean up machines after being run over newly tarred roads are also excellent for removing ordinary house paint from window glass.

If accessory dealers will advertise their line of tar removers as suitable for this purpose they will soon find themselves serving customers who do not own automobiles.

CLEANING MATERIALS.

Washing soda, kerosene and plain soap and water should be the cleaning agents used by car owners for cleaning parts, tools, etc., about the garage. Gasoline is not as good as these others and the cost is considerably greater. For taking grease spots out of clothing some of the inflammable fluids now on the market are better than the present grades of gasoline.

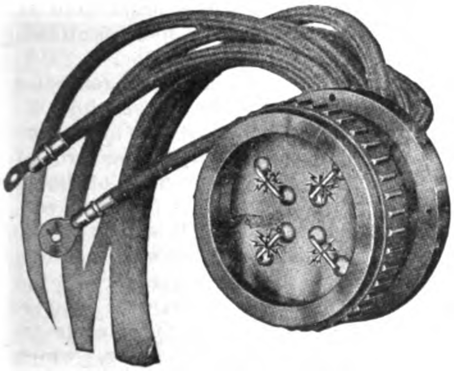
HERZ SPARK-GAS-SAVER AND "OSCILLUM."

The Pro-Mo-Tor Fabricating Corporation, successors to Herz & Co., is bringing out a new device called the "Oscillum," which is a combination spark controller, gas saver and spark intensifier.

The Herz company made a regular spark gap as early as 1902, which was attached to each individual spark plug, but the individual gap, being located directly over the spark plug and subject to temperature changes and jars on the motor, is stated to never have proven very satisfactory.

Letters patent have been granted to G. L. Herz, who has been the designer of a great many automobile accessories for the past 24 years, on a new invention which is claimed to combine all the advantages of the auxiliary gap and at the same time to eliminate its disadvantages.

This new spark gas saver, "Oscillum," attached to the dashboard, not only saves gasoline, but also shows whether or not all spark plugs are working; it indicates the broken or sooted plug and makes the motor run with more power and regularity.


Herz Spark Gas Saver Oscillum.

The Pro-Mo-Tor Corporation offers the Spark Gas Saver "Oscillum" complete, with cables and cable terminals to be attached to the Ford car at $6.50 postpaid (introductory offer, list price $7.50), or, in conjunction with a set of the well known Herz plugs, Bougie Mercedes, for Ford cars, at $11.50. The instrument alone, without cables, is obtainable at $5. It can be used for any four-cylinder car. "Oscillum" instruments, for six and eight-cylinder motors, are now in preparation.

In this connection it is interesting to note that a plan for the distribution of profits has been conceived by the Pro-Mo-Tor Corporation which provides for the free distribution of stock among the dealers in proportion to their sales. The corporation has set aside one-sixth of its capital stock for this purpose and since there is no preferred stock, no bonds or debentures outstanding, the offer amounts to a turning over of one-sixth of the entire business, assets as well as earnings, to the dealers.

The Pro-Mo-Tor Fabricating Corporation will be glad to explain its proposition to any dealer interested, and a letter addressed to 182 Locust avenue, New York, will promptly bring a little booklet which contains full information.

Recent Publications of Interest to Trade

NEW DIRECTORY AND MARKET DATA BOOK.

Crain's Market Data Book and Directory of Class, Trade and Technical Papers, now on the press, promises to be of unusual interest to advertisers generally and users of trade and technical papers in particular. It not only lists all of the business publications of the United States and Canada, giving circulations, rates, type page sizes, closing dates, etc., but supplies a market analysis of each trade, profession and industry. Thus the reader is given the basic facts of each line in which he may be interested, including its buying power, buying methods, character of requirements, etc. The volume, which is bound in cloth and contains nearly 500 pages, is published by G. D. Crain, Jr., 417 South Dearborn street, Chicago. The price is $5. Orders in advance of publication are being accepted at the rate of $3.75.

BURD PISTON RING DIRECTORY.

The 1920-1921 edition of the Burd Piston Ring Directory, published by the Burd High Compression Ring Co., Rockford, Ill., is off the press and is claimed to be the most comprehensive compilation in existence devoted to the subject of piston rings. It contains 192 pages, measuring four by seven inches, with cover printed in three colors.

This book gives the piston ring dimensions, year, model and number of cylinders for practically all makes and models of automobiles, trucks, tractors, motorcycles, gas engines, marine engines, air planes, etc., and in addition to the tabulations of sizes it contains much helpful information for ordering, handling and installing piston rings. It contains also valuable tables of standards that every repair man should have.

A copy will be mailed, on request, to any garage or repair shop by the company.

BASSICK MANUFACTURING CO. HAS NEW HOUSE ORGAN.

The Bassick Bugler, the breezy house organ of the Bassick Manufacturing Co., Chicago, maker of the Secret Service auto lock, Thompson's Graphite Penetration oil and the Alemite High-Pressure lubricating system, has just made its initial bow to the trade. It is well gotten up, full of sales pep and should prove interesting reading to jobbers. The editor is evidently too retiring to print his name, but he has good writing knowledge and is well up in the mechanics of house-organ lay-outs.

NEW STARRETT CATALOGUE.

The L. S. Starrett Co., Athol, Mass., manufacturer, has issued its new catalogue, which is in improved form both as to appearance and arrangement over all its previous compilations, but lists some 21 additional new tools. Among these may be noted an improved Universal bevel protractor, a new micrometer caliper gauge, tool maker's button, metric micrometer caliper, micrometer caliper heads, micrometer caliper sets, metric fillet or radius gauges, V-block and clamp set and firm joint dividers.

AMBU SERVICE MANUALS.

Service stations and repair shops, frequently handicapped in making repairs and adjustments by a lack of complete knowledge of the internal wiring of various starting and lighting systems, will undoubtedly find use for the Ambu Service Manuals, published by the American Bureau of Engineering, 1601 South Michigan avenue, Chicago, Ill. These manuals contain working drawings and complete data and the information is classified and indexed in a manner that makes it easy for one to find the particular subject in which he is interested.

AMBU
Remy
SERVICE MANUAL
AMBU
Delco
SERVICE MANUAL
AMBU
Autolite
SERVICE MANUAL

NEVILLE MANUFACTURING CO. CHANGES QUARTERS.

The Neville Steering Wheel & Manufacturing Co., manufacturer of the Neville More Room Steering Wheel, has outgrown its manufacturing facilities in Detroit and has moved to Wayne, Mich., where it is installed in a new brick and cement building The new plant is one-story in height, 50x280 feet, with plenty of light and modern factory facilities.

The new quarters will more than triple the manufacturing space devoted to the More Room Steering Wheel and enable the company to take care of the rapidly increasing domestic and foreign demand.

PORTER CAR MADE IN BRIDGEPORT.

The Porter car, formerly the F. R. P., is now being manufactured by the American-British Manufacturing Corporation, Bridgeport, Conn. Morton W. Smith Co., Inc., of New York city will handle the distribution of the entire production of the factory, which is limied to about 350 cars a year.

Gen. Nelson A. Miles, Chauncey M. Depew and John Jacob Astor were judges of the second automobile run to be held in this country.

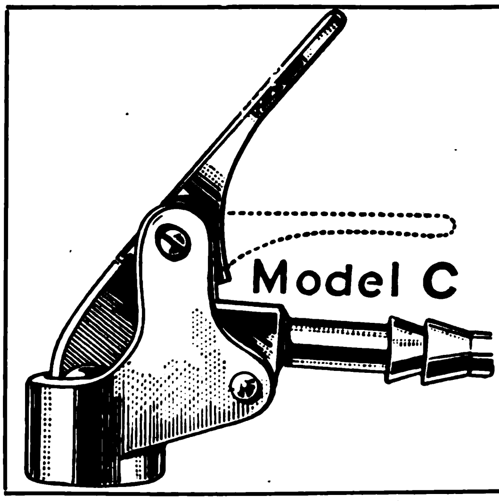
LOX-ON AIR CHUCKS.

There are illustrated, herewith, two models of the Lox-On air chuck, which is being marketed by the Automatic Safety Tire Valve Corporation, 1753 Broadway, New York city. The Lox-On principle for air chucks is stated to have completely revolutionized the old "push-on" methods, with increased efficiency and saving in expense. One of the latest additions to the line is the Model C, which is made of solid brass (nickeled) for direct pumping garage equipment, engine and hand pumps.

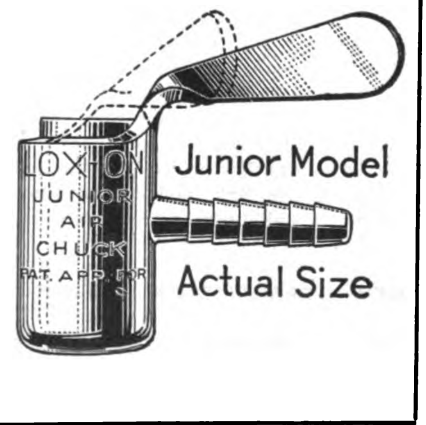
The Lox-On slips over the valve stem and then is caused to grip it by merely pressing down the lever with the thumb. It grips tightly, completely preventing any leakage. To release, simply push up the lever and lift it off. There is claimed to be absolutely no pushing or pulling of the rubber cylinders over the valve threads and consequently they do not have to be frequently replaced. The Lox-On cannot be jammed over the valve shoulder because of the metal baffle plate which protects it and the tire valve.

A smaller model, called the Lox-On Junior, has just been added to the line, and is stated to be as efficient in the class of service for which it is designed as the other members of the Lox-On family.

The list price of the Model C is $1.25 anywhere in the United States. Sold singly or six on an attractive display card. Furnished for one-quarter inch I. D. hose unless otherwise specified, but can be supplied also for 3/16 and ⅜-inch I. D. hose if desired. The list price of the Lox-On Junior is 40 cents each, sold singly or 12 on a display card. Furnished for 3/16-inch I. D. hose, without deflating pin, unless otherwise specified, or may be obtained for ¼ or ⅜-inch I. D. hose if desired.



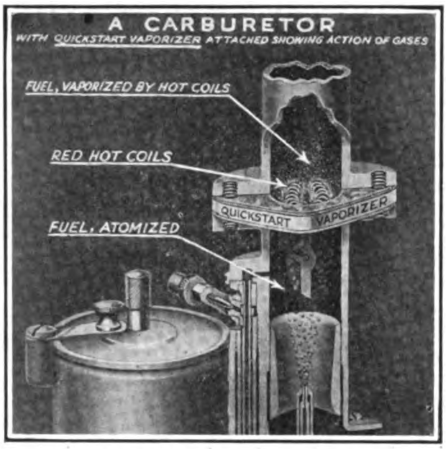
Lox-On Air Chuck, Model C.



Junior Model, Lox-On Air Chuck.

QUICKSTART VAPORIZER.

The Quickstart Vaporizer, made by the Scientific Devices Co., 15 Park row, New York city, makes use of a well known principle; i. e., that to overcome cold weather troubles, means should be provided for instantly vaporizing the heavy gasoline more or less finely atomized at the carburetor. This, it is claimed, can only be done by the application of heat. Exhaust heat or hot water is not available until after the engine has started, but electric heat from the battery is always and instantly available. The theory is that the best place to apply this heat is at the carburetor, where the gasoline is atomized and has not yet collected in streams on the walls of the inlet pipe. The heat should be at the carburetor where it can be aided by the pulverizing action of the air on the gasoline. Under low temperature conditions the gasoline now commonly supplied is difficult to vaporize because of its low vapor pressure.


A CARBURETOR
WITH QUICKSTART VAPORIZER ATTACHED SHOWING ACTION OF GASES
FUEL, VAPORIZED BY HOT COILS
RED HOT COILS
FUEL, ATOMIZED
QUICKSTART VAPORIZER

Interior View of Quickstart Vaporizer.

The Quickstart Vaporizer functions to supply heat and raise the vapor pressure of the unvaporized particles of gasoline that are carried in the stream of working fluid after it has left the carburetor. Even at extremely low temperatures a certain proportion of the fuel has been vaporized and the Quickstart takes advantage of this fact and supplies heat to the remaining unvaporized liquid particles as they are carried forward.

The Quickstart Vaporizer is of a gasket form to be installed in the place of the regular gasket. between the flanges of the intake manifold and the carburetor, and is connected, through a switch, to the storage battery. Its operation is as follows: Before pressing the starting button, or hand cranking, the switch is closed for 15 seconds—taking about 10 amperes of current. The motor is then started and the first intake stroke causes air to be drawn into the air passage of the carburetor, around the spray jet, where by reason of the velocity of the air stream and the pressure differential the gasoline is injected from the spray jet in the form of a fine spray of globules. Ordinarily, under warm weather conditions, this spray, presenting an enormous surface area in the aggregate, is quickly vaporized by the air, and the mixture of vaporized gasoline and air is drawn into the cylinder, properly proportioned, ready for compression and ignition.

Under low temperature conditions, however, when the vapor pressure of the gasoline is low, the small particles comprising the spray are not readily vaporized by the air stream. The air stream carries the particles until they strike against the walls of the intake manifold, where they condense into drops and the air, carrying too small a proportion of liquid fuel vapor to make up an ignitable gas, passes on into the cylinder.

The Quickstart, it is claimed, remedies just this condition. In 15 seconds its heating element is heated red hot. The air enters the carburetor, passes around the spray jet, entrains a mist of liquid fuel and projects this mist fairly in contact with the surface of this heated element. Immediately upon striking this heated surface the vapor pressure of the fuel is raised by the increase in temperature to a point where the fuel is instantly converted into vapor, which mixes thoroughly with the air to form a properly proportioned working gas, is drawn into the cylinders and is there compressed and readily ignited.

The price of the Quickstart Vaporizer is $6, complete and ready for installation, and it is claimed that anyone can attach it in 30 minutes. In ordering the name and model of car and carburetor should be given.

MARTIN AND DELAMOTTE'S PROCESS OF NICKEL PLATING.

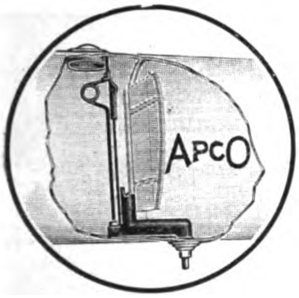
Prepare a bath of:

Water	3.3 gallons
Citric acid	2¾ pounds
Ammonium chloride or ammonium sulphate	1 pound
Ammonium nitrate	1 pound

The bath is heated to 175 degrees Fahrenheit and gradually saturated with freshly precipitated nickel hydrate. It is then removed from the fire, saturated with one-half gallon of ammonia and diluted with water to a bulk of 5½ gallons. It is now allowed to become cold. One pound of ammonium carbonate is then added, the fluid is allowed to settle and is finally filtered. It is blackish-blue and shows 11 degrees Baume. A white layer of nickel of great density and brilliancy is deposited by electrolysis. The temperature of the bath, when used, should be about 120 degrees Fahrenheit. A thicker coating can be obtained by adding hydrate of potassium or of sodium.

TWO NEW APCO ACCESSORIES.

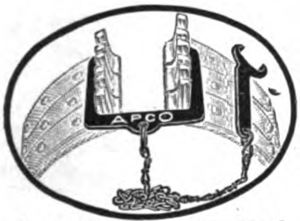
The Apco Manufacturing Co., Providence, R. I., is just putting on the market two interesting new items in the Apco Gasoline Reserve and Apco Transmission Tool.



Apco Gasoline Reserve.

The Apco Gasoline Reserve holds a gallon of gasoline in reserve, which can be used by throwing the valve spring over a quarter of a turn. When this reserve supply is used the tank cannot be filled until valve is reset, which is done by turning valve spring back to its original position. The installation is only the matter of a minute of time, no tools being necessary other than the hands. The filler cap is simply removed, the reserve snapped in place and the filler cap replaced. There is nothing to wear out or get out of order and once installed, it is claimed that it will last a life time. It is made from malleable iron and spring steel, finished in white nickel. It comes packed in a carton and list price is $1.50.

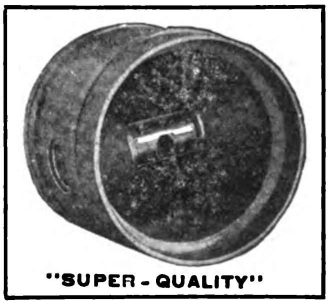
Transmission Tool.



Apco Transmission Tool.

The holding of the transmission bands together while assembling is often times an annoying problem to repair men, and the Apco transmission tool is designed to eliminate this difficulty. The clamp shown in the cut holds the bands in perfect alignment and it may be put on instantly. The wrench is drop forged, milled to the exact size of the adjustment nuts, and the chain eliminates the chance of losing the wrench in the transmission case. The entire tool is finished in black enamel. It comes packed one in a carton; list price, $1.

SUPER-QUALITY PISTONS.



Pistons for Ford Motors.

The Automotive Products Corporation, Hazelton, Pa., is making a line of Super-Quality pistons for Ford motors in standard and over sizes, which it is now supplying direct to the Ford Motor Co., Detroit. It is stated to be a perfectly balanced piston, made to conform to the new Ford specifications, answers every micrometer test and is ready for immediate installation. It is a turned piston of the finest gray iron, mechanically accurate in every detail and an exact stock duplicate of the new Ford stock type. It is guaranteed by the maker, all defective items being cheerfully replaced. The list price is $1.15 each, plus five per cent. war tax.

It is also of interest to note that this company is also making, among other products, such as step-cut piston rings, phosphor bronze individually cast bushings, etc., a line of replacement wrist pins for every type of passenger car.

PIONEER MIRRORSCOPES.

One of the most convenient and economical accessories that is now being offered in the field of automobile mirrors and similar devices is the Pioneer Mirrorscope, manufactured by the Brewer-Titchener Corporation, Cortland, N. Y. The claims made in favor of this accessory are as follows:

Simple: Can be attached and adjusted in a minute. A screw driver the only tool required. It is attached to the windshield of open cars and just above the windshield of closed cars. Can be instantly adjusted up or down or sidewise.

Accurate: Will remain properly focussed over the roughest road without readjustment.

Economical: The price of the Mirrorscope is so small that it is negligible compared with its usefulness.

Durable: Made of the very best material and workmanship. It will last longer than the car.

Handsome: Being protected by the top, it is always neat and clean.

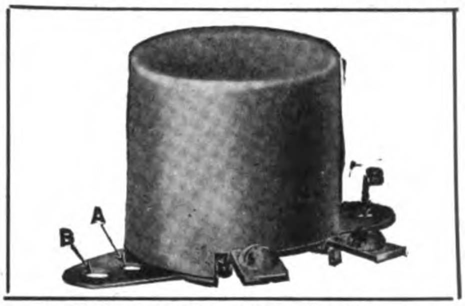
Safe: By placing before the driver a clear view of the road behind, the Pioneer Mirroscope greatly assists in the elimination of accidents, and adds to comfort and safety in motoring.

To aid the dealer in bringing the Pioneer Mirrorscope to the attention of the public the company offers an assortment on an attractive display easel board for the show window or counter.

Actual Photograph of Approaching Train as Seen in the Pioneer Mirrorscope.

GENERATOR CUT-OUTS MARKETED BY NEW YORK COIL CO.

The New York Coil Co. of 338 Pearl street, New York city, has placed on the market a line of generator cut-outs consisting of two models. A special model, for Ford cars only, fits on the round generator in exactly the position and by the same fastening means as heretofore employed. The second model, termed the Universal, is adaptable to all cars using a cut-out, as the lugs are provided with two sets of differently spaced holes so that the Universal model will instantly fit on all generator mountings or may be attached to the dash without boring holes or addition of any wires.



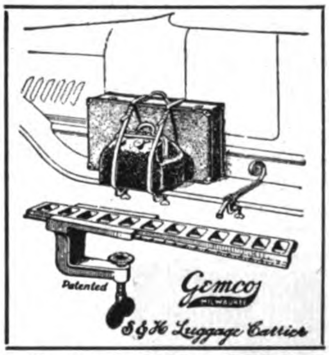
Universal Generator Cut-Out.

This device is claimed to be made with instrument precision, is much smaller, more handsome in appearance and sets a new standard for generator cut-outs.

The list price is $2.50, with a very liberal discount to the trade, and full descriptive matter will be sent on request.

GEMCO LUGGAGE CARRIER.

A good luggage carrier is an almost indispensable adjunct to many types of motor cars. The Gemco Manufacturing Co., 742 South Pierce street, Milwaukee, Wis., offers a form which can be attached to the running board of any car, and conveniently supports suit cases, traveling bags and parcels. The device consists of two main castings, each containing an inner casting, which slides to the necessary width adaptable for carrying the particular case or parcels desired, the adjustment giving a variance of 15 inches. Straps are drawn through openings in the main casting to suit the size of the baggage and to rigidly fasten it. Bundles or parcels may extend over the luggage carrier.



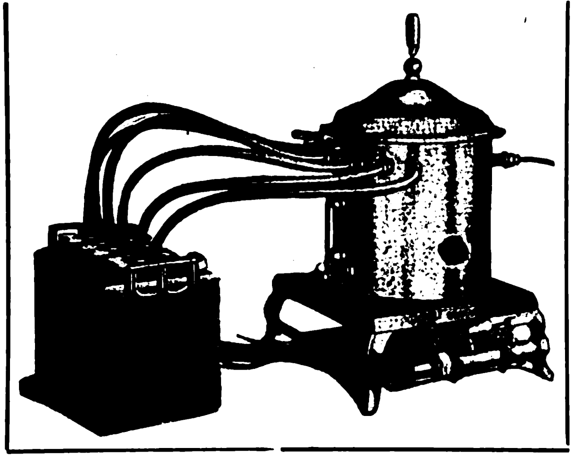
Gemco Luggage Carrier.

The attachment to the running board of the car, which is quickly accomplished, is by two thumb screws. The list price for the complete carrier is $4.10.

AUTOMATIC LUBRICATION BY THE VANOILER.

A new system of lubrication that is claimed to be automatic in its action has been placed on the market by the Advanced Products Corporation, Philadelphia, Pa. The device, which is known as a Vanoiler, is the invention of A. A. Van Orsdale, who is president of the company.

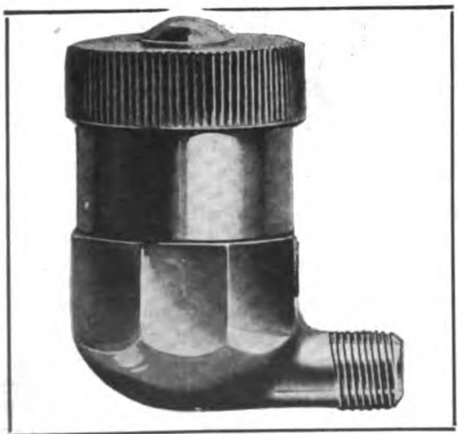
The action of the Vanoiler is dependent upon the vibration of the car, and its delivery of lubricant is in direct proportion to the need. When the car is not in operation lubrication automatically ceases. Oil is fed only when needed, where needed and in the quantity needed.



Ibisco Automatic Battery Steamer.

The principle of operation is simple. Where the cap of the device screws down tightly on the cup it presses on a steel spring which releases a valve and starts the flow of oil to the pan. When the machine is at rest an automatic seal is formed which keeps the oil from running through the bottom of the cup. When the machine is in motion, however, the vibration is sufficient to cause an overflow of oil from the pan, which continues while the machine is in motion, thus insuring a constant supply of oil to the part requiring lubrication. The amount of oil fed to the bearings is easily regulated, as the sensitivity of feeding is adjustable by moving the center piece up or down, which raises or lowers the constant oil level in the pan.

It is also claimed that the Vanoiler adds to appearance of the car.



The Vanoiler, a New Lubricating Device.

IBISCO BATTERY STEAMER.

Among the modern essentials for service station equipment may be mentioned the Ibisco Battery Steamer and Still which is being marketed by Bailey-Drake, Inc., 1120 South Michigan avenue, Chicago, Ill. This apparatus is designed by men who understand the needs of battery service stations. One or all six cells of a battery can be removed by the Ibisco in from three to five minutes with no danger of breaking the jars or injuring the battery in any way. The battery can be opened in a few minutes, making it possible to immediately show a customer the exact condition of his cells.

The Ibisco steamer is made of 14-gauge spun aluminum. It has no seams. No metal other than aluminum and brass comes in contact with the water. All models are equipped with safety valves, which keep the steam at low level pressure. The still attachment distills chemically pure water continuously and, while not in use as a steamer, supplies the fluid at the rate of about a gallon an hour. The amount of fuel required is very small and almost any kind of heating apparatus may be utilized. It seldom requires cleaning out but, by unscrewing the brass screws the top of the boiler can be easily removed for cleansing.

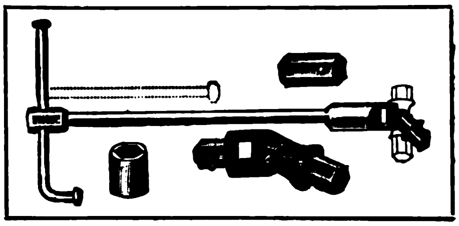
The outstanding features claimed for the Ibisco equipment are economy of operation and small amount of space required. The No. 1 Ibisco steamer and still is equipped with an automatic valve so that the operator can attach it direct to the municipal water supply. It is stated to require absolutely no attention. The faucet is simply turned on, and the automatic valve does the rest. The No. 3 model is identical with the No. 1 except that it does not have the automatic valve. A sight water gauge shows the level of the water in the boiler at all times. This outfit is fed by hand. The steamer may be obtained without the still.

The list prices are as follows: No. 1, combination steamer and still (automatic), $65; No. 2, automatic steamer (without still), $52.50; No. 3, combination steamer and still (not automatic), $50; No. 4, steamer only (not automatic), $37.50. Prices quoted do not include heating devices which, however, can be furnished if desired.

LANE'S SOCKET WRENCH SETS.

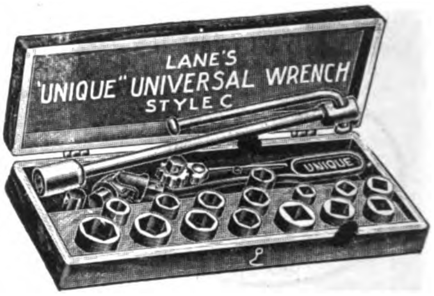
In the accompanying illustrations are presented two examples of the line of Unique Lane tools manufactured by the Will B. Lane Unique Tool Co., 180 North Dearborn street, Chicago, Ill.

The list price of style A socket wrench set is $4. It is especially commended to the attention of the legion of users of Lane's Standard and Ford ratchet sets, as it adds tremendously to the value of those sets because all the sockets can be used on either the adapter pin or universal joint. The A set consists of a wrench 11 inches long, universal joint, adapter pin and one No. 1 half-inch Unique socket to fit quarter-inch hexagon nut or 5/16-inch hexagon cap screw. The adapter pin fits the wrench in place of the joint and converts it into a T handle wrench in five seconds. It comes packed in a cardboard box.



Lane Universal Socket Wrench, Style A Set.

The Unique universal socket wrench set, style C, list price $12, is stated to be the handiest combination of socket wrenches that can be conceived. It consists of a Lane Unique ratchet wrench, an 11-inch sliding T handle socket wrench, universal joint, adapter pin, eight Unique machine made broached steel sockets, with hexagon openings, from 7/16 to ⅞ inch, and six Unique machine made steel sockets, with square openings from one-quarter to 9/16 inch by 16ths. This combination is useful to both mechanic and car owner. Separate wrenches to do the same work that can be accomplished with this combination would, it is claimed, cost 10 times the price. This set is put up in a strong hard wood varnished case.



Lane Universal Socket Wrench Set, Style C.

HARDENING COMPOUND FOR THIN STEEL.

Dr. Hartmann recommends to add about one pound of rosin to the usual mixture composed of one gallon of train oil, two pounds of beef suet and 4½ ounces of wax. He also recommends another compound consisting of 95 parts of spermaceti oil, 10 of melted tallow, 4½ of neats foot oil, one-half of pitch and 1½ of rosin.

FRENCH POLISHING FOR METALS.

Mix one part of washed ferric oxide with 50 parts of magnesium carbonate. Moisten a rag with water or alcohol, dip it into the powder, rub the articles thoroughly and dry them with soft leather.

WORKRITE HYDROMETER OUTFIT NO. 1.

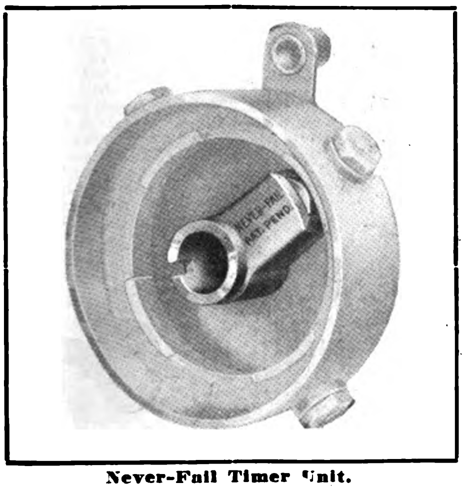
Among the comprehensive line of WorkRite hydrometers and outfits, may be noted the No. 1 outfit, for car owners and small garages, illustrated. This consists of a standard type A hydrometer fitted into a quart jar for holding distilled water. The large rubber washer on the hydrometer fits the mouth of the bottle, making it proof against dust and evaporation. Both the hydrometer and its contents are always clean and ready for use. Blank spaces on the label of the bottle are convenient for the filling in of the last date the battery was tested and filled. Four years of successful sales have made this outfit a standard article in automotive supplies.

No. 1 WorkRite Hydrometer Outfit.

It is manufactured by the Workrite Manufacturing Co., Cleveland, O., which is also supplying the type A hydrometer for general use, separate from the bottle, the No. 2 outfit for use with house lighting plants and auto batteries, which consists of the type A hydrometer fitted into the screw cap of a gallon jar with handle, and the No. 3 outfit for fast and accurate work in garages and battery stations, consisting of type B hydrometer with a gallon water jar with a soft rubber lined mouth designed to prevent breakage. The No. 3 hydrometer is especially designed for quick reading and rough use around a garage.

NEVER-FAIL TIMER UNIT.

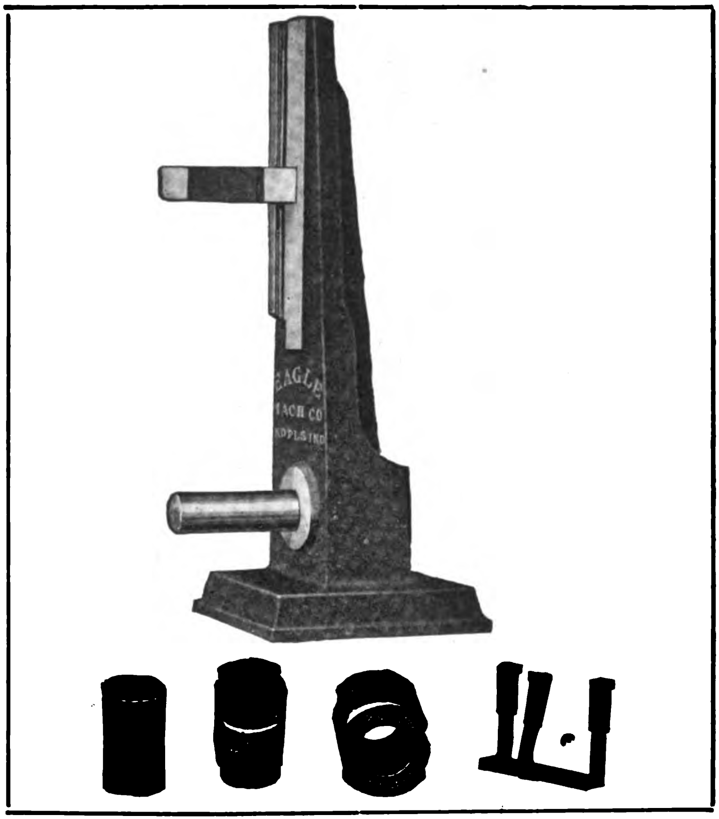
The Never-Fail Timer Unit, marketed by the Never-Fail Carburetor Co., 191 Jackson avenue, Long Island City, N. Y., is claimed to double the life of the timer shell from the fact that it will operate in used shells; that it keeps the roller on the track and requires no oil. It is guaranteed to give satisfaction and afford real economy.


Never-Fail Timer Unit.

EAGLE UNIVERSAL ALIGNING FIXTURE.

One of the most essential tools in a garage or service station is an aligning fixture with which to line up the connecting rods and pistons, so that they will be parallel with the bore of the cylinder. The Eagle Machine Co., Indianapolis, Ind., has designed a tool which enables the mechanic to detect the slightest twist or bend in the rod or a wrist pin hole in the piston which has been bored or reamed out of alignment. By the use of this handy tool the garage man can save considerable time in fitting and assembling his pistons and rods and can be sure that the job is in perfect alignment.

The Eagle Universal aligning fixture embodies several new features, such as enabling garagemen to line up his connecting rod and pin alone or the connecting rod and piston combined. It also has a set of three Universal bushings which will fit all sizes of connecting rod bearings, ranging from 1¼ inch to 2½ inch and all intermediate sizes.


The Eagle Universal Aligning Fixture with Accurate Bushings.

In actual operation the lower connecting rod bearing is clamped on the correct size bushing as it is fitted to the crank shaft, and this bushing is placed on the hardened and ground steel arbor of the machine; and to see if the connecting rod is twisted, the piston pin is clamped in its place. Then the square will show whether it is out of line and how much. After all the pins are lined up the pistons are placed on the rods in the usual manner and the bushing is slipped on the arbor and the square is removed by a thumb nut, leaving a straight, smooth surface. By placing the piston over against this surface it can be readily seen whether it is in line or not. If it is out of line, slip the bushings off the pin and place the vise clamps in the vise and put the connecting rod in the clamps. Bend rod until piston lays straight with the surface. The bushings being solid the rod never has to be removed until the work is finished.

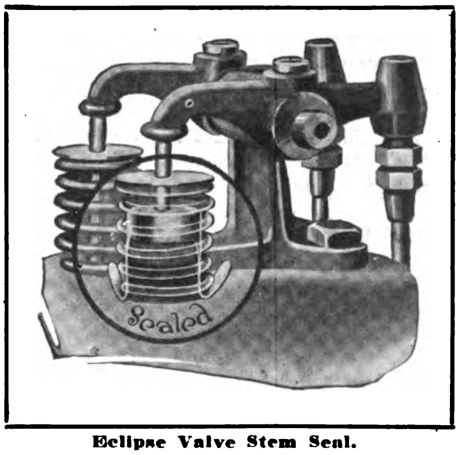
To prove if the rod is straight reverse it on the arbor and if it lays up against surface both ways it is perfectly straight.

Dealers' proposition will be furnished upon request to the Eagle Machine Co., 24 North Noble street, Indianapolis, Ind.

ECLIPSE VALVE STEM SEALS AND OILERS.

The Eclipse valve stem seal and oiler consists of a metal container with suitable packing to withstand the heat and wear to which valves are subjected. It fits on any motor that has 5/16-inch and ⅜-inch diameter valve stems—estimated to be about 75 per cent. of all motors made. It should be applied to the intake valves to obviate the suction of air into the cylinder on the suction stroke on low throttle, which causes missing and weak firing. These seals are suitable for both overhead and L-head motors. The oiling feature lubricates the stem and keeps the road dust out.

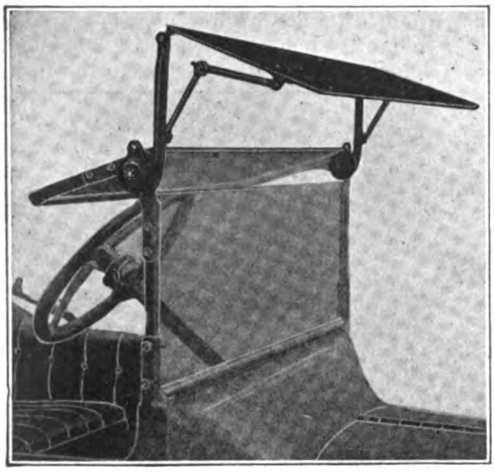
The Eclipse valve stem seals and oilers are manufactured by the Eclipse Accessories Manufacturing Co., 1138 East 112th street, Cleveland, O. They come packed in sizes, four in a box, retailing at $1, and six in a box, $1.50; felts for Chevrolet cars, 12 in a box, 25 cents.



Eclipse Valve Stem Seal.

CORCORLITE SPOT LAMP.

The Corcorlite Spot Lamp, Model 495, was offered for the first time to the trade at the recent Automotive Equipment show at Chicago, and is claimed by the manufacturer, the Thomas J. Corcoran Lamp Co, Winton place, Cincinnati, O., to embody a number of new, desirable features. For example, it can be converted into a trouble lamp by the mere turning of a thumb screw and the switch to operate it is unique but simple.



Loudon's Adjustable Storm and Sun Shade.

An attractive mirror, especially designed for this lamp, is an optional addition that may be obtained with it. The outside streamline body, single shell, is made of brass and finished in black enamel. The lamp is of the double-contact type, with bulb 21 candle power, six to eight-volt nitrogen. It comes furnished with four feet of lamp cord, and its construction is of the highest quality material and workmanship.

Corcorlite Spot Lamp, Model 495.

The retail price of the Corcorlite Spot Lamp, Model 495, is $4.95; with mirror, $5.75. Jobbers and dealers are invited to write for special proposition.

PREVENTION OF SCREWS RUSTING.

The screws in machines exposed to heat and moist air soon rust in even if oil is used, which makes the taking apart of a machine a difficult task. By dipping the screws, before putting them in place, in a thin paste of graphite and oil, they can be removed without difficulty.

LOUDON ADJUSTABLE STORM AND SUNSHADE.

The windshield on the ordinary Ford runabout and touring car is not made with a sub-frame and, consequently, is not adapted for the attachment of other types of shades and at the same time to permit the opening of the windshield without removing the shade. Still other types of shades do not allow the lowering of the top without removing the shade. Loudon's adjustable storm and sun shade is designed so as to be attached absolutely independent of either the top or the opening and closing of the windshield, and is thus particularly suitable for use on Ford runabouts or touring cars. The Loudon shade is 10 inches wide, affording sufficient projection in front of the windshield at any angle to protect the driver and passengers from the discomfort of sun glare or the fear of accidents caused by a rain or snow-clouded windshield. It is adjustable to any angle desired, ranging from horizontal to nearly vertical. It is, in short, an all-weather shade that is always in place and ready for any adjustment. It can be installed by anyone in five to 10 mintues by following the simple instructions furnished with the attachment.

The list price is $7.50, and it is manufactured and distributed by Loudon, Inc., 1303 West Lake street, Minneapolis, Minn.

IDEAL LOCK FOR FORD CARS.

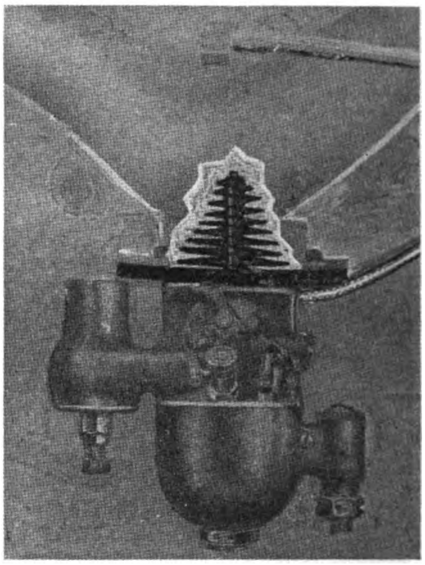
The Ideal lock for Ford cars, being marketed by the Penn Pressed Metal Co., Newton avenue and Line street, Camden, N. J., is stated to be the result of several years' experimentation in the manufacture of automobile locks and its every part and principle has been specially designed for its particular service. The advanced cleverness of the automobile thief has made useless many devices that were formerly considered adequate for protection.

The Ideal lock is provided with hardened steel locking cams that take hold of the steering with a grip of steel that is stated to be impossible to break, and locks the front wheels at any desired angle instantly. The simplicity and quickness of its installation will immediately appeal to dealers and owners of cars, as there is no cutting or fitting to be done. It is simple in operation. For instant locking and unlocking turn key and move lever; the lock cannot be removed when in locked position. The Ideal lock has been inspected and approved by the Underwriters Laboratories. A good proposition is offered to dealers which means big profits and satisfied customers.

The Penn Co. also makes other types of locks, including a combination auto lock.

POMEROY'S PATENTED GASAFIER.

There are now many devices on the market designed to give a more complete vaporization of gasoline, kerosene and similar liquid fuels. The Pomeroy "Gasafier" has been thoroughly tested out in the past 2½ years by the maker, the B. H. Pomeroy Electrical Works, 118 Ridgeway avenue, Rochester, N. Y., and is stated to work efficiently.

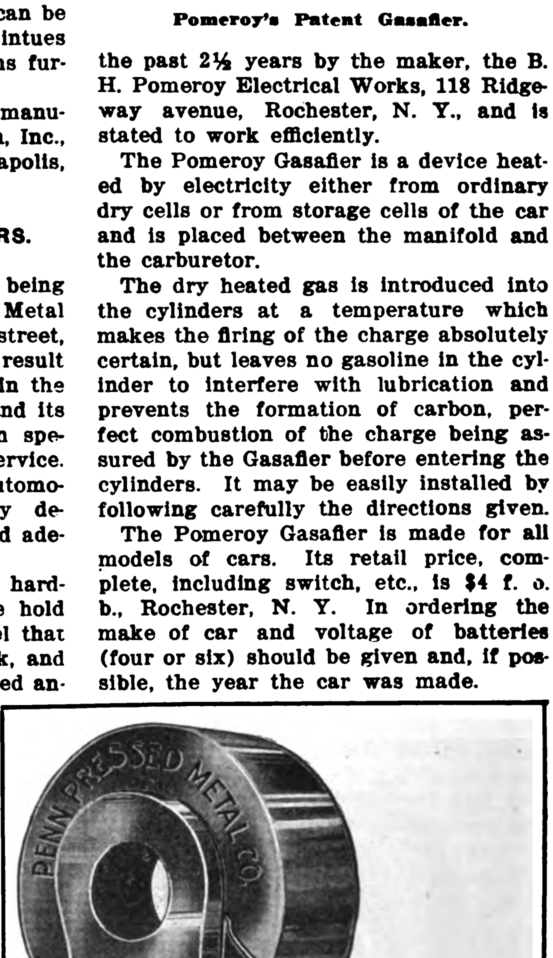


Pomeroy's Patent Gasafier.

The Pomeroy Gasafier is a device heated by electricity either from ordinary dry cells or from storage cells of the car and is placed between the manifold and the carburetor.

The dry heated gas is introduced into the cylinders at a temperature which makes the firing of the charge absolutely certain, but leaves no gasoline in the cylinder to interfere with lubrication and prevents the formation of carbon, perfect combustion of the charge being assured by the Gasafier before entering the cylinders. It may be easily installed by following carefully the directions given.

The Pomeroy Gasafier is made for all models of cars. Its retail price, complete, including switch, etc., is $4 f. o. b., Rochester, N. Y. In ordering the make of car and voltage of batteries (four or six) should be given and, if possible, the year the car was made.



Ideal Lock for Ford Cars.

RECORD OF BUILDING OPERATIONS FOR DECEMBER

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Alabama.

Mobile—Adams Machinery Co.; 3-story concrete show room and storage station, glass front.

California.

Stockton—Matteson Mfg. Co.; factory for tractor production; $150,000.

Connecticut.

Hartford—Paul and Anna Ruffins, 203 Front St.; 1-story brick and public garage, 36x66; $10,000.

Norwalk—J. S. Fairbanks, 438 Atlantic Ave.; 1-story frame battery station, 50x140; $60,000.

So. Norwalk—Jos. S. Fairbanks, Water and South Sts.; 1-story service station and garage; $10,000.

Georgia.

Atlanta—McKee Motors Co.; 2 and 4-story garage.

Cave Spring—City Garage; 2-story garage.

Gainesville—E. L. Sisson; garage; $75,000.

Illinois.

Chicago:

Andrew Benson, care L. E. Russell, 25 N. Dearborn St.; 1-story garage and repair shop; $9000.

C. A. Bergquist, 5638 S. Artesian Ave.; 1-story frame garage.

Paul Biagioni, 4746 W. Park Ave.; 1-story brick garage.

D. Blankenship, 4420 Greenwood Ave.; 1-story frame garage.

Wm. Blau, 1318 Eddy St.; 1-story brick garage.

L. Brockly, 817 E. 90th place; 1-story brick garage.

J. A. Burgess, 512 N. Lavergne Ave.; 1-story frame garage.

Jos. Calonino, 4024 Congress St.; 1-story frame garage.

C. A. Carlson, 1668 Edgewater Ave.; 1-story frame garage.

Geo. Carlson, 6419 S. Green St.; 1-story frame garage.

Philip Carnsillo, 3862 Archer Ave.; 1-story frame garage.

M. Carr, 1303 Winnemac Ave.; 1-story frame garage.

M. Cichewski; 1-story brick garage at 4391-93 Archer Ave.; $12,000.

Wm. Conley, 4526 S. Albany Ave.; 1-story frame garage.

A. W. Cook, 3941 N. Ashland Ave.; 1-story frame garage.

W. H. Crasma, 1550 E. 94th St.; 1-story frame garage.

E. W. Crowell, 3522 W. Adams St.; 1-story frame garage.

H. M. Dillon, 6745 Cregier Ave.; 1-story brick garage.

Andrew R. Dole, care Geo. H. Grussing, 154 W. Randolph St.; 2-story garage and repair shop at 1050 Arcade Court; $50,000.

M. Durand, 618 N. Kedzie Ave.; 1-story frame garage.

C. Fahlberg, 6609 S. Troy St.; 1-story frame garage.

Wm. J. Farrar, 4947 Fletcher St.; 1-story frame garage.

F. A. Fidler, 8249 Harper Ave.; 1-story frame garage.

C. Fiedler, 3335 Southport Ave.; 1-story frame garage.

M. Fitzpatrick, 7044 Prairie Ave.; 1-story frame garage.

Henry Friedman, 4721 Indiana Ave.; 1-story frame garage.

F. Freud, 2110 Cullom Ave.; 1-story frame garage.

Herman J. Friese, 37 N. Long Ave.; 1-story frame garage.

Jos E. Fuller, 6047 S. Whipple St.; 1-story frame garage.

S. Gena, 2747 N. Artersian Ave.; 1-story frame garage.

A. L. Himelblau, 179 W. Wash. St.; 1-story brick and stone trim garage. 100x125; $75,000.

Holton Seelye Co., 140 S. Dearborn St.; 1 and 2-story brick garage, 72x100, at 3022 S. Wabash Ave.

Independent Packing Co., 31st and Halsted Sts.; 1-story brick garage, 75x125, at 41st St. and Emerald Ave.; $25,000.

Matthew Kandel, 3629 Archer Ave.; 1-story frame garage.

John E. Katen, 1121 N. Ridgeway Ave.; 1-story frame garage.

Dr. A. H. Keats; 1-story garage and repair shop, at 1547-49 Devon Ave.; $2000.

Jos. H. Kirk, care W. G. Kohlfeldt, 64 E. Van Buren St.; 1-story garage and repair shop at 3108-16 Emerald Ave.; $50,000.

Jos. Lang, 2148 Grace St.; 1-story frame garage.

Chas. H. Laniford, 2524 Blaine place; 1-story frame garage.

O. Larsen, 7612 Rhodes Ave.; 1-story frame garage.

T. J. Lavin, 7310 Oglesby Ave.; 1-story brick garage.

J. E. Lawrence, 2511 Seminary Ave.; 1-story brick garage.

T. S. Leake, 6552 Woodlawn Ave.; 1-story brick garage.

Rudolph Leifortz, 4522 N. St. Louis Ave.; 1-story frame garage.

E. C. Leonard, care A. P. Dippold, 4747 S. Cottage Grove Ave.; 1-story garage and accessory shop at 5547-55 Harper Ave.; $90,000.

A. M. Levy, 1229 Winnemac Ave.; 1-story frame garage.

Dr. W. H. Liffler, 2352 Diversey Ave.; 1-story frame garage.

A. Lilley, 7447 St. Lawrence Ave.; 1-story frame garage.

C. Locassis, 917 Bernice Ave.; 1-story frame garage.

A. Loll, 2324 N. Kostner Ave.; 1-story frame garage.

W. F. J. Lutz, 3918 N. Ashland Ave.; 1-story frame garage.

Wm. E Lowry, 4649 N. Springfield Ave.; 1-story frame garage.

J. McGregory, 7919 East End Ave.; 1-story frame garage.

W. B. Martin, 181 E. Walton place; 1-story frame garage.

M. Maskin, 1900 N. Albany Ave.; 1-story frame garage.

G. W. Milliken, 543 W. Garfield Blvd.; 1-story frame garage.

Jos Moeller, 1436 Rosemont Ave.; 1-story frame garage.

E. H. Morey, 650 N. Long Ave.; 1-story frame garage.

North Side Oldsmobile Co., care F. W. R. Lewis, 3046 Lincoln Ave.; 1-story sales room and service station at 5206-8 Broadway.

Oakland-Phillips Co., 931 Wilson Ave.; 1-story garage and show room; $100,000.

L. E. Olson, 1035 N. Leamington Ave.; one-story frame garage.

Parmelee Transfer Co., 202 S. Clark St.; 1-story brick garage, 150x180, at Monroe and Racine Sts.; $100,000.

R. Sahlin, 5247 Byren St.; 1-story frame garage.

St. Joseph's Hospital, Garfield and Burling Sts.; 1-story brick garage.

B. Sarner, 10,453 Wabash Ave.; 1-story frame garage.

Chas. Saxon, 34 W. 113th place; 1-story frame garage.

E. F. Schaaf, 4219 N. Winchester Ave.; 1-story brick garage.

A. Schade, 1649 N. Springfield Ave.; 1-story frame garage.

V. Schofflein, 7835 S. Morgan St.; 1-story brick garage.

A. Schweig, 366 N. Hamlin Ave.; 1-story frame garage.

Chas. Sitler, 1735 N. Crawford Ave.; 1-story frame garage.

Wm. W. Sleight, 7229 East End Ave.; 1-story frame garage.

John Spiriman, 11,313 Watt Ave.; 1-story frame garage.

Thos. Stock, 1104 W. 104th place; 1-story frame garage.

Standard Oil Co., 910 S. Mich. Ave.; 8 1-story service stations, various locations; $10,000 each.

Staver Motor Car Co., 100 W. Garfield Blvd.; 1-story service station at State St. and Garfield Blvd.; $150,000.

Dr. Robt. F. Steele, 11,349 S. Irving Ave.; 1-story frame garage.

Henry Stricker, 5916 N. Hermitage Ave.; 1-story frame garage.

A. Strilky, 5727 Indiana Ave.; 1-story frame garage.

August Strom, 6949 S. Park Ave.; 1-story frame garage.

Byron Thurber, 2704 N. Talman Ave.; 1-story brick garage, 42x22; $2500.

Mrs. J. Trogoff, 3133 Logan Blvd.; 1-story garage at 2729 N. Kimball Ave.; $3500.

L. Wagner, 7022 Laflin St.; 1-story frame garage.

Wallace & Kellogg, room 808, 6. N. Clark St.; 2-story brick and stone garage, 40x50; $15,000.

J. R. Walters, 4155 Gladys Ave.; 1-story brick garage.

C. G. Weaver, 6609 S. Troy St.; 1-story frame garage.

John A. Webber, 5251 Carpenter St.; 1-story frame garage.

Mrs. Weederquist, 1625 Winona St.; 1-story frame garage.

Wm. Wertz, 6747 Emerald Ave.; 1-story frame garage.

T. M. White, 2314 S. Robey St.; alterations and addition to garage and accessory shop at 2316-18 S. Robey St.

G. B. Williams, 8250 Cornell Ave.; 1-story tile garage.

Thos. Williams, 915 N. Trumbull Ave.; 1-story frame garage.

H. Wisman, 2107 Montrose Ave.; 1-story frame garage.

M. Wolf, 5284 N. Luna Ave.; 1-story concrete garage.

J. Wunderlee, 1209 Eddy St.; 1-story frame garage.

P. H. Ziegler, 7008 Harper Ave.; 1-story frame garage.

Decatur—Community Service Station Co.; 1-story filling station; $7000.

Dixon—Roy Barron, 213 W. 1st St., addition to blacksmith shop for show room and service station.

Harrisburg—C. O. Cummins; 1-story garage and repair shop at Main and Church Sts.; $35,000.

Highland Park—Herman Hettler Lumber Co., 2601 Elston Ave., Chicago; 1-story garage and repair shop; $40,000.

Oak Park:

Oakland Sales Co.; 1-story sales room and garage at 4700 Wash. Blvd.

Miss Dora Optner, 1106 Austin Ave.; addition to garage and repair shop at 22 W. Chicago Ave.; $12,000.

Peoria:

Peoria Auto Parts Co.; 1-story brick public garage; $120,000.

T. A. Rennett, 501 Kettelle St.; 1-story frame garage.

R. G. Weber., 319 Frye Ave.; 1-story brick garage.

Springfield:

Andrew Gardner, 1929 S. Pasfield St.; 1-story frame garage.

Jos. Graser, 1020 S. 4th St.; 1-story brick garage.

E. Richter, 509 N. 5th St.; 1-story brick garage.

Watseka—Standard Oil Co.; 1-story oil and service station at 5th and Walnut Sts.; $17,000.

Indiana.

Hartford City—Leslie Housemand; 30-foot addition to garage and repair shop.

Indianapolis—W. C. and T. B. Brydon, 124 S. Bolton Ave.; 1-story concrete block garage, 46x173, at 4415 E. Wash. St.; $15,000.

Montpelier—Brock Oil Products Co.; 1-story filling station at High and Main Sts.

Valparaiso—W. A. Stimpson; addition to garage for repair shop.

Iowa.

Davenport—G. Koester; 3-story garage and service station at Front and Brady Sts.; $150,000.

Marengo—Thomas & Johnson; large addition to garage and repair shop.

Oskaloosa—O. E. Quaintance; garage and repair shop at 219-23 E. High Ave.

Paullina—H. E. Hoistman; addition to garage and repair shop.

Kansas.

Attica—Texas Petroleum Co.; filling station.

Beloit—Kansas-Texas Petroleum Co.; Wichita; service station.

Concordia—Mr. Warren; remodel Butterfield & Sons Garage, 7th and Broadway.

Dodge City—Will Joerling, Producers' Consolidated Oil Co.; gasoline filling station at Spruce St. and 2nd Ave.

Elkhart—E. H. Van Hosen, west garage of Elkhart Motor Co.; machine shop.

Halstead:

Kansas & Texas Petroleum Co.; filling station at 1st and Main Sts.; $18,000.

Standard Oil Co.; filling station at Jones Corner.

Liberal—Liberal Auto Supply Co.; garage.

Prescott—City Garage; repairs; Alva Messer and Herbert and Will Johnson, owners.

Salina—Henry Bruning, Kansas City; improvements on G. L. Hudkins' Ford agency, including tile floor.

Satanta—J. J. Fletcher; improvements on Satanta Garage.

Sedan:

Guy Field; auto storage building on S. E. Walker lots, S. Chautauqua St.

W. H. Sproul; filling station, 40x40, Ford Garage Bldg.

Topeka—Trefry Motor Co., 1014 Kansas Ave.; 1-story garage and repair shop at 9th and Quincy Sts.; $100,000.

Washington—Kansas-Texas Petroleum Co.; filling station.

Kentucky.

Bowling Green—Chevrolet Motor Co.; 1-story brick garage, 70x114; $19,000.

Covington:

Jeff Davis, 2720 Latonia Ave.; 1-story metal garage.

H. L. Eilerson, 4t6h St. and Clifton Ave.; 1-story concrete garage.

Mrs. Kate Kellar, 510 Pike St.; 1-story metal garage.

Wm. Koenig, 205 Sterritt St.; 1-story cement garage.

Laurena H. Odenthal, 43rd St. and Vermont Ave.; 1-story cement garage.

Andrew Porpas, 10 W. 9th St.; 1-story metal garage.

Mrs. Kate Rensman, 1722 Woodburn Ave.; 1-story metal garage.

Louisville—Western Petroleum Co.; 1-story brick and stone filling station, 16x30.

Newport:

Bell Davis, 1003 Saratoga St.; 1-story metal garage.

August Dirringer, 123 Beech Ave.; 1-story metal garage.

Emil Roth, 712 Central Ave.; 1-story metal garage.

Taylorsville—M. S. Cheek; garage.

Maine.

Auburn—Darling Auto Co.; 2-story brick public garage, 99x79.

Maryland.

Baltimore—Wm C. Hipple, North Ave. and Chester St.; two-story addition, 80x80, to garage.

Hagerstown—Hagerstown Storage & Transfer Co.; rebuild garage.

Massachusetts.

Beverly—Paul S. Watson, 434 Rantoul St.; 1-story public garage and repair shop, 60x97 and 31x46.

New Bedford—Mrs. Jennie McMurray, 6 Park place; 1-story cement block public garage, rear 6 Park place.

Oak Bluffs—Mary A. Rice, care Frank F. Rice, Ocean View hotel; 1-story public garage, 18x60.

Springfield—Nat. Auto. Parking Co., 145 State St.; 8-story public garage, 100x190, at Dwight, Court and New Sts.; $700,000.

Worcester:

Conroy Motor Co., 871 Main St.; 2-story garage and service building, 87x145, at Wellington St. and Murray Ave.

Harris Edenberg, 22 Brown St.; 1-story concrete block public garage, 40x80, at Pond and Grace Sts.

Nathan Moore, 338 Plantation St.; 1-story concrete block public garage, 30x40.

Michigan.

Alma—Johnson & Thompson; 1-story garage and service station, at Superior St. and Park Ave.; $35,000.

Coldwater—Van Aken garage and repair shop; to be rebuilt.

Detroit:

H. Friedman, 122 Garfield Ave.; 1-story public garage, 45x190; $60,000.

Kessler & Sons, 462 Dix Ave.; 1-story brick garage, 30x150; $10,000.

Stearns Detroit Auto Co.; alterations and 1-story top addition, 74x200, to garage at 1084 E. Jefferson Ave.; $60,000.

Hastings—Mich. Cooperative Oil Co.; 1-story filling station.

Ludington—Stearns Motor Mfg. Co.; 1-story foundry, 70x100; $50,000.

Marshall—Standard Oil Co.; 1-story filling station at State and Grand Sts.

Negaunee—Standard Oil Co.; filling station.

Minnesota.

Aitkin—Ames Motor Co.; concrete addition to garage and repair shop.

Duluth:

H. J. Borium, 320 E. 2nd St.; 1-story frame garage.

Martin Erickson, 428 8th Ave.; 1-story frame garage.

R. Oklind, 908 E. 7th St.; 1-story frame garage.

S. Palmquist, 4531 Cambridge St.; 1-story frame garage.

Minneapolis:

Army & Navy Club, 1000 Hennepin Ave.; 1-story metal garage.

J. M. Bertels, 6311 Newton Ave., N.; 1-story frame garage.

C. H. Butler, 3835 Lyndale Ave.; 1-story frame garage.

A. L. Fletcher, 5100 Emerson Ave.; 1-story stucco garage.

A. Frederickson, 3238 4th St., N.; 1-story frame garage.

Milton Goldstein, 4600 1st Ave.; 1-story stucco garage.

N. E. Hangfien, 3512 Cedar Ave.; 1-story frame garage.

Ole Johnson 3319 6th St., N.; 1-story frame garage.

Aaron Karlin, 525 Lyndale Ave., N.; 1-story frame garage.

Geo. Lambert, 3249 Longfellow Ave 1-story frame garage.

O. F. Lundgreen, 4529 James Ave.; 1-story frame garage.

Mortgage Redemption Co., 3107 Lyndale Ave.; 1-story frame garage.

A. G. Olson, 3009 Clinton Ave.; 1-story frame garage.

Wm. Pettit, 2525 Pillsbury Ave.; 1-story frame garage.

Mrs. Emma Siemore, 2008 Nicollet Ave; 1-story concrete garage.

E. E. Voll, 1814 Newton Ave.; 1-story stucco garage.

Missouri.

Doniphay—C. F. Allen; enlarge garage and repair shop on Lucust St.

Ironton—H. L. Bell, garage, south of post-office on Main St.

Jefferson City—Heisinger Bros.; garage.

Kansas City:

A. D. Allen & Co., 515 Reliance Bldg.; filling stations at Hardin, Cameron, Butler, Richmond, Plattsburg and Higginsville, Mo.

E. G. Clear, 921 Cherry St.; 1-story brick and stone trim garage, 50x132.

M. A. Clippinger, Pres. B. C. Clippinger & Son Mfg. Co.; motor truck factory building; site, 100x130; $25,000.

Kansas City Refining Sales Co., 1st St. and Troup Ave.; 1-story filling station, 16x72.

C. H. Weideman, 4017 Penn St.; 1-story brick and stone garage, 50x80, at 4011 Penn St.; $5000.

M. L. White; 2-story brick and stone trim garage 100x160.

St. Louis:

Battery Service Co.; 1-story garage and service station at 22nd and Locust Sts.; $100,000.

Dodge Bros. Motor Co., enlargement to factory, 7th St. and Division Ave., E. St Louis.

Frampton Motor Car Co., Leonard and Locust Sts.; alterations to garage; $20,000.

Hudson-Frampton Motor Co., Leonard and Locust Sts.; 1-story garage and repair shop.

Meletio Garage Co.; addition, 162x140, to garage; $50,000.

Wm. A. Meletio; 1-story garage and repair shop; $50,000.

Southwest City—John Keith, Independence, Kan.; garage, in Oylar Bldg.

Springfield—Union Motor Co.; remodel brick building at 1609 Boonville St.; $3000.

Montana.

Kalispell—Glacier Park Garage; addition; $20,000.

Nebraska.

Kearney—Patterson Motor Co.; addition to garage and sales room.

Table Rock—C. C. Nemecheck; remodel garage and repair shop.

New Hampshire.

Nashua—Mercer Bros. Garage Co.; 2-story brick addition, 100x100, to garage.

New Jersey.

Atlantic City:

Fred Burke, Virginia and Atlantic Aves.; 1-story brick public garage, 84x57, at Boston and Atlantic Aves.

Saml. Walden, 2105 Pacific Ave.; 1-story brick public garage, 50x90, Sunset St. and Albany Ave.

Asbury Park—J. C. English, Asbury Ave. and Main St.; one-story brick, cement block and stucco public garage; $30,000.

Newark:

Abraham Gennett, 73 Treacy Ave.; 1-story brick and limestone trim public garage at 10-12 Gouverneur St.; $15,000.

Edward A. Kirch Co., 77 Market St.; 1-story brick commercial garage at 127-131 Bank St.; $18,000.

McAllister Carton Corp., 1001 Broad St.; 1-story brick garage and service station; $125,000.

S. K. Seidenberg, 16 Hayes St.; 1-story brick and limestone commercial garage at 24-28 Hayes St.; $25,000.

Trenton—Star Long Distance Express Co.; 1-story brick garage, 60x72.

New York.

Brooklyn:

Philip Adler, 1563 Pitkin Ave.; 1-story brick garage; $30,000.

A. & D. S. Realty Corp., 1165 Eastern Parkway; 1-story brick garage; $25,000.

John J. Buke, 164 Highland Blvd.; 1-story brick garage; $30,000.

C. & K. Building Co., 8 Wayne St., Middle Village, L. I.; 1-story brick garage and shop; $59,000.

Barney Clayman, 37 Van Buren St.; 1-story brick garage; $40,000.

Geo. Dose Engineering Co., Inc., 43 W. 27th St., New York City; 2 and 3-story reinforced concrete garage and service station at 529 W. 55th St.; $75,000.

Grant Improvement Co., Inc.; 1-story brick garage at 876-80 DeKalb Ave.; $25,000.

Julius Hechman, 575 Greene Ave.; 1-story brick garage; $65,000.

Hyland Construction Co., 215 Montague St.; 1-story brick garage, northwest corner Grand Ave. and Bergen St.; $30,000.

Isaac Karlson, 791 Broadway; 1-story brick garage; $35,000.

Charne Katz, 392 Bushwick Ave.; 1-story brick garage, northwest corner Montrose Ave. and Leonard St.; $30,000.

Harry Katz, 146 Prospect Ave., Bayonne, N. J.; 1-story brick garage; $15,000.

Morris Klein, 783 Howard Ave.; 1-story brick garage; $20,000.

Rose Koeppel, 338 Van Sicklen Ave.; 1-story brick garage, northeast corner Stone Ave. and McDougal St.; $25,000.

J. Lassoff, 555 Elton St.; 1-story brick garage; $50,000.

Lin-Cook Corp., 1768 Pitkin Ave.; 1-story brick garage; $75,000.

Martha Garage Corp., 1678 President Ave.; 1-story brick garage; $50,000.

Morris Auto Co., 1995 Bedford Ave.; addition to garage, Parkside and Bedford Aves.; $25,000.

Wm. Nevine, 44 Court St.; 1-story brick garage, southwest corner Waverly and Fulton Sts.; $130,000.

Isidore Polivinick, 267 Barrett St.; 3-story brick garage; $125,000. Also 1-stotry brick garage; $20,000.

Realty Associates, 162 Remsen St.; 1-story brick garage; $20,000.

Chas. Riso; 1-story brick garage at southeast corner Union Ave. and Conselyea St.; $20,000.

Segal & Schorr, 180 S. 4th St.; 1-story brick public garage; $25,000.

Talbnesor Realty Co., 190 Bay 31st St.; 1-story brick garage; $12,000.

West Church Realty Co., Inc., 44 Court St.; 1-story brick garage at northeast corner Livonia and Van Sinderon Aves.; $30,000.

Buffalo:

Dwelle, Kaiser Co.; 1-story brick garage at 251 Elm St.; $10,000.

Board of Supervisors of Erie County; 2-story reinforced concrete garage; $30,000.

Erie Service Co., 349 Masten St.; 1-story brick garage, 100x150.

Herman Goodman, Lafayette Hotel; 1 and 2-story brick service station, 92x163, at 3068 Main St.

Max Stovroff, 120 Seneca St.; 1-story addition, 25x130, to public garage at William and Cedar Sts.; $8000.

New York City:

Anthony Rubber Co., 680 Lenox Ave., tire manufacturer, plant at Lenox Ave. and 144th St.; site, 75x100.

Geo. H. Aspland, 31 Park place; 1-story brick garage; $35,000.

Bainbridge Construction Co., 52 Vanderbilt Ave.; 2-story garage, northeast corner Bedford Park Blvd. and Jerome Ave.; $80,000.

Morris Bohrer, 205 W. 23rd St.; 1-story brick garage; $20,000.

City Real Estate Co., 176 Broadway; 1-story brick garage; $40,000.

Crotona Realty Co., 441 Tremont Ave.; 1-story brick garage; $45,000.

Jos. Dillon Contracting Co., 25 W. 140th St.; 2-story brick garage; $45,000.

Edel Realty Co., 1901 Walton Ave.; 1-story brick garage; $75,000.

Jas. Fenne; extension to garage at 862 E. 162nd St.; $12,000.

Johnson Estate, 30 E. 42nd St.; 2-story brick garage at 21-27 E. 2nd St.; $60,000.

Arthur Kennedy, 558 Water St.; 1-story garage at 503-9 Water St.; $30,000.

Lyons & Strobes, 76 W. 35th St.; alterations to garage, 509-11 W. 34th St.

New York Railways Co., 165 Broadway; 3-story brick garage at 130-42 Barrow St. and 168-174 Christopher St.; $30,000. Lessee, Barrow St. Commercial Garage.

179th St. Building Corp., 2167 Belmont St.; 1-story brick garage; $40,000.

Anthony Paladino, 219 E. 118th St.; 1-story brick garage at 437-41 E. 120th St.; $25,000.

John E. Sheehy, 256 Broadway; 1-story garage at 172nd St. and Southern Blvd.; $35,000.

Bertram M. Smith, 2527 Hughes Ave.; 1-story brick and terra cotta trim garage northeast corner Ditmars St. and City Island Ave.; $45,000.

Elmer Stevens, 57 E. 177th St.; 1-story brick garage; $45,000.

Webb Building Corp., 1767 Wash. Ave.; 1-story brick and terra cotta trim public garage; $50,000.

Richmond Hill—L. C. Smith; 1-story brick garage at northeast corner Elder's lane at 91st St.; $60,000.

Syracuse—Jones Oil Engine Co., 227 Walton St.; plant on Free St., 90x200. $60,000.

Troy—North End Auto Supply Co.; 1-story addition, 32x46, to garage at Glenn and Craigen Sts.; $5000.

Yonkers:

August Bushmeister, 194 McLean Ave.; 1-story brick garage; $12,000.

Ludlow Garage Co., 390 Riverdale Ave. 1-story brick garage at 228 Riverdale Ave.; $50,000.

North Carolina.

Greensboro—Guilford Motor Car Co.; 3-story brick garage; site, 65x140; $60,000.

Ohio.

Akron—Summit County Commissioners; 1-story garage and repair shop at 187 S. Broadway; $27,000.

Cincinnati:

Nettie Ackerman, 3531 Warsaw Ave.; 1-story frame garage.

John Amann, 6701 Windward St.; 1-story frame garage.

P. Andrews, 2201 Boone St; 1-story frame garage.

Mrs. M. Armstrong, 131 W. 9th St.; 1 story frame garage.

N. A. Baldwin, 1357 Cryer Ave.; 1-story frame garage.

Geo. Baumgartner, 2128 Hatmaker St.; 1-story frame garage.

G. M. Benedict, 3537 Burch Ave.; 1-story frame garage.

R. C. Boyer, 6220 Madison Rd.; 1-story frame garage.

Louis P. Britten, 3703 Linsle Ave.; 1-story brick garage.

Wm. Brockfield, 1301 Chase Ave.; 1-story frame garage.

Chas. Brokate, 1117 St. Clair Ave.; 1-story frame garage.

Wm. Brunner, 3160 Mapleleaf Ave.; 1-story frame garage.

S. C. Claxton, 1024 Overlook Ave.; 1-story frame garage.

Mrs. Viola Coleman, 2732 Cox lane; 1-story frame garage.

Lillian Cook, 4213 Wash. Ave.; 1-story frame garage.

N. Depriz, 2186 Queen City Ave.; 1-story frame garage.

C. B. Dillon, 1038 Underwood place; 1-story frame garage.

V. W. Dixon, 4203 34th Ave.; 1-story frame garage.

Wm. Doerger, 1615 Pulte St.; 1-story frame garage.

Wm. J. Doyle, 1020 DeMonte place; 1-story frame garage.

Allen Drake, 5028 Stewart place; 1-story frame garage.

Robt. L. Dunning, 2865 Erie Ave.; 1-story frame garage.

Fenton United Dry Cleaning Co., northwest corner Woodburn Ave. and McMillan St.; 1-story brick garage.

• Chas. Gail, 3120 Gloss Ave.; 1-story frame garage.

H. Goertmiller, 288 Oakmont Ave.; 1-story frame garage.

Wm. Hauschmitt, 1655 Iliff Ave.; 1-story frame garage.

J. Hauser, 74 Greenwood Ave.; 1-story brick garage.

Stanley Henshaw, 5544 Belmont Ave.; 1-story frame garage.

Thos. Hern, 6017 Bramble Ave.; 1-story frame garage.

Herman Jentz, 75 Hereford Ave.; 1-story frame garage.

Benj. Jones, 3024 Vine St.; 1-story frame garage.

Gertrude Jurisch, 2456 Columbia Ave.; 1-story frame garage.

Chas. F. Koehler, 4372 Virginia Ave.; 1-story frame garage.

C. E. Kohlsatt, 1449 E. McMillan St.; 1-story frame garage.

John Kohr, 3568 Zumstein Ave.; 1-story frame garage.

Dr. Robt. Kosting, 2912 Vine St.; 1-story frame garage.

Geo. C. Lowenstein, 3323 Fairfield Ave.; 1-story frame garage.

National Biscuit Co., 401 Lock St.; 1-story garage and accessory shop.

A. Ragor, 921 Woodlawn Ave.; 1-story frame garage.

S. M. Redfield, 439 Hawthorne Ave.; 1-story frame garage.

Chris Reinking, 3642 Monteith Ave.; 1-story frame garage.

Wm. Riemeier, 2903 Burnet Ave.; 1-story frame garage.

Philip Ryan, 3546 Pembroke Ave.; 1-story frame garage.

Wm. Scheidt, 2435 Colerain Ave.; 1-story frame garage.

W. Steinkoenig, 14 W. 69th St.; 1-story frame garage.

Geo. Stewart, 467 Purcell Ave.; 1-story frame garage.

John Wamsgans, 3548 Colerain Ave.: 1-story frame garage.

Frederick Weitkamp, 1616 Knowlton St.; 1-story frame garage.

Western & Southern Life Ins. Co., 421 McAllistre St.; 1-story brick garage.

August Willenhapt, 1121 Omena place; 1-story brick garage.

Cleveland:

Cataract Motor Sales Co., 8807 Broadway; 1-story sales room and service station; $200,000.

Harry Kaplan; 1-story brick garage, 80x60, at 1869 E. 55th Ave.; $9000.

Dayton—Victor E. Herter, 12 Meigs St.; 1-story public garage, 55x65, at 14 Meigs St.; $15,000.

Elyria—Elyria Fireproof Garage & Storage Co.; 2-story brick and stone garage and storage station, 65x165; $100,000.

Hamilton—Fred Brown; 1-story brick garage and service station, 30x40, at Hooven and Pleasant Sts.; $12,000.

Marion:

E. E. Kies, 734 Uncapher Ave.; 1-story frame garage.

G. A. Proce, 740 Uncapher Ave.; 1-story frame garage.

Norwood:

Robt. Albiez, 2669 Dacey Ace.; 1-story frame garage.

Burns Ballard 4923 Ash St.; 1-story frame garage.

Harry E. Barnes, 3904 Hazel Ave.; 1-story frame garage.

Harry Baumer, 4337 Beech St.; 1-story frame garage.

Mrs. Clara J. Duff, 1760 Williams Ave.; 1-story frame garage.

Fred. Eschmeyer, 4113 Floral Ave.; 1-story frame garage.

1st M. E. Church, Elm and Station Aves.; 1-story frame garage.

E. E. Jones, 1950 Waverly Ave.; 1-story frame garage.

Frank Kramer, 1709 Sherman Ave.; 1-story frame garage.

Dr. Ralff, 5436 Laura lane; 1-story frame garage.

Truck Delivery Co., 4424 Ashland Ave.; 1-story public garage, 140x229, at Montgomery St. and Hopkins Ave.; $65,000.

Youngstown:

Mrs. Sophia Bracher, 210 W. Chalmers Ave.; 1-story frame garage.

C. M. Clawson, 114 W. Laclade Ave.; 1-story frame garage.

R. L. Fisher, 1326 Wick Ave.; 1-story frame garage.

Geo. Henderson, 210 Ayers St.; 1-story frame garage.

Sadie and Etta Lewis, 675 Hayes Ave.; 1-story frame garage.

Mrs. Helen Price, 126 Warren Ave.; 1-story frame garage.

John Price, 2033 S. Heights Ave.; 1-story brick garage.

L. R. Banner, 103 S. Portland Ave.; 1-story brick garage.

D. J. Scott, 349 Auburndale Ave.; 1-story frame garage.

John Walker, 59th St. and Thornton Ave.; 1-story frame garage.

Oklahoma.

Bartlesville—Burt Gaddis, G-V Motor Co.; warehouse.

Lawton—Geo. Hutchins, Faxon; garage in old Methodist Church bldg., 4th St. and B. Ave.

Stigler—Lantz Motor Co.; 2-story brick, reinforced concrete and stone trim garage, 75x130.

Pennsylvania.

Corapolis—Keystone Garage Co.; 1-story brick and concrete commercial garage, 50x110.

Easton—Easton Auto Co., 3rd and Snyder Sts.; 1-story brick and reinforced concrete sales and service station, 65x150 and 58x65; $65,000.

Hazelton—Schwartz Motor Car Co., 10 E. Broad St.; 2-story brick public garage 75x125; $50,000.

McAdoo—Andrew Lukac, 115 N. Tamaqua St.; 1-story public garage, 50x100; $20,000.

Philadelphia:

Commercial Truck Co.; factory on Colladay estate, northwest corner Vine and Franklin Sts.

Moyamensing Garage, 306-12 Reed St.; rebuild garage, 60x100; $15,000.

Pittsburgh:

Frank T. Page, 5740 Aylesboro Ave.; 2-story garage, 25x30; $4000.

Pittsburgh Track Mfg. Co., 609 Neville St.; 1 and 2-story garage and shop, 100x100, at 44th St. and Penn. R. R.

W. Brownsville—Jas. R. Herbertson; 2-story reinforced concrete garage, 129x82; $80,000.

Steelton—Steelton Garage; remodel and enlarge garage and repair shop at 154-58 S. Front St.

Wilkes-Barre—S. Wilkes-Barre Motors Co.; 1-story brick addition, 75x100, to public garage; $30,000.

South Carolina.

Charleston—Colonial Service Stations, 60 Society St.; 1-story garage; $5000.

Winnsboro:

S. C. Turner; rebuild garage.

L. D. Wells; rebuild garage.

Tennessee.

Chattanooga—Z. C. Patten, Jr.; 1-story garage and drive way; $3000.

Humboldt—Humbolt Garage Co.; 1-story brick and concrete garage, 85x130.

Texas.

Canadian—W. H. Dorr, vice pres., Southern Service Products Co.; 2-way drive-in filling station.

Edinburg—M. V. Garner and Carl Gernentz; improvements on E. M. Derry Garage.

Ft. Worth—D. J. Blast, 2378 Harrison Ave., Mistletoe Heights; rebuild garage.

Houston:

Armour Auto Co., 1 and 3-story reinforced concrete garage, Preston Ave. and Louisiana St.; $81,000. Also 1-story structure, corner Prairie Ave. and Louisiana St. Additions to cost $100,000.

Sherwood Auto Market; auto building, 2 stories and basement (ultimately 10 stories), 100x100; $80,000.

San Antonio—S. X. Callahan Garage, 419 N. Flores St.; to be rebuilt.

San Jose—Goodwear Tire & Belt Factory, Akron, O.; factory building, 65x600; $300,000.

Vermont.

Rutland—W. H. Williams; 1-story hollow tile and reinforced concrete sales room and service station, 67x131.

Virginia.

Cape Charles—C. W. Parson; 2-story garage, 40x70.

Richmond:

Chas. N. Phillips, R. E. American Nat. Bank Bldg.; 1-story garage and service station at Belvidere and Grace Sts.; $8000.

Southern Auto Co.; rebuild brick garage.

West Virginia.

Charleston—R. J. Zimmerman, 408 Reffner Ave.; 2-story brick and limestone trim garage, 29x22.

Clarksburg—John T. Clabby; 45-ft. addition to garage; $5000.

Huntington—F. F. Starcher, Day & Night Bank Bldg.; 1-story concrete block garage, 45x160; $10,000.

Wheeling—12th St. Garage Co.; 5-story brick commercial garage, 82x125; $150,000.

Wisconsin.

Hustler—Onsager & Rider; 1-story cement garage and repair shop, 60x100.

Madison—Theodore Kupier; 1-story brick garage at 625 E. Mifflin St.; $8000.

Manitowoc—Clark Oil Co., 10th and York Sts.; 1-story garage and filling station; $36,000.

Portage—Wright & Robbins; addition to garage and service station.

Red Granite—John Piechowski; 2-story brick and reinforced concrete garage, 70x150.

Shawano—Shawano Motor Car Co.; 1-story garage and sales room.

Sheboygan—South Side Garage Co., S. 12th St. and Indiana Ave.; 2-story public garage, 44x112; $55,000.

Spooner—Spooner Garage Co.; brick and tile addition, 30x90, to public garage.

CONTRACTS AWARDED.

Birmingham—Frank Fowlkes & Crawford Johnson; 1-story garage, 5000 sq. ft. floor space, including storage room and shower baths; for U. S. government; $20,000.

Connecticut.

Bridgeport—Canadian Raybestos Co.; remodelling factory at Peterboro, Ont.; $18,000.

Hartford—Martin & Wilemsky, 418 Garden St.; 1-story public garage, 35x50, for Abraham Cohn, 25 Russell St.

New Haven:

H. D. Jackson, Whalley Ave. and Blake St.; 1-story service station, 35x52x66; $9000.

Sperry Engineering Co., 82 Church St.; 2-story garage, 22x30, for Winthrop G. Bushnell, 902 Chapel St.

District of Columbia.

Washington—Geo. A. Fuller Co., Munsey Bldg.; addition, 72x120, to auto sales room, for Stanley H. Homer, 1015 14th St.

Georgia.

Atlanta—A. V. Gude & Co.; 1-story fireproof service station, 200x400, for White Motor Car Co., Cleveland, O.

Illinois.

Blue Island—Edward Strum; 1-story public garage and repair shop at 103rd and Charles Sts.

Chicago:

B. E. Adair, 5053 Bernard St.; 1-story frame garage.

A. Anderson, 2319 N. Keating Ave.; 1-story frame garage.

B. E. Anderson, 4813 Longley Ave.; 1-story brick garage.

Andrew Benson, 1723 W. Monroe St.; 1-story garage, 85x43, at 1721-23 W. Monroe St.; $9000.

P. E. Berg, 4021 N. Harding Ave.; 1-story frame garage.

Mrs. Henry Bergstt, 4122 N. Ashland Ave.; 1-story brick garage.

Alfonso Frulano, 2223 W. Harrison St.; 1-story garage, 24x82, at 623 Norton St., for Antonio Slugo, 622 S. May St.; $6500.

A. Gade, 1019 N. Ridgway Ave.; 1-story frame garage.

C. Groth, 4138 N. Kilburn Ave.; 1-story frame garage.

C. L. Gustafson, 9820 Ewing Ave.; 1-story concrete garage.

L. Hagberg, 7741 Longley Ave.; 1-story frame garage.

G. Hawkinson, 2536 N. Hamlin Ave.; 1-1-story frame garage.

M. A. Helen, 6219 N. Maplewood Ave.; 1-story frame garage.

B. Holek, 2646 Millard Ave.; 1-story brick garage.

F. Hoelin, 5633 S. Rockwell St.; 1-story frame garage.

Frank Holtz, 5843 Magnolia Ave.; 1-story frame garage.

Home Construction Co., 2138 N. Keeler Ave.; 1-story public garage, 75x175, at 6816 N. Clark St., for E. Becker; $100,000.

J. Jalnik, 6508 S. Hoyne Ave.; 1-story frame garage.

H. P. Johanson, 2507 N. Central Park Ave.; 1-story frame garage.

Claus Julh, 7759 St. Lawrence Ave.; 1-story garage, 75x125, at 41st St. and Emerald Ave., for Independent Packing Co., 31st and Halsted Sts.; $25,000.

John Justic, 3803 W. 66th place; 1-story frame garage.

P. Karlovsky, 4808 S. Honore St.; 1-story garage, 39x109, at 4915-23 S. Racine Ave., for People's Coal Co., 4913 S. Racine Ave.; $12.000.

J. Kuebler, 1324 Eddy St.; 1-story brick garage.

Mrs. B. Kuhnmann, 1710 Addison St.; 1-story frame garage.

H. McEwen, 5517 Lafayette St.; 1-story frame garage.

J. Mahalla, 6036 S. Wood St.; 1-story frame garage.

M. T. Mansfield, 4336 N. Mozart St.; 1-story frame garage.

C. A. Myers, 7104 Champlain Ave.; 1-story brick garage.

Amalie Nielsen, 7938 Laflin St.; 1-story public garage, 110x106, at 912-20 W. 79th St.; $35.000.

B. Nilsen, 5131 Byron St.; 1-story frame garage

W. Oliff, 7913 Kenwood Ave.; 1-story frame garage.

A. E. Peterson, 7618 Cornell Ave.; 1-story frame garage.

Saml. Peterson, 5021 N. Hermitage Ave.; 1-story brick garage.

Saml. Pinkert, 4101 W. Lake St.; 1-story frame garage.

W. E. Pope, 420 W. 59th St.; 1-story frame garage.

Edward Postern, 11,243 Edbrooke Ave.; 11,243 Edbrooke Ave.; 1-story frame garage.

Peter Printz, 5612 Potomac Ave.; 1-story frame garage.

Prusener & Danielson, 2709 Leland Ave.; 1-story garage, 60x37, at 4026-28 N. Kedzie Ave., for Berschootes Motor Express, 4024 N. Kedzie Ave.; $15,000.

John Qwicki, 2431 N. Maplewood Ave.; 1-story frame garage.

C. J. Rand, 1335 Early Ave.; 1-story brick garage.

P. A. Reichard, 6539 S. Mozart St.; 1-story frame garage.

A. Reif, 1815 Humboldt Blvd.; 1-story frame garage.

A. Ristau, 4415 N. Avers Ave.; 1-story frame garage.

C. D. Robson, 38 S. Dearborn St.; 1-story garage, 72x66, at 1522 S. Wabash Ave.; for Emilies Longhi.

A. T. Roner, 1454 Belle Plaine Ave.; 1-story frame garage.

L. Rubenzek, 3148 W. 15th St.; 1-story frame garage.

E. Rylander, 6218 N. Campbell Ave.; 1-story frame garage.

J. Rzich, 13,507 Burley Ave.; 1-story frame garage.

L. A. Stephan, 255 W. 112th St.; 1-story brick garage.

Geo. Thomson, room 1342, 30 N. LaSalle St. ;1-story garage, 125x125, at 16th and Rockwell Sts., for Jos. T. Ryerson Co., 134 S. LaSalle St.; $90,000.

Simon Van Browen, 7946 St. Lawrence Ave.; 1-story frame garage.

Paul Vincent, 5332 N. Luna Ave.; 1-story frame garage.

Hugo A. L. Westerdahl, 133 W. Wash. St.; 1-story garage, 23x37, northwest corner Chicago Ave. and Lawndale St., for Simon Swartz; $5000.

J. F. Yerkes, 11,030 Prospect Ave.; 1-story brick garage.

Decatur—E. S. Merris; 1-story garage and repair shop, at Franklin and Wash. Sts.; $10,000.

Iowa.

Corydon—R. A. Youngblood; service station.

Creston—A. A. Willis & Sons; garage for Harry Boyd.

Kansas.

Cottonwood Falls—Wm. Turner, Miami, Okla.; garage on old street car barn lo for Henry Wiebrecht and Claude McDonald, Strong City.

Dighton—B. F. Parsons, construction engineer of Kansas Petroleum Co.; filling station.

Kensington—Dick Brommer; machine and repair shop in Breon Ford Garage, N. Main St.

Liberty—Liberal Oil & Supply Co.; remodelling business building on S. Kansas Ave.

Minneapolis—Gage Auto Co.; extensive improvements on building.

Osage City—Producers' Consolidated Oil Co. of Kansas; filling station; $10,000.

Peabody:

T. M. Jennings; 1-story garage, 70x100, for Nusbaum Bros.; $11,000.

C. S. Stauffer; 1-story garage, 50x90; $10,000.

Satanta—McPhaill Motor Co.; new building.

Sterling—B. F. Parson, construction engineer of Kansas-Texas Petroleum Co.; hollow tile filing station, white stucco exterior.

Topeka—Trefry Motor Co., garage and sales building, 1028-30 Kansas Ave.

Kentucky.

Bowling Green—Geo. I. Knight; 1-story addition, 24x110, to garage for Powell Auto Co.; $10,000.

Covington:

A. H. Connor, 410 Lehmer St.; 1-story concrete garage.

A. D. Kelly, 514 Scott St.; 1-story metal garage.

H. J. Stroer, 802 Greet St.; 1-story concrete garage.

Lexington—W. R. Williams Motor Co., 241 E. ain St.; 1-story service station, 20x30.

Louisville—Western Petroleum Co.; filling station.

Maine.

Augusta—C. E. Hoxie, 42 State St.; 1-story public garage and service station, 50x100; $20,000.

Maryland.

Annapolis—Lloyd Bros., 17 Franklin St.; 1 and 2-story public garage, 65x66x48x75x 65x55, for Andrew Krause, 400 West St.; $17.000.

Baltimore:

Martin R. Meyers, 1004 Union Ave.; 2-story brick addition, 48x118, to garage; $10.000.

Reinhart Construction Co., 521 Calvert Bldg.; 1-story brick garage, 28x21; cement floor, steam heat, electric lighting plant; for city of Baltimore; $2800.

F. J. Simmers Construction Co., 3001 Greenmount Ave.; 1-story addition, 57x 106, to garage for R. F. Good.

M. G. Yost, 403 E. Capital St.; 1-story addition, 40x60, to garage for Jas. A. Rafferty.

Massachusetts.

Boston—John B. Broderick, 101 Tremont St.; 2-story public garage, 100x100, at 2nd and Dorchester Sts., for John Dunn.

Cambridge—S. C. Perry Co., 300 Main St.; 5-story garage and repair shop, 138x20, for Standard Oil Co., 26 Broadway, New York City; $250,000.

Everett—Linn Weiner, 1485 Dorchester Ave.; 1-story garage, 85x100, for Louis Albaum; $20,000.

Mattapan—E. S. Butterfield, 20 Nonquit St., Roxbury; 1-story addition, 130x30, to garage at Milton St. and Woodrow Ave., for Jas. Barrett, 6 Milton Ave., Dorchester; $10,000.

Peabody—E. H. Porter Co.; 1-story reinforced concrete garage, 70x70, for A. C. Lawrence Leather Co.; $60,000.

Springfield:

Tetreault Bros., 174 St. James Ave.; 1-story garage, 48x80, at 43 Grange St., for Wm. P. and Arthur Trudel, 43 Sargent St.; $20,000.

Wells & White, 735 Worthington St.; 1-story public garage, at Mulberry and Union Sts., for Ridgwood Community Trust, 367 Union St.; $14,000.

Worcester—James Miles & Son Co., 393 Main St; land, 2-story garage, 154x28, at 401 S. Bridge St., for Claflin Sumner Coal Co., 9 Pleasant St.; $28,000.

Michigan.

Battle Creek—Clark Equipment Co.; plant, including machine shops and power house.

Detroit—Lennane Bros., 809 Trust Bldg.; 1-story addition to garage, 21 N. Forrest Ave., for Harrison Rund Sales Corp., 833 Woodward Ave.

Iron Mt.—Mich. Land & Lumber Co.; office building and 50 modern houses for employees.

Minnesota.

Minneapolis:

J. F. Barberry, 1722 Fremont Ave.; 1-story frame garage.

Jean L. Besanson, 2652 Lyndale Ave.; 1-story frame garage.

Albert Beyer, 320 Plymouth Ave.; 1-story tile garage.

C. B. Burdick, 4228 Vincent Ave.; 1-story frame garage.

A. B. Fruen, 58 Oliver Ave.; 1-story stucco garage.

H. F. Slater, 4409 Harriet Ave.; 1-story frame garage.

Rosewood—Furan-Sorenson Co.; garage, 28x60.

St. Cloud—Martin Mutcher, garage, 52x120, 5th Ave., south, between 4th St. and Ravine.

Missouri.

Blue Springs—R. L. Myers; garage.

Butler—Hunt Engineering Co., 515 Reliance Bldg., Kansas City; 1-story filling station for A. D. Allen & Co.

Cameron—Hunt Engineering Co., 515 Reliance Bldg., Kansas City; 1-story brick and stucco filling station for A. D. Allen & Co.

Hume—Anderson & Bellows; tile garage on Main St.

Kansas City:

G. M. Baltis, 3801 Wabash St.; 1-story garage, 50x132, at 810-12 Charlotte St.; $12,000.

Timothy Kelly, 4036 Troost Ave.; 1-story garage, 50x126, for W. H. Wood, 550 Forrest Ave.

Kirkland-Cravens Motor Co.; redecorating sales rooms at 1515 McGee St.

Motor Appliance Co., H. J. Talge, pres.; auto accessory store, 1813 Grand Ave.

Swenson Construction Co., Shubert Theater Bldg.; 1-story garage at 10th and Central Sts., for F. H. Fitch and J. W. Grounds, Orear-Leslie Bldg.; $50,000.

White Eagle Oil & Refining Co.; retail filling station, 19th and Baltimore Ave.

Myrtle—Jude Cox; concrete blacksmith shop and garage.

Savannah—Producers' Consolidated Oil Co., Kansas City; concrete filling station, King's Corner; $8000.

St. Louis:

Battery Service Co., Wm. O. Suhre, pres.; Willard battery distributing station, site, 81.6 ft., south side of Locust St.

Preston J. Bradshaw, architect, four-story building, 4210 Forest Park Blvd., for Goodyear Tire & Rubber Co.

Winona—C. E. Bollin; garage; $8000.

Nebraska.

West Point—Nicholas Oil Co.; service station.

New Jersey.

Camden—E. Schulke, 1182 Jackson St.; 1-story garage, 18x50, at Pine and Magnolia Sts., for Justice Lime Co.

Hoboken:

F. & C. Haerter, 770 Hudson Blvd., W. New York, N. J.; 2-story sales room and service station at 609 Wash. St., for John H. Paul, 605 Wash. St.; $45,000.

Bernard Veretti, 927 Castle Point Terrace; 1-story public garage at 509-13 Madison St., for John Romano, 509 Madison St.; $25,000.

Jersey City—Purdy & Henderson, 45 E. 17th St., N. Y. City; 1-story garage for Jos. T. Ryerson & Son, 2458 W. 16th St., Chicago, Ill.; $75,000.

Long Branch—A. T. Duryea; 1-story hollow tile and reinforced concrete sales room at 300 Broadway; $9000.

Newark:

Wm. L. Blanchard, 160 Sherman Ave.; 1-story sales room at 168-170 Wash. St.; for Aetna Realty Co., 738 Broad St.; $25,000.

Jacob Blum, 546 S. 20th St.; 1-story public garage at 524-28 S. 12th St., for Morris Pankin, 113 Avon Ave.; $30,000.

Chas. Gerber, 316 Peshine Ave.; 1-story public garage at 66 Charlton St. for Louis Hoffman, 127 Prince St.; $18,000.

Edward A. Kirch & Co., 177 Market St.; 1-story commercial garage at 127-31 Bank St.; $10,000.

Jos. Slifer, 469 S. 10th St.; 1-story commercial garage at 486 S. 10th St.; $20,000.

Pleasantville—Geo. Houser; 1-story public garage, 50x150, at 19 E. Wash Ave.

Wildwood—L. Garrison, 117 Magnolia Ave.; 1-story public garage, 70x80, at Pine and Pacific Aves., for Sheppard Coombs, Maple and New York Aves.

New York.

Brooklyn—F. J. Ashfield, 350 Fulton St.; 1-story garage, southeast corner Beard and Richards Sts.; for estate of Wm. Beard, 21 State St.; $60,000.

Buffalo:

E. M. Hager & Son, 141 Elm St.; 2-story garage, 22x50, at Amherst Estates, for Marcus Barmon, 937 Broadway; $10,000.

Frank C. Kempf Sons, 821 Virginia St.; 1-story garage and repair shop, 65x125, at 1512 Main St., for E. Ahr & Son; $25,000.

Corning—Sebring & Runner; 1-story garage and service station at 137-29 W. Market St.

Long Island City, L. I.—Waverly Building Corp., 44 Court St.; 1-story garage; $25,000.

New Rochelle—Thos. Smith; 1-story garage at Huguenot St. and North Ave., for S. L. Carpenter and Robt. T. Safford, Jr., 219 Sickles Ave.; $50,000.

New York City:

A. D. Angelo, 149 E. 216th St.; 1-story garage for City Real Estate Co., 176 Broadway; $40,000.

Globe Jerome Co., 2704 E. Morris Ave.; 1-story garage; $50,000.

Raffo Sillite, 590 E. 191st St; 1-story garage for Clarence Ciamp, 613 Fordham Rd.; $12,000.

Rathbart, Marcus & Goldstein, 175 E. 96th St.; alterations to 1-story garage at 544-50 W. 56th St. for 546 W. 55th St. Garage Co., Inc., 175 E. 119th St.

Standard Top Co.; 1-story brick factory, 40x90; $15,000.

M. Talsky, 32 Ave. C.; 1-story garage for Isaac Shore at 804 E. 5th St.; $10,000.

Rochester—A. E. Beale & Son, 206 Arlington Bldg.; 1-story garage, 20x55, at 42 N. Goodman St.; $4500.

Syracuse:

W. J. Burns Co., Keith Theater Bldg.; 1-story garage, 80x22x12, at Burnet and Elm Sts., for Cooperative Milk Co.; $7000.

Fred Grossman, 706 W. Onondaga Ave.; 1-story garage, 91x217x23, at 617 W. Genesee St.; $50,000.

Fellows & McGrath, 415 Fellows Ave.; 1-story commercial garage, 65x100x16, at 722 W. Genesee St., for Cooper Syracuse Auto Exchange, Inc., 821 Grape St.; $20,000.

Union Course, L. I.—Rich Grove Construction Co., 690 Broadway, Brooklyn; 1-story brick garage.

W. New Brighton, S. I.—A. N. Eldridge, 8 Stuyvesant place; 1-story show room; $10,000.

North Carolina.

Greensboro—J. R. Tuitt; fireproof auto storage shed, 19x237, for J. R. Thomas.

Ohio.

Cincinnati:

College Hill Garage, 5919 Hamilton St.; addition; $8000.

M. C. McCassy, 936 Marion Ave.; 1-story brick garage.

J. Chas. McCullough, 2726 Marryat St.; 1-story frame garage.

F. F. McMinn, 1324 Burdett Ave.; 1-story frame garage.

A. S. Mann, 3958 Dickson Ave.; 1-story frame garage.

E. E. Metzger, 30 E. Liberty St.; 1-story frame garage.

Jennie Miller, 3040 Woodburn Ave.; 1-story frame garage.

Mrs. E. Murphy, 4502 Hector Ave.; 1-story frame garage.

R. C. Nepper, 2363 Ohio Ave.; 1-story frame garage.

Norwood Concrete Block Co., 2120 Madison Ave., Norwood, O.; 1-story oil filling station, 24x90, at 900 Depot St., for Refiners' Oil Co., Depot and South Sts.; $15,000.

F. C. Ortman, 4227 Dane St.; 1-story frame garage.

Rudolph Pfeffer, 6603 Lebanon Ave.; 1-story frame garage.

Jos. Puchly, 3810 Colerain Ave.; 1-story frame garage.

Max Schwab, 441 Rockdale Ave.; 1-story brick garage.

Adolph Schwintz, 3568 Beechmont Ave.; 1-story frame garage.

Claud E. Smith, 4607 Glenshade Ave.; 1-story frame garage.

Aaron Stitx, 2215 Upland place; 1-story frame garage.

Lincoln Smith, 3754 Iberis Ave.; 1-story frame garage.

Wm. Stevenson, 3450 Clifton Ave.; 1-story frame garage

Wm. Thie, 4131 Ballard Ave.; 1-story brick garage.

R. S. Usher, 1540 Marlowe Ave.; 1-story frame garage.

Edward Vosmer, 1916 Clarion Ave.; 1-story frame garage.

Dayton—General City Improvement Co., 2214 U. B. Bldg.; 1-story garage, 74x70, for W. E. and A. F. Becker, 1214 U. B. Bldg.; $30,000.

Norwood:

Ollie W. Blasing, 4919 Carter St.; 1-story frame garage.

Geo. Lovey, 4732 Main Ave.; 1-story concrete block garage.

F. E. Mayer, 2629 Dacey Ave.; 1-story frame garage.

Edward Meiers, 2114 Cameron Ave.; 1-story concrete block garage.

H. W. Presson, 1824 Wayland Ave.; 1-story frame garage.

Paul P. Rover, 4009 Floral Ave.; 1-story frame garage.

Mrs. A. C. Runyan, 4203 Smith Rd.; 1-story frame garage.

A. H. Winkler, 3741 Edwards Ave.; 1-story frame garage.

Perrysburg—Wesley Smart, Fremont; 1-story garage, 66x150, for Ford Agency; $20,000.

Oklahoma.

Goodwell—Homer Pointer, Guyman; remodelling and enlarging City Garage.

Lawton—George Nutchins, remodel garage, 4th St. and B Ave.

Tulsa—F. E. Shaffer, brick and concrete garage at 201 E. Lee St.; $5000.

Pennsylvania.

Philadelphia:

John Y. T. Adair; 1-story garage, 20x54, for Thos. Tansey; $2500.

Armstrong & Latta; one-story garage, 14.6x42.2, rear 46 N. 39th St., for Presbyterian hospital; $2000.

W. J. Baltz; 1-story garage, 10x18, southwest corner Howard and Colona Sts., for Gottlieb Hummel; $1290.

John J. Bateman & Sons; 1-story garage, 20x30, at 5138 Wayne Ave.; $1000.

Berger & Duble; 1-story garage, 10.7x15.6, rear 718 Lehigh Ave., for L. Grosberger; $1200.

C. A. Bonner; 1-story garage, 16.9x73.8, at 2315 N. 2nd St.; $3300.

H. W. Butterworth, Jr.; 1story garage, 10x20, at 316 Carpenter St.; $500.

Carr & Trainer; 1-story garage, 30x52, southeast corner Jasper and Willard Sts.; $4500.

Dante Collinelli; 1-story garage, 15x32, at 120 McClellan St.; $500.

Alex. C. Cowan; 1-story garage, 36x40, at 5713-15 Pearl St.; $1500.

John J. Dillon; 1-story garage, 8x13, northwest corner 57th and Webster Sts.; $700.

E. Donofrey; 1-story garage, 37.10x21.10, at 8127 Germantown Ave.; $1500.

E. J. Gilbert; 1-story garage and shop, 15x92, west side Jasper St., north Allegheny Ave., for Catharine Roberts; $2500.

E. R. Hall; 1-story garage, 20x16, northwest corner 48th St. and Baltimore Ave., for Dr. J. McEldowney; $2000.

Fred A. Havens Co.; 2-story garage, 19x45, rear 451 N. 3rd St., for W. H. Horn Co.; $4500.

H. J. Homan Co., 34 S. 17th St.; 1-story forge shop addition for Hess-Bright Mfg. Co., Front and Erie Sts.

A. Liebovitz; 1-story garage, 50x110.6, at 3804-6 DeLancey St.; $4000.

H. J. McGarry; 1-story garage, 23x40; $700.

Emilio Mazzanti; 1-story garage, 50x70, at 4927-31 Kershaw St., for Jos. Matteuci; $5000.

E. B Miller; 1-story garage, 16x20, at 4416 N. 8th St., for Jos. Derk; $850.

M. Moister Co.; 1-story garages, as follows: 15x16, at 3330 G. St., for C. and J. Campbell; $425. 15x16, at northwest corner 6th and Wolf Sts., for J. Grossman; $400. 9x18.8, at 5622 N. 15th St., for C. G. Klopp; $325. 18x24, at 1611 Erie Ave., for C. Lebranc; $700. 14x16, at 1108 Pentridge St., for H. S. Rush; $400. 12x35, at 310-20 Spruce St., for Oscar Smith & Sons Co.; $600. 9x14, at 5328 Tacony St., for Edward Tazel; $270. 13x17, northwest corner Rising Sun Ave. and Adams St, for United Gas Improvement Co.; $475.

D. A. Pacific; 1-story garage, 17.10x20, at 3218 Baring St., for Geo. Meade; $1;00.

H. A. Prettyman; 1-story garage, 16x20, rear 1629 S. Broad St. for W. Govicke; $1500.

B. Shestack & Co.; 1-story garage, 9x16, at 5931 Thompson St., for Dr. Thos. Melnick; $1200.

J. S. Silver; 1-story garage, 33x100, northeast corner Atlantic and Palmetto Sts.; $2000. Also 2 garages, 16x75 each, north side Atlantic, east Palmetto St.; $1600.

Strouse Equipment Co.; 1-story garage, 10x15, rear 5609 Ridge Ave., for N. L. Jones; $250.

Geo. Sutton, 1-story garage, 9x18, at 1228 S. 21st St., for M. Coplin; $800.

Wm. C. Witherstine; 1-story garage, 17.6x90; $2000.

Chas. Yackle; 1-story garage, 32x70, at 1326-28 N. Smedley St.; $3000.

Fred Zimmerman; 1-story garage, 35x17, Bristol St., east 15th; $4000. Also 1-story garage, 17.6x40, at 2511 N. Palethrop St., for Black Bros.; $1000.

Pittsburgh:

Lauer & Son, 810 Portland St.; 1-story garage, 26x150, for Booth-Flinn, 1942 Forbes St.; $12,000.

Nicola Bldg. Co., Penn and Denniston Aves.; 2-story brick garage and sales room, 60x195, at 1807 5th Ave., for Fred Mugele, 1013 Sheridan St.; $92,000.

Toupet, Bell & Conley, Inc., 5814 Ellsworth St.; remodel garage and sales room at 5944 Baum Blvd., for R. E. Loughney Motor Co.; $10,000.

Williamsport—A. L. and M. K. McFadden;1 -story garage and repair shop at 450-52 William St.

Rhode Island.

Pawtucket—Frank Gotta, 30 Charpentier St.; 2-story public garage, 69x117, for Laurence B. Fogarty; $50,000.

Tennessee.

Chattanooga—L. S. Smallwood Construction Co.; 1-story brick and concrete garage for Payne, Montague & Howell; $12,000.

Texas.

Bastrop—Haynie Motor Co.; work shop.

Cisco—J. E. Chesley, garage, 9th St. and D Ave., for Southwestern Motor Co.

Colorado—O. Lambeth; filling station at intersection of Pine and B. & B.; $5000.

Cotulla—Neal's Garage; brick garage; plate glass.

Del Rio—J. S. McWherter; garage adjoining McMain's Hotel and City Hall; $5000.

El Campo—Magnolia Petroleum Co.; filling station on Jackson St.

Ft. Worth—Mid-Tex Petroleum Co.; gasoline filling station and office building at 7th and N. Main Sts.; $100,000.

Goldwaithe:

Smith Bros.; sheet iron garage, Robt. Burns lot, 3rd and Parker Sts.

Ford Garage, E. Fisher St.; 10,000 sq. ft. floor space.

Graham—J. H. Henderson; garage; filling station and storage building, 110x220.

Houston:

Armour Auto Co., additional story to 6-story building, Louisiana St. and Preston Ave.

J. E. McGillicuddy Co.; 3-story concrete auto building for Dow Motor Co.; $81,000.

San Jose—Goodyear Tire & Rubber Co.; tire and belt factory building, 65x300; $300,000.

Vernon—Bennett-Rogers Lumber Co.; brick automobile filling station, 40x44, corner Fannin and Wilbarger Sts.

Weatherford—Walter Spuyres; garage on Ft. Worth St.

Virginia.

Alexandria—H. Herfurth, Jr., St. Joseph and Madiosn Sts.; 1-story public garage. 52x118.

Cape Charles—Pusey Morris Co.; 2-story garage, 40x70, for C. W. Parson; $20,000.

West Virginia.

Logan—J. W. Fisher; 1-story garage, 40x86; $10,000.

Wisconsin.

Milwaukee:

B. M. Odya, 113 Bremen St.; 1-story garage, 24x56, at Bremen and Hadley Sts., for Frank Zinda, 28 Hadley St.; $15,000.

Peter Spanheimer, 1116 27th St.; 1-story garage, 63x20, at 261 4th St, for Dick & Reutemann, Caswell Bldg.

No. Cape—J. H. Kamper; garage.

Replinger—Aug. Stecker; cement garage.

Rochester—V. V. Beers; garage.

Sheboygan—South Side Garage Co., S. 12th and Indiana Ave.; addition to garage.

Steuben—Earl Daugherty; public garage.

CHANGES IN NAME.

Ashdown, Ark.—Hite Motor Co. to McCormick Motor Co.; A. E. McCormick, mgr.

Booneville, Ark.—City Auto Co. to Universal Motor Co., Broadway and Cooke St.

Rochelle, Ill.—Graves & Holmes Motor Co. to Rochelle Auto Co., Lincoln Highway and 5th Ave.; Ford autos and Fordson tractors.

Sullivan, Ill.—Crowdson Garage to Bussie's Garage; E. C. Bushhard, owner.

Waukegan, Ill.—Colwell Storage Battery Co. to Lake County Battery and Ignition Co.; A. J. Carpenter, owner.

Clinton, Ind.—Vietti Garage & Repair Shop, N. 9th St., to Western Ave. Garage; Gibson Motor Co., owner.

Paoli, Ind.—Paoli Auto Co. to West Side Auto Co.; Karl Kibler, lessee.

Carson, Ia.—Ford Garage to Denton & Son; Pearl Denton, owner.

Clinton, Ia.—Ovee Sales & Service Co., 420 N. 2nd St., to Ovee Garage; Chas. O. Goodwin, owner.

Athol, Kan.—Rowe & Albright, tractor and implement dealer, to Athol Tractor & Realty Co.; F. E. Wertz, owner.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN AUTOMOBILES, TRUCKS AND TRACTORS.

Arizona.

Miami—Coast-Holmes Co.; W. R. Coast.

Arkansas.

Ft. Smith—Light Car Sales Co., buy and sell autos and accessories; $10,000; W. A. Strozier, J. C. and J. P. McCord, J. C. Cann.

Jonesboro—Griffin Motor & Sales Co., Union St.; cars, tires and other accessories; $50,000; purchased business of W. T. Lane, Jr.

California.

El Centro—Big 3 Auto Co.; succeeds General Sales Co.; S. E. Bragg, president; J. L. Maddux, H. O. Stock.

Hollywood—Garden Court Motors Corp.; $500,000; W. L. and P. A. Jourden, A. C. Shepherd, F. A. Hartwell.

Porterville—Kennedy & Kerr, tractor and implement business; L. Miller, manager.

Connecticut.

Hartford:

Barnard Motor Co.; $50,000; G. C. Barnard, L. P. Schumm, Henry Brueggestrat.

Bowman Motor Car Co., 46 Allyn St.; $100,000; E. C. Bowman, G. H. Hilman, A. J. Marks.

New Haven—Brockway Motor Truck Co.; $50,000; W. B. Snow, Louis Wolfe, Putnam; W. E. Sayles, Danielson.

Putnam—Putnam Motor Mart, Inc.; $50,000; J. M. D. Dean, Jr., Louis Wolfe, Samuel Rosoff.

Delaware.

Dover:

Peterson Motors of Washington, autos; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

United Auto Electric Service Corp., autos, etc.; $200,000; Cornelius A. Cole, Robt. A. Van Voorhis, Arthur R. Oakley.

Wilmington—Piqua, O., Financing Corp., farm implements, etc.; $550,000.

Georgia.

Atlanta—Rutland Motor Sales Co., tractors, motor cars, trucks and air planes; $30,000; J. C. Oliver, Guy W. Rutland, S. J. State.

Columbus—Burrus Motor & Tractor Co., Ford and Fordson agent; $50,000; E. Percy, G. E. and Mrs. E. P. Burrus; successors to R. M. Stanley.

Idaho.

New Perce—New Perce Motors Co., cars, tractors, farm machinery, hardware and plumbing; $45,000.

Illinois.

Chicago:

Master Truck Sales & Service Co., autos and accessories; $50,000; R. H. Reid, A. I. Dutton, H. C. Kennan.

Rex Auto Sales & Service, Inc., to deal in, repair and store autos; $50,000; D. Komix, Emma Perlmand, Ruth Berkman.

Petersburg—Herschbach Motor Co., Ford agency; formerly the Seigle Auto Co.

Quincy—Quincy Buick Co., autos; Walter E. Brownell, Ethel A. Carlson, C. F. Hughes.

Springfield—Farm Power Co., tractors and farm machinery; $50,000; L. E. Hazlett, C. S. Boynton, J. H. Coleman.

Waukegan—Tibbetts Auto Co., 205 S. Sheridan Rd., Dort cars; C. P. Tibbetts, Lake Forest; M. C. Tibbetts, Flint.

Indiana.

Marion:

Dunn & Geary, 104 S. Washington St., tractors and autos.

Marion Tractor & Implement Co., tractors and farming implements; $30,000; Geo. L. Dunn, John D. Williams, Arthur A. Presnell.

S. Bend—S. Bend Motors Co.; $200,000; C. E. Bathwick, W. J. Beuttner, F. V. O'Toole.

Terre Haute—Tro Auto Jack Co., autos and accessories; $10,000; Wm. E. Lindley, Clarence Ranberger, Henry Streacker.

Kansas.

Abilene—Abilene Buick Co., Broadway and 4th St.; W. R. and Roy E. Bell, props.

Hutchinson—Southwest Motor Co., Reno County; $100,000; Elmer J. Negy, Geo. Moliter, J. H. Tudor.

Independence—Albert Moore, W. Laurel St., tractor and implement business.

Lincoln—United Auto & Tractor Co., tractors.

Meriden—Meriden Hardware Co., tractors, implements, autos and accessories; J. A. Shirley.

Peabody—McConnell-Linley Motor Co., Marion County; $80,000; Louis D. Linley, Donald F. McConnell, Peabody; Chas. E. Irving, Burlington, Vt.

Topeka:

Balden Motor Co., 425 Jackson St., tractors.

Hays Motor Corp., deal in autos and conduct general repair business; $50,000; Allen Hays, pres.; F. W. Mills, sec.-treas.; J. S. Rausin, director and general manager; A. W. Freeman and H. R. Constable, directors.

Kentucky.

Paris—Big Four Motor Co.; $50,000; C. P. Mann, H. S. Redmon, W. S. Hughes, W. L. Board.

Maryland.

Baltimore—Spann Motor Co.; $225,000; Chas. and John D. Spann, John H. Sause, Jr.

Massachusetts.

Beverly—Ford Owners of America, Inc., Ford motor cars; $100,000; Fred C. Trask, Norman L. Wallace, Geo. H. Whittemore.

Boston:

Babcock Sales Co., motor vehicles; $100,000; Reginald H., Martin and Sarah R. Wisbach, H. Gordon.

Mann, C. J. & Co., Inc., autos and automotive equipment and devices; $5000; Chas. and Jack D. Grossman, Isidor Saltz, directors.

Bridgeport—Krause D'Elia Electric Co., motor vehicles and accessories; $25,000.

Fall River:

American Motor Car Co.; $15,000; directors, Jos. Heywood, pres.; Jas. H. Gildard, treas.; Louis E. Fournier.

Overland Fall River Corp., autos; $60,000 John Hall, Alban J. Gagnon, J. B. Cartier.

Springfield:

Daniels-Hurley Motor Co.; $50,000; Chas. F. Duggan, F. Hurley, Fred Reilley.

Dickens Motor Co., Westcott agency, Colonnade garage, 51 Summer Ave.; Jas. Dickens, Jr., manager.

Worcester—Hare's Motors of Worcester, Inc., motor vehicles and crafts; $100,000; Fred. J. Klauer, Jos. R. Hiltz, John B. F. Lawrence.

Michigan.

Bay City—Fletcher Auto Sales Co.; $100,000; R. H. Fletcher, R. H. Fletcher, Jr., Walter Fitzhugh.

Marquette:

Bissell, T. E. & Son, tractors, autos and accessories; $25,000.

Upper Michigan Motors Corp., formerly J. S. Davis Motor Co.; $40,000.

Minnesota.

Hallack—Kittson County Machine Works, tractor and implement business.

Lake City—Lake City Motor Co.; $35,000; John A. Duffus, Milton A. Erickson, Fred C. Fick.

Missouri.

Bethany—Hacker, Otis; Cleveland and Chandler motor cars.

Breckenridge—Andrews Motor Co.; $35,000.

Independence—Select Motor Co., care of Paul W. Shepard, 121 S. Main St.; $5000.

Joplin—Durham Auto Co., 221 Main St.; $100,000; W. R. Shuck, atty. Brisco Bldg.

Kansas City:

Consolidated Motors Co., to succeed Kagey Motors Co., Westcott and R. & L. Electric distributor and Prairie Motors Co., distributor of Kissel and Saxon lines; sales rooms and executive offices at McGee traffic way and 24th St., service station at Main and 35th Sts.; $100,000; R. G. Kagey, pres. and gen. man.

Front Drive Motor Co.; $200,000; Albert I. Beach, atty., suite 1206-7 Commerce Bldg.

Great Western Motors Co., 3024 McGee Traffic way, tractors and passenger cars.

Kirkland-Cravens Motors Co., 1503 McGee St., successor to Buxton-Phillips Co., distributor of Maxwell and Chalmers autos, and Cravens Motor Co., distributor of American car and Hurlburt ruck; $500,000; H. G. Kirkland, pres.; Walter Cravens, Salina, vice pres. and treas.

St. Louis:

Boehl Motor Truck Co., 3021 Olive St., Denby truck; J. Louis Boehl, pres.; P. H. Fuchs, vice pres.; Francis Wagner, sec.

Holmes Motors, Inc., 3015 Locust St., successor to Franklin Auto & Supply Co. Holmes air cooled cars; $50,000; C. T. Payton, pres.; E. C. Klipstein, vice pres.; W. A. Cochran, sec.-treas. and gen. man.; E. M. Grossman, atty, Rialto Bldg.

Nebraska.

Sidney—Sidney Truck & Tractor Co., trucks and tractors; $25,000; Stephen Johnson.

New Jersey.

Hackensack—United Auto Electric Service Corp., autos, etc.; $200,000; Cornelius A. Cole, Hackensack; Robt. A. Van Voorhis, Jersey City; Arthur R. Oakley, Pearl River, N. Y.

Newark—Rutan Motor Sales Co., general auto business; $100,000.

New York.

East Randolph—E. Randolph Mfg. Corp., autos and sleighs; $50,000; C. C. Tennies, R. and S. C. Henning.

Jamaica—Downs & Tompkins, autos; $50,000; I. L. Terry, B. Tompkins, E. O. Downs, Flushing.

New York City.

Arbert Construction Co., Manhattan, autos; $20,000; J. M. Levine, J. Bashein, J. C. Benson, 403 W. 115th St.

Gasifier Co., Manhattan, autos; $110,000; C. Wilson, E. F. and G. L. Kennedy, 2515 Grand Concourse.

Greene Bros., auto business; $50,000; G. W. Kutscher, R. B. and A. H. Greene, 1050 Amsterdam Ave.

H. & D. Motors Co., Manhattan, autos; $500,000; G. F. McKay, A. A. Hayes, C. J. Cahill, 370 Manhattan Ave.

Hope Motors, Manhattan; $100,000; F. N. Post, M. Holmes, J. P. Orteig, 227 W. 61st St.

Hurley Motor Co., 312 N. Broadway, R. & V. Knight cars; H. J. Hurley.

Kempf, Cahill & Helbig, Queens, autos; $30,000; F. J. Kempf, J. H. Cahill, W. A. Helbig.

Longview Auto Repair & Specialty Co., Bronx, auto business; $15,000; F. A. Dede, G. W. Breitweiser, P. Shapiro, 1933 7th Ave.

Reilly & Scott, Manhattan, autos; $5000; A. Reilly, M. E. Reardon, G. A. Scott, 136 W. 52nd St.

Port Richmond—Einziger Bros., autos; $10,000; W., E. and B. Einsiger.

Yonkers—Affleek Auto Corp.; $5000; W. R. and J. G. Affleek, J. G. Affleek, Jr.

North Carolina.

Charlotte—Cole Tractor Co.; C. O. Kuester, E. A. Cole, A. L. Byrd.

Greensboro—Greensboro Republic Truck Co., trucks, tractors and passenger cars; A. G. Garrett, M. B. M. Mayes.

Roseboro—People's Motor Sales Co.; $50,000; H. L. Boring.

Wilmington—Wilmington Taxicab & Sales Co., auto and livery business; $10,000; W. A. Cannon.

Ohio.

Andover—Andover Auto & Tractor Co.; $75,000; G. D. Stump.

Cleveland—Meade Motor Co.; $10,000; E. Meade, A. Horwitz, R. O. Bartholomew, F. H. Pardee.

Oklahoma.

Ardmore:

Guaranty Motor Sales Corp.; $12,000; E. E. Chivers, V. V. Suggs, P. M. Brigance.

Mechanic's Motor Co.; $100,000; W. F. Oakley, M. T. Steele, J. C. Nelson.

Muskogee—Mid-Continent Motor Corp., truck and tractor agency; $20,000.

Oklahoma City—Hurley Motor Co., 312 N. Broadway, R. & V. Knight cars; H. J. Hurley.

Tulsa:

California Auto Co.; $50,000; H. P. DeLongy, S. Goldman, E. J. Lundy.

Tulhoma Motor Co.; $1000; Jas. Coburn, V. Goble, C. E. Olander.

Rhode Island.

Providence:

Hersch Motor Corp., motor vehicle business; $10,000; Anthony A. Mulligan, Jane Silverman, John F. Harloe, Jr.

Howard, Fred M. Co., autos; Fred M. Howard, Arthur M. Alden, Robt. L. Knight.

South Dakota.

Aberdeen—Aberdeen Motor Co., Inc.; $100,000; A. C. Walter, A. B. McDonald, F. K. Holb.

Texas.

Amarillo—Markham Motor Co.; $100,000; W. M. Williams.

Austin—Woodward Mfg. Co., autos and auto bodies; $500,000; D. J. Woodward, J. A. Nichols, D. J. Woodward, Jr., Sam Sparks, R. R. Ogden.

Bay City—Bay City Auto & Sales Co.; $125,000.

Beaumont—Kyle Owens Motor Co.; $10,000; Kyle Owens, E. C. Gilmartin, E. S. Sutliff.

Cisco—B. & H. Motor Co.; $50,000; Ed. S. Hughes, H. I. Stock, R. E. Brookshire.

Comfort—Alsbury Motor Co.; $34,000; E. M. Alsbury, E. C. Schuster, Ben Taub.

Dallas—Standard Auto Co.; $25,000; T. R. Peacock, H. C. MacNeath, W. E. Z. Grimes.

Dennison—Thompson Motor Sales Co.; $100,000.

Eastland:

Lone Star Motor Co.; $25,000; L. C. Garrett, G. A. Phillips, L. M. Pratt.

Magness Buick Co.; $32,000; H. S. Magness, J. H. Cheatham, F. A. Blankenbeckler.

Galveston—Alderman-Clark Motor Co.; $12,000; Dave Alderman, Townsend Clark, R. M. Thompson.

Hereford—Motor Sales Co.; $10,000; Eli and W. E. Dunlap, I. W. Hough.

Houston—Sherwood Auto Market, Prairie Ave. and San Jacinto St.; $350,000; W. C. Roberts, pres.; E. P. Maynard, sec.-treas.

Jasper—Jasper Auto Co.; $50,000; G. G. Markley, P. H. Powell, J. H. Pruett.

McKinney—Brown-Mann-Nash Co., Nash cars and trucks; $20,000.

San Antonio—Page Motor Co.; $50,000; F. O. and Mary A. Davidson, J. A. Treadway.

Silsbee—Silsbee Auto Co.; $25,000; G. G. Markley, P. H. Powell, N. A. Cravens.

Smithville—Smithville Motor Co.; $30,000; A. V. Bothage, Oswald and A. G. Buescher.

Waco—Brazos Motor Co.; $20,000; Ed and E. G. and G. W. McCullough.

Whitesboro—Shelton Auto Co.; $40,000; P. M. and Will and Wm. Shelton.

Yorktown—Yorktown Motor Co.; $10,000; H. R. and J. R. Frobese, B. Schiwetz.

Virginia.

Norfolk—R. H. White, tractor, passenger car and truck business.

Wytheville—Wythe Motor Co., autos, tractors and accessories and general garage business; Jas. D. Tate.

Wisconsin.

Ashland—DuPont Motors Co.; $20,000.

Fond du Lac—Raymer-Romaine Co., successor to Engels & Romaine Co. and E. Eugene Raymer, passenger car, tractor and implement business; E. Eugene Raymer.

Stevens Point—Motor Sales Co.; $25,000.

MANUFACTURERS OF AUTOMOBILES, TRUCKS, TRACTORS, ETC.

Dover, Del.—Plow-Planting Tractor Corp.; $250,000; Wray C. Arnold, Frank A. Cabeen, Jr., Frank W. Hay, Philadelphia, Pa.

Wilmington, Del.:

Alemite Lubricator Co. of Delaware; autos; $50,000; Louis A. Levy, Geo. J. Racher, Wilmington; Conrad Cloaking, Philadelphia, Pa.

Columbia Tractor Co., autos; $2,500,000.

Franklin Wilmington Motor Car Co., motor vehicles; $200,000.

E. Moline, Ill.—R. & V. Motor Co., to take over auto business of Root & Vandervoort Co.; $6,500,000.

Long Island City, N. Y.—Lease Motors Co., consolidation of Lease Motors Co. and D. D. D. Corp., autos and equipment; $1,800,000; I. and R. M. and A. Lease.

New York City—Sperling Motors Corp., Manhattan, autos, etc.; $20,000; H. S. Hechheimer, P. J. Fowler, O. Sperling, 1465 Broadway.

Riverhead, Suffolk County, N. Y.—Fanning, Edwards & Gagen, autos, air planes and farm implements; $150,000; I. T. and E. S. Edwards, J. T. Fanning.

Cincinnati, O.—American Tractor & Implement Co., tractors and implements; $400,000; Edwin McFarland, pres.; H. C. Hubbell, gen. man. Factory at Washington Court House, O.

Cleveland, O.—National Auto Mfg. Co.; $50,000; J. E. Heene.

Pittsburgh, Pa.—Wick Auto Construction Co., autos and parts; Harry L. Wick, A. L. Pretty, Ellsworth Jordan; Robt. B. Ivory, rep., 1156 Frick Annex.

Waynesboro, Pa.—Frick-Geiser Co., to take over Emerson-Brantingham plant and light machinery manufactured by Frick Co.

Houston, Tex.—Driverless Auto Co.; $10,000; F. Scott Glover, L. A. Glover.

MANUFACTURERS OF PARTS, ACCESSORIES AND EQUIPMENT.

California.

San Francisco—Van Air Spring Co., auto air springs; C. R. Gray.

Connecticut.

Stratford—Liberty Mfg. Co., Cameron air-cooled engines for autos, trucks and tractors; $3,000,000.

Delaware.

Dover:

Auto Supply Service Corp., motors, engines, etc.; $500,000; Frank M. Walsh, New York City; L. H. Anderson, H. Bouton, Brooklyn, N. Y.

Collier Motor Devices Corp.; $100,000; Wm. H. Smith, Rich. M. Page, John T. Carr, Lowe, N. Y.

Dixie Tire & Rubber Assn.; $500,000; J. E. Mayo, J. D. Youngblood, R. T. Meadow.

Electric Spark Plug Co.; $100,000; John W. and Mark H. Gleason, Jos. W. Pearson, Schenectady, N. Y.

Horner Motor Corp., gasoline motors; $200,000; Chas. B. Lusk, Ernest G. Horner, Quincy, Ill.; Ernest L. Horner, Detroit, Mich.

Miller, R. E., Rubber Co., tires, etc.; $2,000,000; Harry C. Hand, Saml. B. Howard, Robt. K. Thistle, New York City.

Vokelhorn Corp., device for motor vehicles; $500,000; B. F. Frieble, John Matta, Adam Erdman.

Wilmington:

Apex Motor Corp., motors and supplies for autos; $4,000,000.

Dayton Rubber Mfg. of Del., tires; $200,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

International Products Corp., crude oil and rubber, etc.; $1,000,000; T. L. Croteau, M. A. Bruce, S. 1. Dill.

Motor Radiator & Mfg. Co.; $70,000; M. L. Rogers, L. A. Irwin, W. G. Singer.

Powertown Tire Sales Co.; rubber tires; $1,200,000; M. M. Lucey, V. P. Lacey, L. S. Dorsey.

Reliable Auto Parts Co.; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Illinois.

Chicago:

Automotive Mfg. Co., auto accessories; $10,000; F. P. Armbruster, R. Wetherhold, W. C. Wilson.

Battery Specialty Co., manufacture and deal in batteries, motor accessories, machinery, etc.; $5000; Carl Behn, Jr., Cora E. and John S. McGlashan.

Movie Parts Co. of America, auto supplies; $6000; Ben J. Weisbrodt, S. A. Guthrie, Chas. Y. Freeman.

Hamilton—Armored Tire & Rubber Co., auto accessories, etc.; $1,000,000; R. L. Wheaton, Wm. A. Bradford, R. M. McNish.

Indiana.

Anderson:

Fennessy Auto Lock Co., auto accessories; $10,000; Jas. H. Fennessy, Maurice Collins, Philip B. O'Neill.

Star Automotive Specialty Co., auto accessories; $100,000; Wm. Wikle, Harry Stahl, Wm. Estep, Guy Martz, Hans Runyan.

Massachusetts.

Boston—Vehicle Auto Top Co.; $8000; directors, Harry Lukatch, pres.; Sam Weinstein, treas.; Ruth M. Marshall.

Michigan.

Iron Mt.—Mich. Land & Lumber Co., to conduct saw mill and body plant; $2,000,000; Henry Ford, pres.; E. G. Kingsford, vice pres. and asst. treas.; C. B. Longley, sec.; Edsel Ford, treas.

Missouri.

Kansas City—Hartford Windshield Mfg. Co.; Watson, Gage & Ess, atty., Grand Ave. Temple.

St. Louis:

American Gasolater Co.; $100,000; Sturdevant & Sturdevant, atty., Central National Bank Bldg.

Automotive Piston Ring Co., 4510 Manchester Ave.; $7000; Walter F. Schelp, atty., 10 Title Guaranty Bldg.

Robinson Automatic Fender & Safety Appliance Co.; $2000; Keil & Keil, atty., 4061 Chouteau Ave.

Shafer Safety Auto Post Co.; $50,000.

Stone Motor Devices Co., 718 Spring Ave.; $2000; Jas. R. Van Slyke, atty., Third National Bank Bldg.

Tornado Auto Pump Co.; $100,000; Hugh K. Wagner, atty., 212 Calumet Bldg.

New Jersey.

Passaic—Ajax Battery Co., Ajax storage batteries; $500,000; Delos C. Gibson, J. H. Lefferte, Rich. Baker, Garfield.

New York.

Brooklyn—American Auto Fender Works, auto fenders and other sheet metal specialties; $15,000; R. and I. Rosenthal, 715 Lafayette St.

Buffalo—Cutting, A. D., Body Corp., auto bodies; $100,000; F. F. Grott, J. H. Eberhardt, A. D. Cutting.

New York City:

Accessory Products Corp., Manhattan, motors and air planes; $10,000; H. Eagle, R. Delamater, W. H. Cradick, 159 W. 24th St.

Circle Storage Battery Co., Manhattan; $5000; D. S. Tuttle, R. A. McIntyre, M. D. Welch, 349 W. 85th St.

Hart Bell Mfg. Co., carbon removers and auto jacks; $1,250,000; Geo. V. Reilly, Robt. K. Thistle, Saml. B. Howard.

Non-Metallic Piston Corp.; $500,000; F. R. Hansell, J. Vernon Pimm, F. M. MacFarland.

Railway Motors, motor truck frames; $60,000; W. D. A. Rose, L. Prasher, H. S. Gray.

Star Rubber Co., Manhattan, tires, etc.; $10,000; G. Norris, F. L. Driscoll, H. Buste, 115 Broadway.

Universal Starlight Signal Corp., Manhattan, auto signals; $1,000,000; H. M. Schemme, S. D. Kessler, E. E. Fuchs, 310 W. 99th St.

Nyack—Burlock Non-Skid Tire Corp.; $250,000; Jas. E. Burlock, Chas E. Spiegel, New York City; Walter D. Beardsley, Nyack.

Rochester—Auto Safety Signal Co. of Del.; $1,000,000; Z. A. Gilbert, rep.

Ohio.

Cleveland—Zenith Renewable Spark Plug Co.; $41,000; E. H. Wade.

Dayton—Allsteel Tire & Rubber Co., tires and inner tubes and metallic air bag fo. use in manufacture and vulcanizing of tires; $250,000; Andrew Huetter, pres.; Rich. Burkhardt, Geo. H. Kramer, A. J. Pocock, H. Knapp.

Oklahoma.

Tulsa—Cal. Auto Top Co.; $50,000; H. P. DeLongy, S. Goodman, E. J. Lundy.

Pennsylvania.

Allentown—K. & L. Radiator Co., radiators and other iron and steel products; $1,200,000; J. M. and J. H. Mack, W. J. Grives.

Brownsville—Vokelhorne Corp., device for motor vehicles; $500,000; B. F. Frieble, John Matta, Brownsville; Adam Erdman, Uniontown.

Coudersport—Graham Roller Bearing Co., roller and ball bearings; $325,000.

Rhode Island.

Providence—Air-Jac Corp. of America; $300,000; Thos. Gavin, Louis Cher, Gladys Goldsmith.

Texas.

Houston—Ho-Tex Mfg. Co., 7400 Wash. Ave.; tires; Max Krost, pres.

San Antonio—Bull Bros. Tire Co.; $40,000; Chas., Harry and Gilham Bull, Chas. Bull, Jr.

Wisconsin.

Ashland—DuPont Motors, Inc., liquid fuel for internal combustion engines; A. B. Fontaine, Ralph T. Osman, A. Sparling.

Beaver Dam—Duplex Storage Battery Co., storage batteries; $600,000; Wm. Petschel, pres. and chief engineer; Peter Kettenhofen, business manager.

Boscobel—Hunt, Geo. L., Mfg. Co., automotive equipment, parts and accessories.

La Crosse—Kone Clutch Corp., clutches and other transmission units; C. S. Cone, G. O. Stoffer, Geo. W. Bunge.

Milwaukee:

Classy Auto Deflector & Supply Co.; $500,000; Henry M. Johnson, Andrew Gilbertson, Mary Stockhausen.

Hub Body Corp., special speedster and sport type bodies for passenger cars; A. B. Elmer, Herbert Zwebell.

Lincoln Light Corp., make and deal in generating systems, fixtures, appurtenances, etc.; $250,000; Adolph, Jas. and Herbert Mahler, 219 28th St.

Oliver Mfg. Co., lifting jacks, wrenches, tools, etc.; Helmus B. Wells, gen. mgr.

Racine:

Far Motorizer Co.; $250,000.

H. & M. Body Corp., Mitchell Wagon Works plant; $1,575,000.

Sheboygan—She-Boy Rubber Co., tires, tubes, protectors and mechanictl rubber goods; executive offices at 176 16th St., Milwaukee; $675,000; Leo Hofmeister, Milwaukee, pres. and gen. mgr.; Danl. F. Knauth, Kiel, vice pres.; E. A. Hickey, Sheboygan, sec.; Corty M. Halderson, Valders, treas.

GARAGES, REPAIR SHOPS AND SERVICE STATIONS.

Arizona.

Phoenix—City Garage; W. L. George, prop; Thos. Lee, mgr.

California.

Folsom—Highway Garage, Chevrolet cars; D. H. Slocum, G. Frazier.

Helmet—Helmet Auto Electric Co., Carmelita St., battery and electrical work; T. H. Eaton, prop.

San Francisco—San Francisco Battery Co., 987 Golden Gate Ave., general storage battery work; Korss Bros., prop.

Santa Ana—Anderson & Hinton, Third St., tire and vulcanizing establishment; Victor tire agency for Orange county.

Connecticut.

Stratford—Reliable Auto Repair & Supply Co.; $15,000; Jos. Nerber, Louis Gerner, John Wrabel.

Illinois.

Pecatonica—Balke & Farren, Hamilton Garage; Walter Blake, Joe Farren.

Kansas.

Antelope—Reed, L. S., general auto repairing and deal in Goodyear and Goodrich tires, accessories, gasoline and oils.

Argentine—Argentine Motor Service Co.; $10,000.

Massachusetts.

Boston—Kenmore Co., Inc., sell and repair second-hand autos; $5000; directors, Alex V. Campbell, pres.; Robt. S. Steinhert, treas.; A. L. Heath.

Worcester—Main North Garage, Inc.; $15,000; directors, Jas. M. Curnin, Harry A. Katz, Estella C. Dawson.

Michigan.

Detroit—Enterprise Garage Co., to conduct a garage; $25,000; Geo. W. Jackson, Robt. Gilman, Robt. L. Bradby.

Grand Rapids:

Carleton, H. E., Garage; $5000.

Continental Garage Tool Co.; $50,000.

Minnesota.

Candy—Tire Hospital, Laney Bldg., Main St., tire and vulcanizing plant, formerly conducted by Albert Ginsbach; Crum & Pennington, prop.

Missouri.

St. Louis—Eagle Auto Service Assn.; $200; Wm. H. O'Brien, atty., 1204 Central Nat. Bank Bldg.

New York.

Brooklyn:

Eager & Herman, garage; $5000; S. Eager, S. & C. Herman, 1864 Sterling place.

J. & G. Garage; $12,000; W. & J. Genat, E. Greenberg.

Parker & Messall, garage; $10,000; C. P. Latou, L. Messall, F. S. Parker, 225 94th St.

Stagg Auto Service Co.; $10,000; D. Wolf, A. I. Nova, E. I. Rubenstein.

Strand Auto Repair Co.; $15,000; W. Cummings, M. and A. Hamilton.

Buffalo:

Delavan Garage; $75,000; M. and C. Weill, E. A. Kinner.

Frontier Motor Service & Supplies Co.; J. M. Fes, A. O. Kautz, J. L. Kenefick.

Farmingdale, L. I.—General Motor Service Corp.; $7500; B. Raymond, H. Baker, I. Jaffe.

Lake Placid—Lake Placid Garage; $50,000; F. Dashnaw, T. A. Leahy, P. J. Hennessy.

New Rochelle—Rosie's Sale & Service Corp., auto business; $50,000; J. Werbelowsky, B. Rosenbaum, E. J. Boulle.

New York City:

Adore Garage Corp., Manhattan; $50,000; L. Eckman, I. M. Sackin, N. Broyd.

Always Ready Auto Service Co., Manhattan; $50,000; L. Heron, C. W. Folsom, F. L. Carr.

Auto Hospital & Machine Works, Manhattan; $5000; R. T. Apuzzo, E. Young, J. R. Engelman, 416 E. 65th St.

Campus Garage, Manhattan; $60,000; W. C. Bergen, J. J. O'Grady, M. Blau.

15th Ave.—60th St., garage, Manhattan; $15,000; M. Eistenstein, A. Gronich, I. J. Schuster.

G. W. Garage; $15,000; I. and S. Greenberg, J. Wolkowitz.

Jackson & Webster Ave. Corp., Queens, garage; $30,000; J. J. and B. O'Hare, J. E. Connolly.

Kaufman's Garage, Manhattan; $50,000; M. Swerling, M. and M. Kaufman, 214 W. 50th St.

L. & K. Garage; $5000; H. and E. Label, I. Karp.

M. K. L. Corp., Manhattan, garage; $25,000; S. Milbauer, S. Kleinfeld, W. Loeb, 1457 Broadway.

No. 551 W. 34th St. Garage, Manhattan; $15,000; T. A. Merz, F. H. Foley, P. H. Greenstein, 485 Jackson Ave., Bronx.

118th St. Garage, Manhattan; $20,000; A. W. Venino, A. Fuhl, J. Leahy, Jr.

156 E. 57th St. Garage; $25,000; M. Stoltzberg, C. Vogel, S. Krautheimer.

Poe Garage Co., Bronx; $25,000; A. F. and C. J. and E. Schwarzler.

Rosen, E. & Co., Manhattan, auto repairs; $25,000; A. S. and W. C. Levy, E. Rosen, 840 E. 93rd St.

50th St. East Garage Co., Manhattan; $50,000; A. Levy, H. R. Batcher, S. Shatz, 111 Broadway.

Signal Garage; $15,000; C. Brust, C. Vogel. M. Stoltzberg.

Webb-Dutemple & Co., Manhattan, garage; $25,000; W. W. Ulman, C. G. Dutemple, W. S. Webb, 1299 Dean St., Brooklyn.

Union Springs, Cayuga County—Union Springs Garage Co.; $6000; E. Jobson, J. T. Mascord, G. C. Starkweather.

North Carolina.

Wilmington—Y. & F., auto service and accessory station; Jos. Youngblood and Louis Fisher, props.

Ohio.

Cleveland:

Euclid 105th Garage Co.; $60,000; B. H. Lea, S. L. Hickman.

Hanley Motor Service Co.; $10,000; J. H. Hanley.

Dayton—Point Garage Co.; $50,000; T. W. Jordan, C. M. Keiter.

Oklahoma.

Miami—B. V. D. Battery & Tire Co., 18 A. St., N. E., battery and tire station; Ed F. Deering, mgr.

Oklahoma City—Triangle H. Cooperative Service Station Co.; $5000; J. M. Houston, T. C. Rice, I. W. Hensley.

Tahlequah—Pilcher & Herin, repair and storage plant and accessories, next to city hall.

Oregon.

Astoria—Astoria Tourist Garage; $25,000; S. W. Lovell, Norris Staples, S. S. Sovey.

Texas.

Ft. Worth:

Day & Night Motor Service; $100,000; J. W. Milner, B. N. Honer, B. B. Brown.

Guarantee Tire & Vulcanizing Co.; $5000; W. H. Beck, R. S. Smith, Max Eversberg.

Haskell—E. & L. Garage; Thomas Bros. prop.

Houston—Carlton, Smith & Grant, Standard Garage, 2404 Main St.; Harry G. Grant.

Ranger—Mission Garage & Motor Co.; $50,000; R. A. Benson, C. S. Clark, B. F. Gayton.

Pecos—Hairston, Eugene, vulcanizing shop, J. A. Hardy & Son Garage.

West Virginia.

Wheeling—12th St. Garage, Inc.; $150,000; S. W. Harper, J. A. Bloch, Arthur Langhans.

Wisconsin.

Milwaukee—Kraemer Harris Motors Co., garage; $20,000.

DEALERS IN ACCESSORIES, PARTS AND EQUIPMENT.

California.

Helmet—Kings' Tire House, 213 E. Florida St.;. A. King, prop.

Los Angeles—California Camel Corp. will handle sales in Cal. of Weekes Camel, a reserve radiator device; $30,000; P. B. Wright, W. H. Brayen, G. E. Reid.

San Bernardino—Eddy, Jos. D., tire store, 4th St., Miller tires.

Connecticut.

Bridgeport—U. S. Auto Indicator Co., indicators; $500,000.

Florida.

Jacksonville—Hill, Coite H., Inc., auto machinery; $50,000; Coite H. Hill, J. P. Holbrook, M. M. Parish.

Illinois.

Chicago:

Armored Tire & Rubber Co., auto accessories, autos, etc.; $1,000,000; R. L. Wheaton, W. A. Bradford, R. M. MacNish.

Service Garage Co., oil, gasoline and auto supplies; $3000; Geo. Backy, L. M. Betts, Albert O. Olson.

Tire & Battery Service Co., auto tires, accessories, etc.; $50,000; Edward J. Henle, Edgar E. Miller, Howard W. Sams.

Kansas.

McCracken—Williams & Alger, tire shop, Sutton Bldg.

Maryland.

Baltimore—Eskridge Tire Co., 868 N. Howard St.; $5000; David R. Eskridge, Maurice R. Robinson, Isaac Michaelson.

Massachnsetts.

Boston:

Kay-Fowler, Inc., buy and sell leather, rubber and canvas goods, etc.; $25,000; directors, Louis F. Fowler, pres.; Chas. Kay, Gloucester, treas.; Geo. F. Merrill.

National Auto Owners of America, Inc., auto accessories; $10,000; directors, D. A. Costa, pres.; Jos. Ascher, treas.; Ida T. Ascher.

Lawrence—Greaves, Casey Motor Car Co., Inc.; motors; $20,000; Geo. H. Casey, Fred L. Greaves, John D. Marks.

Springfield—Auto Pointer Co., Inc.; auto accessories; $25,000; Owen J. Marra, Michael M. Kiley, John H. Madden.

Michigan.

Detroit:

Steer Warms Sales Co., auto accessories; $5000; Roland C. and Elizabeth W. Lee, Eva Grain.

Watson, H. E., Battery Corp., batteries; $4000; Harry E. and Erma M. Watson, Zura Seavers..

Grand Rapids—Chisholm & Dickerson, accessories, parts, etc.; $30,000.

Jackson—Motor Sales Corp., auto accessories and parts; $25,000.

Missouri.

Kansas City:

Ace Hurd Tire & Service Co., 2740 McGee St.; $40,000; Geo. H. Imbrie, atty.

Air-Way Sales Co. of Missouri, care of E. A. Hosmer, 909 Sharp Bldg.; $50,000.

Storms Auto Supply Co.; $100,000.

New York.

Brooklyn:

Chase Tire Sales Corp.; $50,000; B. C. Ribman, A. M. and L. G. Chase.

Protex-In-Tire Co., linings for tires; $25,000; J. Steinman, L. E. Jennings, H. W. Brock.

New York City—Downing Tire Stores Corp., Manhattan; $100,000; C. J. and C. M. and D. R. Downing, 1985 Creston Ave.

Rochester—Rieke Sales & Service Co. Garage; $10,000; E. G. See, F. Christman, F. Lurz.

Ohio.

Cleveland—Aberdeen Motor Supply Co.; $25,000; W F. Burrer.

Columbus:

Cleveland Tire Exchange Co.; $10,000; W. Werner, E. E. Stearns, C. H. Royon, B. H. Hauck, H. Chapin.

National Auto Supply & Tire Co., 122 E. Long St., general tire and accessory business.

Rhode Island.

Providence—Suff Motors, Inc., motors, autos and accessories; $10,000; Abraham Suff, Joshua Bell, J. C. Semenoff.

Tennessee.

Knoxville—Little & Keener Battery Co.; $10,000; Chas. W. Little, J. B. Keener, Claud Reeder, J. B. Caldwell, T. T. Place.

Nashville:

Ford Sales & Service Corp.; $75,000; H. A. and R. J. Potter, L. O. Bing, A. C. Bain.

Motor Shop, Inc., auto accessories; $50,000; L. B. Lowenstein, Leroy Friedlander, Leo Goodman.

Texas.

El Paso—American Auto Supply Co.; $20,000; H. W. Bauder, W. H. Aldredge, W. H. Aldredge, Jr.

Ft. Worth—Ellison Friend Tire Co.; $10,000; Jas. Ellison, A. Carrol Friend, H. Simmons.

Wichita Falls—King & Weaver, 1012-14 Scott Ave., oils, gasoline and general auto storage business; Hugh Weaver, Joe A. King.

Wisconsin.

Madison—Smock, R. H., Sales Co., auto tires and accessories; $25,000; Robt. H. Smock, Raymond A. Kiefer, Patrick T. Stone.

Merrill—Smock, R. H., Sales Co., wholesale and retail dealer in auto tires and accessories; $25,000; Patrick T. Stone.

Miscellaneous.

Dover, Del.:

International Trucking Corp.; $100,000; Chas. B. Bishop, A. M. Fox, R. H. Ocheltree.

Rahe's Auto & Tractor School Corp., operate schools for teaching of handling autos; $250,000.

Wilsonville, Ill.—Benld-Wilsonville Motor Transportation Co., passenger, freight and express business; $10,000; Louis and Guiseppe N. Deambrogio, Frank Marne.

Clayton, Mo.—Auto Finance Co.; $3000; E. McD. Stevens, atty.

Atlantic City, N. J.—Auto Securities Corp., auto insurance; $50,000; Chas. W. Gale, Bernard T. Miller, Jos. A. Corio.

Bloomfield, N. J.—Bloomfield Taxi Service; $50,000; Jas. and Maria Delaporte, Maria Ippolta.

New York City:

Cunard Motor Trucking Co., Manhattan; $5,000; D. Sternberger, M. Hecht, B. Kaplan, 438 E. 70th St.

Doris Taxi Co., Manhattan; $12,000; A. Einhorn, M. Sherman, M. Dorfman, 562 Brook Ave., Bronx.

Mendelson, B. S., Auto Trucking Co., Manhattan; $10,000; A. Veinberg, A. and B. S. Mendelson.

Mott Haven Motor Transportation Co.; $10,000; G. Terwilliger, E. and R. Neumann.

Tulsa, Okla.—Ray Gasoline Co.; $25,000; Ray S. Fellows, Stanley D. Campbell, W. L. Doyel.

INCREASES IN CAPITAL.

San Diego, Cal.—Davies-Overland Co.; to $250,000.

Bridgeport, Conn.—Liberty Mfg. Co.; $250,000 to $3,000,000.

Indianapolis, Ind.—Holton Tractor Co.; $500,000 to $2,000,000.

Detroit, Mich.—Poll-Ells Aeroplane & Motor Corp.; $250,000 to $5,000,000. Name changed to Poll-Ells Corp.

Lima, O.—Lima Sheet Metal Products Co.; $50,000 to $300,000.

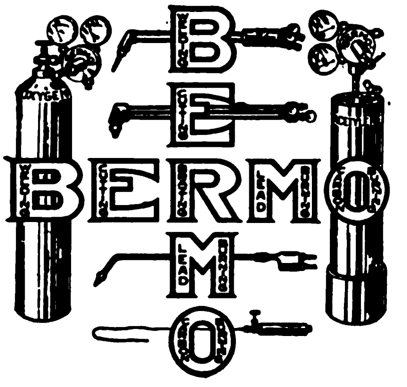
Richmond, Tex.—Richmond Motor Co.; $25,000 to $35,000.

Wichita Falls, Tex.—Southern Tire & Vulcanizing Co.; $10,000 to $40,000.

Manitowoc, Wis.—Eastman Mfg. Co.; $25,000 to $50,000.

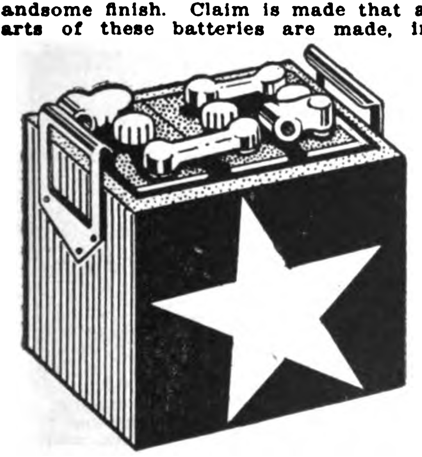
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

Bermo Welding Apparatus, for 16 years a well known product, is claimed to have reached a degree of efficiency which is the result of experience and experimentation and that practically all kinds of welding, cutting, lead burning, brazing and decarbonizing can be done at a minimum of time and expense. The manufacturer is in receipt of many letters of recommendation, all of which tend to show the general usefulness of the different products. All Bermo apparatus is guaranteed for one year and liberal terms of credit are given which enable the purchaser of a Bermo plant to pay for it from the profits of the business.



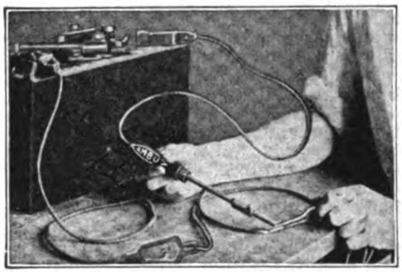
Manufactured by Bertschy Engineering Co., Cedar Rapids, Ia.

Star Storage Batteries, designed to meet every emergency to which a storage battery may be subjected, are made of the best of materials, of rugged design and handsome finish. Claim is made that all parts of these batteries are made, inspected and assembled by the manufacturer, and that no part is accepted until it has passed an especially rigid test. Car owners who have used the Star batteries are said to speak highly of their general efficiency and high class workmanship.



Manufactured by the Star Storage Battery Co., Muncie, Ind.

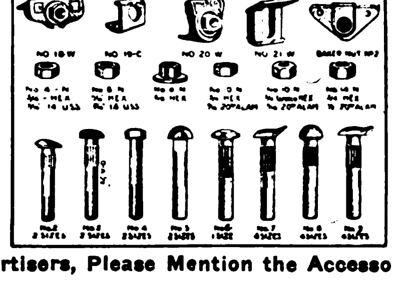
The Ambu Solder Iron complete, consists of three feet of rubber covered braided wire with clamp for attaching to battery, a three-foot connecting wire with two clamps, six carbon points, a piece of wire solder and one two-ounce can of Ambu solder paste. It is designed to work wherever there is a storage battery, and, therefore, can be used in the shop, the car or the garage. It is unique in that it wastes no current because none is used except at the instant of soldering.



Manufactured by American Bureau of Engineering, Inc., Chicago, Ill. Retail price, $5.

Hubco Replacement Rim Parts are said to be made in such manner as to eliminate all annoying squeaks and rattles when fitted to the car. The claim is made that properly annealed malleable iron is used, which does away with any wear on the rim, the idea being that it is better to have the wear come on the parts than on the rim. All parts are galvanized with a heavy double coating of galvanized iron, and are said to be absolutely rust proof. An interesting feature of the marketing of these parts is the dealers' specification sheets, which are laid out in such manner as to make it practically impossible for the wrong parts to be supplied to a customer. The line includes wedges, clamps, bolts and nuts for all makes of cars.

"HUBCO" REPLACEMENT RIM PARTS



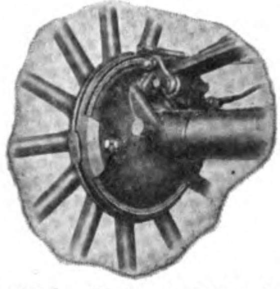
Manufactured by the Baltimore Hub Wheel & Manufacturing Co., Fallsway and Gay Streets, Baltimore, Md.

Gimlet Bit Sets—This set consists of 12 bits, 1/32 to 12/32 inches, put up in a round wooden box. Each bit is hand forged from crucible steel, carefully hardened, oil tempered and sharpened by hand.

ONE SET
No.577
HAND FORGED
GIMLET BITS
1/32 TO 12/32
MANUFACTURED BY
GOODELL-PRATT COMPANY
GREENFIELD, MASS. U.S.A.

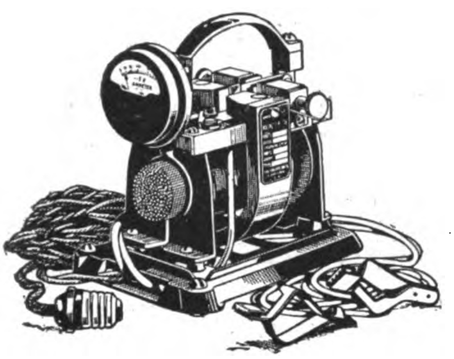
Manufactured by Goodell-Pratt Co., Greenfield, Mass. Price, complete, per set, $2.80. Weight, 1½ pounds.

The Moore Rear Wheel Service Brake for Ford Cars is a full wrap contracting brake, acting directly on the original Ford brake drums. It is operated from the original brake pedal, the Ford transmission brake band being disconnected and not used. Claim is made that it is positive in its action and can be applied gently or in such manner as to lock the wheels. There are no loose parts to rattle, and materials are used which seem to indicate that it will give thousands of miles of service.



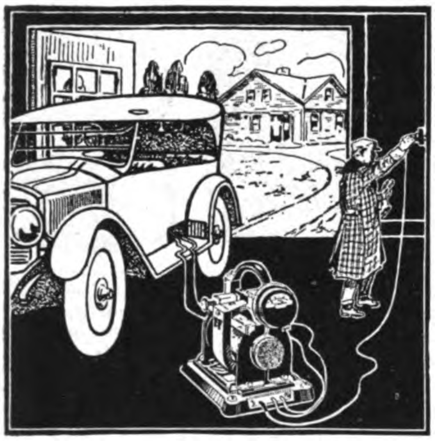
Manufactured by Tractor-Train Co., Connersville, Ind. Prices: Model 100, for passenger cars and all Model T chassis, $20 plus 75 cents excess tax. Model 200, for one-ton worm drive trucks, $40, plus $1.50 tax. F. O. B. Connersville, Ind.

The F-F Battery Booster is designed to furnish an efficient and satisfactory means for charging all types of storage batteries from alternating current. This device uses both sides of the wave of the alternating current, rectifying the positive and negative alternations through copper and carbon electrodes which, it is stated, are inexpensive and durable and cannot burn, break or depreciate on account of the infusibility of the carbon.



The essential parts of the mechanism are the transformer and rectifying unit. The rectified charging current delivered is an interrupted, pulsating direct current, the heating effect of which is stated to be less than with the straight direct current; therefore, charging can be done at a higher rate in less time. The upkeep is negligible as the carbon brushes are adjustable for wear simply by turning a thumb screw, and are claimed to be good for thousands of hours of service.

The F-F Alternating Current Battery Booster or Magnetic Rectifier is also stated to give the proper "taper" of charge. Its operation does not depend in any way upon the condition or state of the charge in the battery. It is entirely automatic and needs no fixed conditions of installation, constant attention or expert knowledge. The expense of operation is said to be no more than the cost of burning an electric light for a few hours. It is convenient in that the outfit can be readily transported and attached to the battery wherever located. All that is necessary to be done is to screw a plug into a lamp socket and snap the two charging wires on to the battery terminals.



The alternating current F-F Battery Booster is equipped complete with ammeter, long extension cord and plug, heavy charging wires and battery clips. The dimensions are five by seven by seven inches for types 16 and 112, and five by seven by nine inches for other types.

The same company also manufactures a combination of rectifier and carbon rheostat and F-F panel rectifiers in a number of types, as well as the F-F Battery Booster or charging rheostat with current regulator for use on 24 to 220-volt farm lighting plants, or direct current circuits.

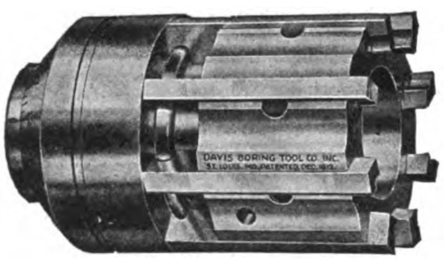
The company fully guarantees the F-F Battery Booster for workmanship and performance.

Made by the France Manufacturing Co., Berea road and West 104th street, Cleveland, O. Prices: Type 16, which charges one six-volt battery at a rate of eight amperes, $24; type 112, for one 12-volt battery at a rate of six amperes, $24; type 166, for one six-volt battery at a rate of 12 to 15 amperes, $32; type 1612, for one 12-volt battery at a rate of seven to eight amperes, $32; type 1626, combination outfit, for charging either six or 12-volt batteries at a rate of 12 or seven amperes, $48. These prices are for 110 or 220-volt circuits and for frequencies of 60 or 50 cycles. The voltage and frequency must be specified when ordering as the machines do not operate interchangeably on 110 and 220 volts or 60 and 50 cycles. When not specified, 110-volt, 60-cycle rectifiers will be sent. For 40, 30 or 25-cycle current, add $8 to above prices, except for types 16 and 112, which are made only for 60 or 50-cycle current.

The Davis Expansion Reamers have as distinguishing features, simplicity and practical construction, with the minimum number of parts, it is claimed. The blades are positively controlled by an accurate micrometer adjusting dial, graduated in quarter thousandths, which acts for both expanding and receding of blades. The blades are slotted and fit over the ring on the adjusting dial, which prevents their movement either way, without turning the dial. When the reamer is set to the size required the blades are individually and doubly locked to the reamer body by a locking principle which positively secures the blades without the use of individual blade screws, virtually making a solid reamer.

It is pointed out that the elimination of screws for holding the blades in a reamer body is a distinct advantage. The blades are held with a hardened pin, which is fitted to the reamer body on special taper with line contact only in groove in the blade, resulting in a constant downward and lateral thrust that firmly holds the blades under all conditions. Blades are clamped to the reamer body with the locking ring threaded on the adjusting dial, making it impossible to expand or recede the blades either by accident or carelessness without releasing the locking ring, which must be done before the expanding dial can be turned in either direction.

This reamer is stated to represent the first application of the principle of the forward movement of blades for the purpose of expansion in a tool of this type. This feature always keeps the blades cutting in advance of the tool body; consequently they never lose their bottoming feature. The movement of the blades is positively controlled by the adjusting dial, which expands or recedes them. They have liberal expansion, with one-quarter thousandth adjustment and the locking of the blades is absolute and positive.



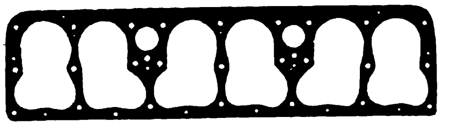
Among the distinctive features of Davis Expansion Reamers is simplicity of driving, which eliminates the necessity of making costly arbors. Any size can readily be applied without interfering with the driving shank. True alignment is assured when assembled in multiple form, virtually making a solid line reaming bar.

Blade efficiency and the cost of blades is an important factor which should be considered in connection with any adjustable reamer. Davis Expansion Reamers, it is stated, require but three groups of blades to cover a range of sizes from 1⅝ to six inches inclusive. When the blades for a six-inch reamer are worn under size they can be used in 32 smaller sizes down to and including four inches. Blades for a 3 15/-16-inch reamer can be used in 23 smaller sizes down to 2½ inches. Blades in a 2 7/16-inch reamer can be used in 15 smaller sizes down to 1½ inches. This wide range of adjustment permits reaming the maximum number of holes to a set of blades.

These tools are made either in the shell type or with a solid shank, straight or taper, to which a floating holder can be applied. All wearing parts are hardened and all threaded parts are protected from dust, chips or possible injury which might result from careless usage or accident.

Manufactured by the Davis Boring Tool Co., 3718-24 Forest Park Boulevard, St. Louis, Mo. Prices and literature on request.

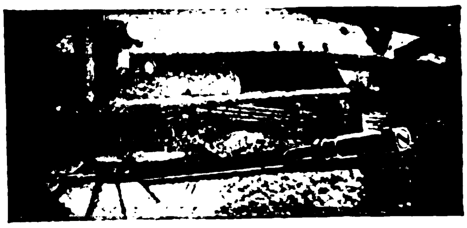
Universal Gaskets were designed to meet the demand of manufacturers and dealers for a first class gasket. They are of copper with an inner section of asbestos and are guaranteed to prevent the leakage of either gas or water. Universal gaskets are stated to be made of high grade material throughout and to stand up under the hardest usage. They are manufactured in all styles and shapes for regular and special work about the gasoline engine.



No. 1009 Hudson Super Six

Manufactured by the Universal Gasket & Manufacturing Co., 2901 South 48th avenue, Cicero, Ill. Prices and literature on request.

The Cincinnati Drag Link is designed for use in passenger cars and trucks and offers special features which should recommend it to manufacturers and service station owners. It is made of the highest grade of material throughout and special features are embodied in it the manufacturer claims, so that when once filled with lubricant no further attention is required for a year.

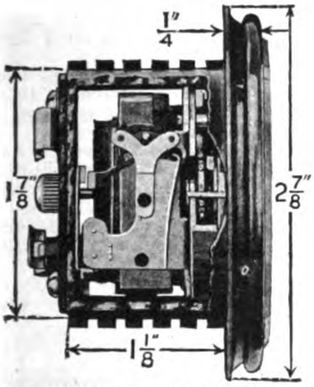


In the self-lubricating link a long wick is drawn through plugs at either end of the tube, and no matter in what position the link may be placed it is claimed that there is a constant flow of oil to the working parts, while the end grease cups deliver the lubricant directly to the wearing surfaces.

In a drag link which has been adapted to light vehicles, the connecting rod is upset into the sockets at the end to eliminate the weld. The sockets, while held firmly in place by spring pressure, are free to revolve slightly. This provides for the side motion of the steering arm which otherwise might injure the sides of the socket.

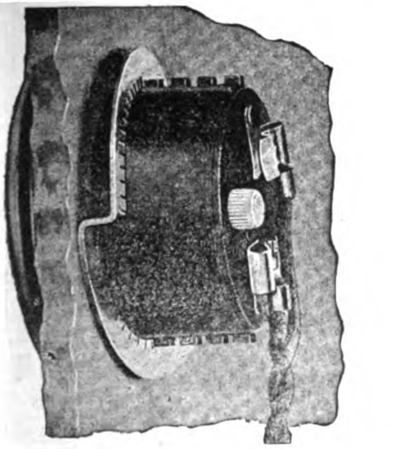
Manufactured by the Cincinnati Ball Crank Co., Cincinnati, O. Prices and literature on request.

The Connecticut Electric Clock was specially designed to meet the demand of the automotive industries for a time piece automatic in operation, needing no attention, and accurate under variable conditions. It has a finely adjusted seven-jeweled movement and in offering it to motor vehicle users the company does so with the positive knowledge that its value as an accurate, durable and simple time piece is beyond question, and that its merits will commend it to the thoughtful purchaser.



Simplicity is the keynote of construction in the Connecticut electric clock. All adjustments are of a permanent nature and will not get out of order. The contact points are of pure coin silver, and so mounted as to prevent arcing and corrosion. When connected with the storage battery a finely constructed coil spring is automatically tensioned to give the movement the exact power necessary for a proper beat of the balance, and being replenished electrically each minute, causes a constant spring tension, thereby effecting an excellent rating and a minimum of wear.

CONNECTICUT
ELECTRIC CLOCK

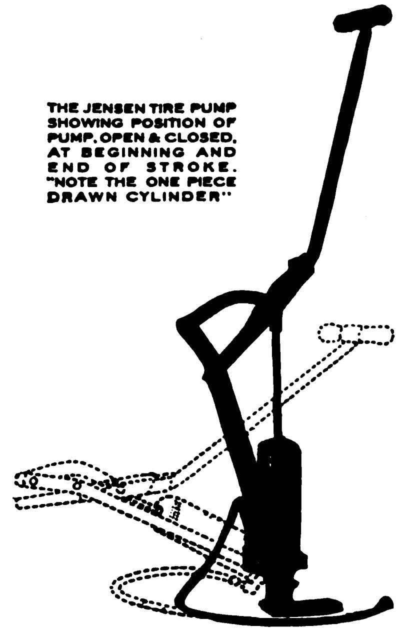


The materials used in this clock are of the very highest quality obtainable, and expense has not been a factor in developing it to make it the most reliable of automobile time pieces.

The case is of flange type to allow the use of a small dial and a small body, is dust proof, extremely compact and fitted with the Connecticut lock ring, which prevents it from jarring loose—no need of unsightly screws and nuts. The terminals on the back of the case are of a spring construction, which eliminates any possibility of becoming loose and insures a positive circuit. The setting knob is located on the back of the case, where it is not liable to be tampered with, but is at the same time easily accessible when actually needed for setting. The fiber washer at the back of the case completely protects it from short circuits. It is stated to be economical in current consumption, using less current in a year than a dash light in one hour.

Manufactured and guaranteed by the Connecticut Clock Co., Hartford, Conn. Price, $18; with luminous hands and dial, $2.50 extra.

The Jensen Tire Pump is designed to fill the demand for a pump that will inflate tires without back-breaking effort and physical exhaustion. It operates on the well known fulcrum and lever principle which actuates against a 90-pound pressure with less effort than the ordinary pump against a pressure of 65 pounds. It is stated that one-half the number of strokes are required to inflate a tire and that it is accomplished with one-third less energy on the part of the operator.

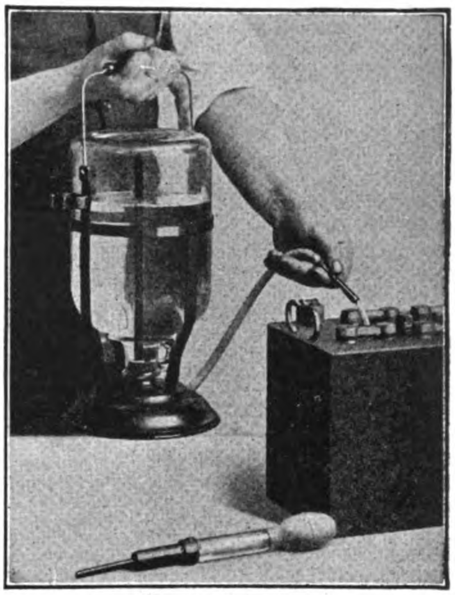

THE JENSEN TIRE PUMP SHOWING POSITION OF PUMP, OPEN & CLOSED, AT BEGINNING AND END OF STROKE. "NOTE THE ONE PIECE DRAWN CYLINDER"

The pump is constructed almost entirely of steel and is machined to fit accurately, is equipped with a ball check valve at the outlet of the cylinder, which prevents back pressure, while the 7/16-inch piston is made of cold rolled steel. The plunger is made of oil seasoned oak leather securely fitted inside of the cylinder chamber and fastened to the end of the piston by means of a threaded and reinforced plunger case with a metal washer and machine turned lock nut riveted tight. The cylinder is a one-piece drawn type insuring, it is claimed, absolutely air tight compression under all conditions.

Manufactured by the W. H. Howell Co., Geneva, Ill., Price $6; fitted with pressure gauge, $7.35.

The Reliable Battery Filler is designed especially for the service station which is called on to supply many batteries during the day with distilled water. The device is provided with a rubber tube fitted with hard rubber end for filling batteries, and a catch on the side member of the frame holds the tube when not in use, preventing leakage.

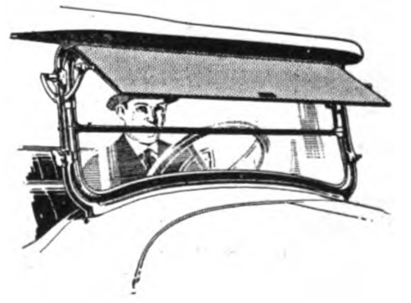
A bracket is also provided for the hydrometer used in testing the solution, while a handle is fitted at the top by which the filler is carried. The container consists of a large glass bottle, which is held inverted in a frame work of steel bands, the connection to the tubing being made through the base or stand. It is stated that the metal of the frame does not come in contact with the contents of the bottle and that any gallon bottle will fit the device. This filler provides a quick and easy means of testing and filling storage batteries.



Manufactured by the Reliable Manufacturing Co., Cleveland, O. List price, $5; discount to the trade.

The Doty Shield Visor is an adjustable shade fitted on to the windshield, made in sizes to fit any open, as well as some closed cars, and enables the car owner to have a convenience that is becoming standard equipment on some of the higher priced limousines. It will shut out the lights of other cars by night, giving a clear view of the road ahead. In the day time it eliminates the glare of the sky and sun's rays, relieving eye strain. During a rain or snow storm it keeps the windshield clear so that the driver can see the road ahead. It is also claimed to add to the appearance of the car.

The Doty Shield Visor is not built like an awning, but over a strong, well shaped, rigid frame, which conforms to the shape of the top. This frame is covered with a fine quality of black, long grain top material, while the under side covering has a green Spanish leather finish. The metal parts are black enamelled and nickel plated.



The Doty Shield Visor can be attached in five minutes, it is stated, no drilling of holes or altering of the car in any way being necessary. It will not rattle and is guaranteed to withstand the strongest wind.

When ordering the make, model and year of car should be stated, or the exact length (inside the frame) of the upper windshield glass only may be given.

Manufactured by Auto Radiator Shutter Co., Dayton, O. Sold to dealers through jobbers by distributors.

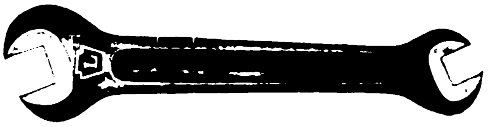
The La France Fire Extinguisher No. 3 is designed to give the motorist, who carries the extinguisher in his car and the service station owner who provides fire protection in his station the best means of handling and putting out small fires at the start. It has been developed, it is stated, with the aim of giving instantaneous and rapid action from the first pull to the last push of the handle. It throws a solid, steady stream from 30 to 40 feet. The pump mechanism is so constructed that it requires no solid joints and as a result it is claimed that there is no part which can be affected by corrosion which results from the action of the carbon tetrachloride solution on the acid flux used in soldering. It is further stated that accidental dents in the walls of the shell will not affect the perfect working of the extinguisher.

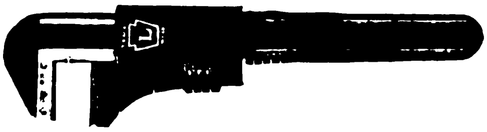
LA FRANCE
FIRE EXTINGUISHER
TO OPERATE
FLUID
CAUTION
REFILLING

Manufactured by the American-La France Fire Engine Co., Inc., Elmira, N. Y. Price with auto or wall bracket complete, $12. A handsome glass wall case can be supplied at $2 extra. The La France solution sells for $1.50 a quart, or $25 for five gallons.

The Lakeside Drop Forged Wrenches are entirely new in design and every detail of their construction, it is stated, has been carefully worked out. For strength, workmanship, quality of material, appearance and general utility, they are said to be unsurpassed.

All finished wrenches are milled to size and case hardened all over, polished and highly finished with bright heads lacquered. The semi-finished wrenches are milled to size and case hardened all over with polished heads, while the unfinished wrenches are the forgings milled only. All wrenches, unless otherwise ordered, are milled for United States standard nuts and bolts. A special line of heavy wrenches for United States standard nuts are also made and these will be found very desirable for heavy work.





Manufactured by the Lakeside Forge Co., Erie, Pa. Prices and literature on request.

Liquid Stoppit is a solution especially designed to stop leaks in radiators which, after considerable experimenting on the part of the manufacturer is stated to be very superior for this class of work; is absolutely harmless and cannot injure radiator, hose connections or cooling system, and that it includes no glue, flaxseed or meal.

It is claimed that Liquid Stoppit will search out every leak in the radiator and will seal it permanently, the work being done in a more efficient manner than by the old method of soldering, and at a fraction of the time and expense.

Liquid Stoppit is stated to be especially efficient in the case of a new radiator, in that filling it with the solution and allowing it to stay for a time will tend to keep the inside from rusting.

Manufactured by Cummings Brothers, Flint, Mich. Sold in pint cans only for all cars. Price, 75 cents each.

Allen's Soldering Paste is one of the many products put on the market, under this trade name, especially designed for this class of repair work on motor vehicles. This is the same material as offered in sticks, but is softened into a paste form for ease in application, and adheres to the surface while soldering is being done. It is put up in collapsible tubes, with non-tapering aluminum nozzles that feed the paste on to the work in a thin ribbon; also in two, four and eight-ounce and one and five-pound cans and 50-pound pails. The soldering material is made self-fluxing by dipping it in Allen paste.

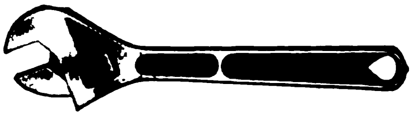
FOR ALL METALS
ALLEN
SODERING PASTE
MAKES SODERING EASY
ACIDLESS NON-CORROSIVE FUMELESS
DIRECTIONS
APPLY THE PASTE SPARINGLY-THEN APPLY SODER
L. B. Allen
MAKE YOUR SODER SELF-FLUXING BY DIPPING IT INTO ALLEN PASTE
ALLEN

Other articles of the same class made by the same company are Alumni-Flux, Alumni-Solder, Alumni-Weld Flux, Non-Acid Soldering Fluxes, Soldering Stick, Soldering Salts, Soldering Liquid, Allen Fountain Pen for liquid fluxes and Allen's Commutator Lubricant.

All these goods are claimed to be convenient and economical, and are free of poisonous acid fumes when in use. Each article is accompanied by full directions for its use.

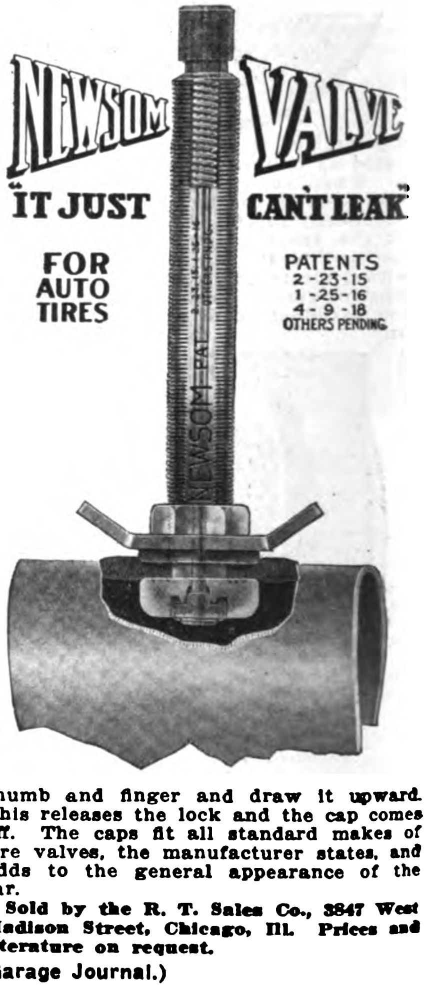
Made by the L. B. Allen Co., Inc., 4521 North Lincoln Street, Chicago, Ill. Prices and literature supplied at request.

The Barcalo Model N Wrench has been developed after much experimenting on the part of the manufacturer and engineers to supply a wrench that would combine ease of operation and toughness to a large degree. The manufacturer states that these qualities are found in the Model N wrench and that, from all angles of use, it is a superior tool. The wrench is of the adjustable type and is operated by a knurled nut, which opens and closes one jaw, the other jaw being stationary and forming a continuation of the handle. It is constructed on a 22½-degree angle and will fit standard hex and square nuts within its size.



Manufactured by the Barcalo Manufacturing Co., Buffalo, N. Y. Prices on request.

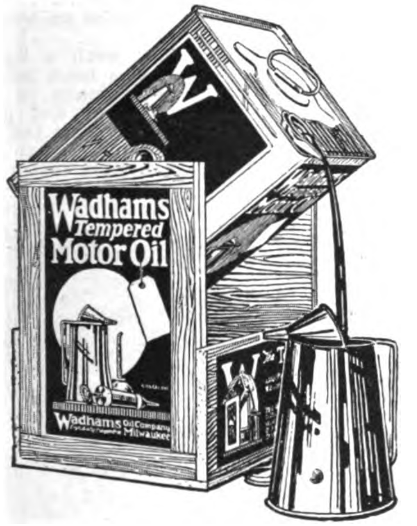
The Newsom Snap Lox Dust Cap fits any automobile tire valve by simply being snapped over the stem of the valve and fastened to the bushing on the rim. It consists of two parts, the bushing that screws down on the valve stem and holds the stem in place and the cap that snaps down and locks. To remove the cap it is only necessary to grasp it between the thumb and finger and draw it upward. This releases the lock and the cap comes off. The caps fit all standard makes of tire valves, the manufacturer states, and adds to the general appearance of the car.



Sold by the R. T. Sales Co., 3847 West Madison Street, Chicago, Ill. Prices and literature on request.

Wadhams' Tempered Motor Oils and Greases are stated to enjoy a large volume of business throughout the northwest, many new and novel ideas having been worked out for the marketing of this product, chief among which is the Wadhams tip-top can, which is used for five-gallon quantities of engine oil. Instead of using a container which is handled from the floor and is liable to spill or waste the oil over the floor or clothes of motorists, Wadhams' tip-top can has been developed to facilitate the pouring of the oil without this danger.

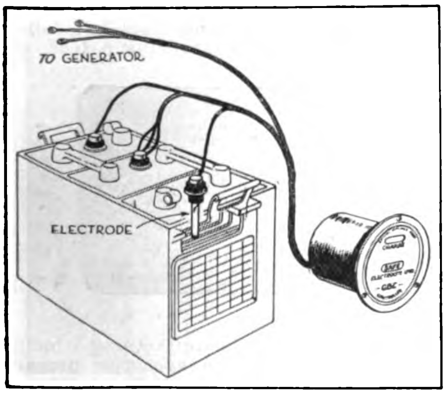
The container consists of a five-gallon metal can, which is fitted to a wooden case, provision being made for raising the can to the proper height for pouring. Pivots are fastened at the sides, which fit slots in the tops of the wooden sides, allowing the can to be tipped so that oil may be poured from the spout without wasting. The containers are not returnable, but become the property of the purchaser.



Tempered motor oils and greases are stated to be highly refined products, which will give the best of results when used for engine and chassis lubrication for either passenger cars, trucks or tractors.

Manufactured by the Wadhams Oil Co., Milwaukee, Wis. Prices and literature on request.

The GBC Controller has been perfected as a recognition of the need in the industry of some device to automatically protect the battery, generator and circuits against damage due to various causes.. As shown in the illustration, this simple protecting device employs three auxiliary electrodes, which project through the ordinary cell caps of the battery so that the bottom of each electrode is just above the respective cell plate tops. Connections are provided from these electrodes to the dash instrument and also from the latter to the generator. The dash instrument is essentially a combination of three electro-magnets which operate three signals, one marked "Low," another both "Low" and "Safe," and the third marked "Off." This latter indicates whether the battery is being charged or not; the signal "Off" indicates reduced generator output, while a blank space in the same window indicates normal charging.



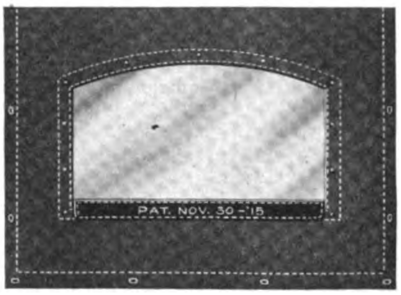
Overcharging is prevented in a simple way by appreciation of the fact that the condition becomes serious only when the battery heat has reached 110 degrees Fahrenheit. The GBC controller basically controls the temperature. The detail of the operation is as follows: Three electrodes, one per cell, are connected by wires to the instrument on the dash. Safe level exists as long as the electrodes are in contact with the electrolyte. If for any cause the level in any cell of the battery falls out of contact with its electrode, the level indicator immediately flashes the sign "Low" on the instrument dial and the driver at once knows that the cell needs water. The middle electrode is hollow and contains a small, rugged thermostat, adjusted to expand a specific amount when the battery attains a temperature of 110 degrees. When the battery is subjected to an objectionable overcharge the temperature reaches this 110-degree limit and immediately the action of the thermostat is conveyed by electrical leads to the instrument on the dash and it automatically changes the generator adjustment so as to reduce the charge, and thus reduces the battery temperature to under 110 degrees.

Ordinarily when the battery connections loosen or slowly corrode the generator voltage is no longer stabilized by the battery and it rises with increased car speed to values which may burn out the lamps, ignition coil and finally the generator itself. Fuse protection, if employed, saves the equipment, but stalls the car. High voltage due to overcharge in cold weather may also cause trouble. The GBC controller obviates such troubles, as it has a coil in the instrument on the dial which, being sensitive to rising or excess voltage due to any cause, immediately adjusts the generator output so that it can develop only the voltage needed for the lamps and ignition, thus protecting these auxiliaries and allowing the car to function.

It is stated that the device can be installed on any make of car in less than one hour's time.

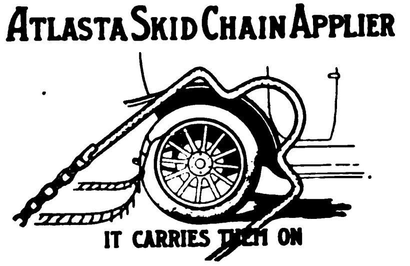
Made by the Battery Appliance Corporation, 1 East 49th Street, New York City. Price, $15, complete with all necessary wire, screws and new battery cell caps.

Replace Curtain Lights for Automobile Tops are designed and manufactured in many styles and shapes; they are adapted for the curtains of many of the standard makes of cars and can be easily fitted by any one. Instead of being sewed in they are fastened in with a special fastener provided with each light, tape also being supplied which is glued over the fastener, making the light water proof.



Manufactured by the Replace Light Manufacturing Co., 2308 Sixth Avenue, Rock Island, Ill. Prices and literature on application. Sold by manufacturers and dealers throughout the United States and Canada.

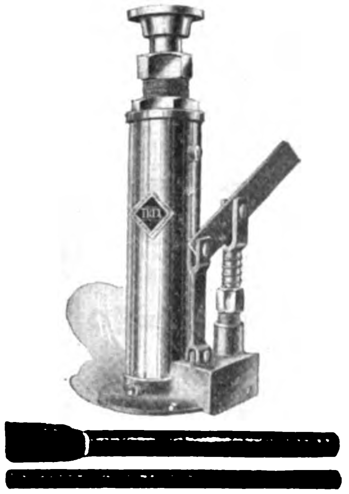
Atlasta Skid Chain Appliers are simple devices, but are claimed to be a great convenience to motorists in that they enable chains to be applied in muddy and rainy weather in a moment's time without dirt and fuss on the part of the driver of the car. They consist of a wire appliance designed to fit over the spoke and around the tire of the automobile wheel, with a hook at either end into which the chains are fastened. They make the operation of putting skid chains on any car easy and simple so that any woman driver can apply them as easily as an expert. All that it is necessary to do is to hook the Atlasta appliers to the chains, drive the car ahead a few feet, enough to make one complete revolution, and the chains are all on ready for service, after being fastened. Furthermore, both chains can be put on at the same time.



Atlasta Skid Chain Appliers are furnished in three sizes, 3½, four and five inch.

Manufactured by Atlasta Specialty Manufacturing Co., 2925-2927 Locust Street, St. Louis, Mo. List prices: 3½-inch, 30 cents each; four-inch, 45 cents; five-inch, 50 cents. A liberal discount is offered to dealers.

The Trex Hydraulic Jack for passenger cars and trucks has been developed by the manufacturer of the Trex tire tool and the Trex air operated valve spring compressor to complete the line. The Trex hydraulic jacks are stated to be the "little brothers" of the enormously powerful hydraulic jacks requiring three men to carry and two to operate them, which are used when lifting ponderous machinery and unusually heavy loads in construction and building work in ship yards and railroad shops.



The device consists of a cylinder containing a plunger, which is operated by a lever at the side, which in turn operates a small plunger in a cylinder at the side. Liquid is contained in the base, preferably an oil which will withstand low temperatures, and this oil operates the plunger in the large cylinder. Provision is also made for lowering the jack in a simple manner when the operator wishes to remove it from under the axle.

When not in use the jack packs into small space in the tool tox and is instantly ready when wanted.

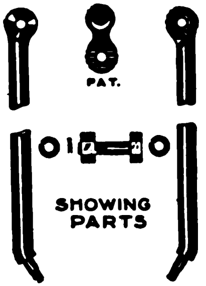
Manufactured by the Trexler Co., 1418 Walnut Street, Philadelphia, Pa. Price, one-ton size for passenger car service, $12; five-ton size for trucks, $25.

Automotive Brand Overalls are made especially for the service station and machine shop worker and garage repairer and mechanic. They are constructed in one piece form and are said to combine unusual wearing qualities with comfort. Pockets are fitted at convenient places, allowing the repairer to carry necessary small tools besides his personal belongings. The Automotive brand of overhauls are fitted with a belt at the middle, which proves a good feature, the manufacturer states, as it cuts down the danger of the workman getting his clothes caught in moving machinery.

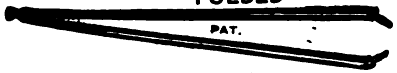
Seven pockets are provided in these garments, two side and two hip, and a rule pocket in the pants and two breast pockets in the blouse, while they are finished with a neat turned down collar of the close buttoned type at the top.

Manufactured by the Ohio Garment Co., Automotive Department, Springfield, O. Price on request.

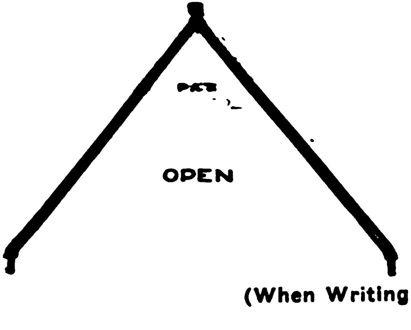
Bridge's Patented Three-Piece Radius Rods for Ford Cars are designed, as the name implies, to replace a broken radius rod. They are constructed in three pieces, which can be folded and stored in the car till wanted. Only a few minutes time is required to remove the old rod and substitute the new three-piece rod, and it is not necessary to lay up the car, or even drive to a garage unless the motorist desires a repair man to put in the new rod.



FOLDED



Three-Piece radius rods are constructed in such a manner, the manufacturer states, as to give them the greatest strength possible, and to hold up under the severest usage. They are made in two styles, one for the 1919 car and previous models, and the other for the 1920 model.



OPEN

Manufactured by the J. D. Bridges Co., Florence, S. C. Price, complete, $3.75.

The Invincible Acid Apron has been developed after much thought and experimenting on the part of the manufacturer to secure a product which would fill the demand for general purpose work around service stations handling battery work exclusively. As more or less acid is always present and the danger of spilling is great, it is necessary to have an apron that will protect the workmen's clothes and able to withstand the acid which would necessarily come in contact with the material. The Invincible apron, the manufacturer states, has met these conditions admirably, having been tested where they were subjected to rough usage, heat, acids, etc. The special fabric which has been developed for use in this apron has an extremely high resistive quality to all acids, giving an unusually long life under the worst conditions, but at the same time it is manufactured under such conditions that it can be put on the market at a very reasonable price, comparing very favorably with that of the ordinary rubber apron and lasting much longer, it is claimed.

Manufactured by the Defiance Welding Co., Defiance, O. Price and literature on request.

The Samson Automobile Horn has been designed to appeal to the discriminating buyer who wants the best obtainable for his money and is stated to embody in its construction those elements that go to make up a horn as nearly perfect as possible.

Samson horns are made in several different styles and are operated by an electrically driven motor which uses the six-volt current of the storage battery, and consumes but little energy, the manufacturer states. The Samson motor is powerfully built and employs a commutator fitted with seven segments. All parts of the motor and horn are stated to be constructed of the highest grade material obtainable and are assembled by skilled mechanics who do nothing else but this class of work.

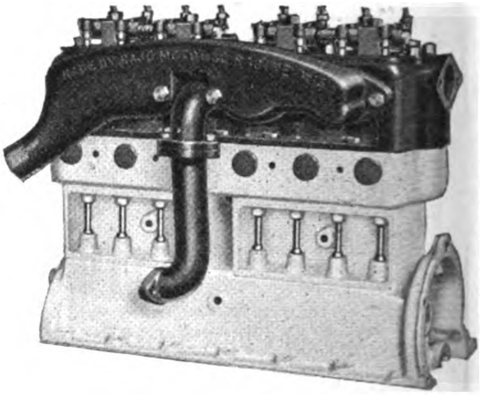
The copper gauze brushes are claimed to be self-adjusting and the field coils are properly insulated and are taped with linen to resist the entrance of moisture.

This company also manufactures a line of hand-operated horns which are stated to be second to none on the market.

Manufactured by the American Electric Co., State and 64th Streets, Englewood Station, Chicago, Ill. Prices and literature on request.

The Rajo Model 30, Valve-in-Head is designed to replace the regular engine head on either the Ford passenger car or truck, enabling the Ford engine to develop, it is stated, better than 32 horsepower, thus enabling the Ford car to reach a speed of 50 or 60 miles an hour if desired.

The device is equipped with a larger water carrying space in the head jacket, while the exhaust pipe is made in one piece and contains a by-pass and pipe, which carries the hot gases from the exhaust to a jacket on the intake manifold and preheats the gas before it enters the combustion chambers. The valves are of large size and are made of tungsten steel, carefully machined, are practically unbreakable and insure long life.. The push rods are of cold rolled steel, fitted with a hardened steel concave head, which retains the oil and greatly lessens the wear and friction.

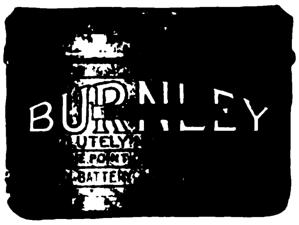


It is claimed that the power of the Ford engine is increased between 30 and 40 per cent. when using a Rajo equipment with valves in the head and that the gasoline consumption runs considerably less than the amount ordinarily consumed.

Manufactured by the Rajo Motor Co., Racine, Wis. Price and literature on request.

The Burnley Soldering Paste has been developed after considerable experimentation on the part of the manufacturer to find a suitable paste that would be efficient for all-around soldering work, more especially for radiator repairs and general work in the service station.

The manufacturer states that Burnley's soldering paste is the best flux that it is possible to obtain, that it needs no preparation for use and that it does not flow from the soldering line, but follows the heat of the iron, insuring a free, even flow of the solder.



Other articles manufactured include soldering salts and a specially prepared soldering stick which combines solder and flux in the one article.

Manufactured by the Burnley Battery & Manufacturing Co., North East, Pa. Prices and literature on application. Repair men are invited to send for samples of these articles.

Fisk for 1921

Sold only by Dealers

Choose your tire line for 1921 with care.
Choose a standard tire.
Choose a good tire.
Choose a company that backs you up.
Choose a tire that will give you a profit.

Fisk has the best proposition and the best policy for 1921 ever put out for a tire dealer.

Fisk policy makes dealer friends.

Fisk Tires make tire friends.

Fisk has the policy, the product, and the price which will give every dealer the opportunity to make 1921 a successful year.

You cannot afford to place your contract for spring delivery until you have talked with a Fisk salesman or learned our proposition.

There is a Fisk Branch within 24 hours of you. Mail the attached coupon and we will get into direct communication with you.

PLEASE FILL IN, DETACH AND RETURN

Time to Re-tire?
(Buy Fisk)

Fisk Rubber Company of New York Chicopee Falls, Mass.

Gentlemen:—Please let me have the details of the Fisk Proposition for 1921.

Name..
(Print it, please)

Street Address..

City...State...................................

Suggestions on Methods of Nickel Plating

The double sulphate of nickel and ammonium, the salt generally used for nickel plating, may now be had in commerce almost pure. The anodes should considerably exceed in size the articles to be covered with nickel. Any common form of battery may be used. Three Daniell's cells, or two Bunsen's, connected for intensity, will be found sufficient. The battery power must not be too strong or the deposited nickel will be black. A strong solution of the sulphate is made and placed in any suitable vessel; a glazed stoneware pot answers very well if the articles to be covered are small. Across the top of this are placed two heavy copper wires, to one of which the articles to be covered are suspended, to the other the anode. The wire leading from the zinc of the battery must then be connected with the wire from which the articles are suspended, the other battery wire being connected with the anode.

To prepare the articles for coating they must be well cleansed by scrubbing them, immersing in boiling potash to remove any grease, then dipping them for an instant in muriatic acid, and afterwards washing thoroughly in water, taking care that the hand does not come in contact with any part of them. This is accomplished by fastening a flexible copper wire around them and handling them by means of it. The wire serves afterwards to suspend them in the bath.

If the articles are made of iron or steel they may be first covered with a thin coat of copper. This is best done by the cyanide bath, which is prepared by dissolving precipitated oxide of copper in cyanide of potassium. A copper plate is used as an anode. After they are removed from the copper bath they must be washed quickly with water and placed in the nickel bath. If allowed to become dry, or to tarnish, the nickel will not adhere. Great care must be observed during the whole process to keep all grease, dust or other dirt from the articles to be coated, or the result will be unsatisfactory. The whole process is one of the most difficult that is used in the arts, it being far easier to gild, plate or copper an article than to nickel it; but if due care is taken the results will amply pay for the trouble.

Improvement in Nickel Plating.

An experienced worker has found that an addition of boracic acid adapts the different salts of nickel better for the electrolytic separation than any other substance and especially prevents the formation of sub-salts of nickel on the cathode. The following mixtures can be especially recommended: Five parts of nickel chloride and two of boracic acid; or two of nickel sulphate and one of boracic acid. The nickel precipitated from these solutions adheres very tenaciously. Sheet metal plated by this process can be polished, stamped and fashioned into various shapes without injury to the coating.

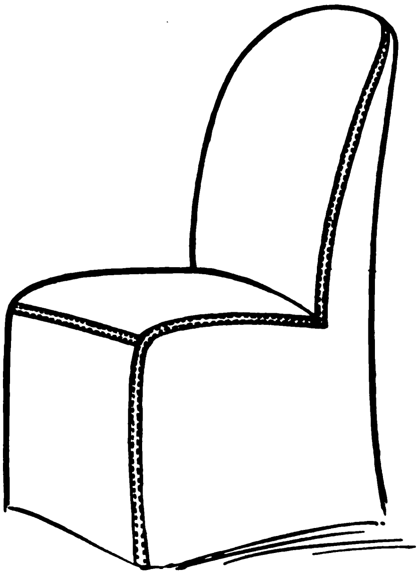
Latest Anglo-American Nickeling.

A nickel plating, the excellence of which is vouched for, is accomplished by using the following bath: Two pounds of the double sulphate of nickel and ammonium and one pound of refined boracic acid are boiled for one-quarter hour, when the fluid is allowed to cool. This bath gives a silver white plating and all parts of the article receive a uniform nickeling and remain unchanged even if continuously used, which is not the case with other nickel baths. In nickeling large articles several nickel anodes must be suspended on each of the four sides. In nickeling plates, cups, etc., a plate of nickel must be suspended in the center of the hollow, but should be, if possible, kept at a distance of two to four inches from the article to be nickeled. A strong Bunsen battery of four to eight elements or, what is still better, a dynamo electric machine is used.

REINFORCING SEAT COVERS.

The greatest wear on automobile seat covers comes on the edges of the seat where the seams occur in the cover. Here the friction causes the cover to wear through in time and as a result the cover gets too shabby for use. It is possible to lengthen the life of the seat cover by reinforcing the seams with strips of leather substitute, which stand the wear very well and as a result lengthen the life of the cover. The strips of leather substitute are one inch in width and are sewed to the cover cloth on each side of the seam, thus preventing the seam from ripping.

The seam reinforcement also prevents dust from accumulating in the seams and as a result adds to the cleanliness of the cover. The leather substitute strips should preferably be dark brown or black in color and serve as a trimming for the lighter goods of which the seat cover may be made.



Method of Reinforcement of Automobile Seat Covers with Leather Substitute Strips.

GUARD AGAINST BENT RIMS.

Bent rims are a direct cause of rim cuts, of tires blowing from the rim and of the breaking of the wire cables at the base of the tires. Oftentimes motorists cannot understand why tires should "blow" when they are driving along slowly. The facts of the case are that the overstrained carcass has reached the limit of its endurance from previous abuse and has given way.

Many motorists, were they to examine the wheels on their cars, would be surprised to notice that their rims are bent along the edges. These bent rim flanges are ordinarily little thought of, yet they cause a goodly percentage of tire trouble.

When the wheel hits a frog or a switch of a street car track or a hole in the road there is a tendency to flatten the rim, especially if the tire is underinflated. The rim's support, however, is essential to the life of a tire. If it is bent so that it does not fit the tire and allows the side walls to bulge, the motorist may know that trouble is to be expected unless he takes immediate precautions.

By trueing up their rings, motorists may prevent much tire trouble. And half the pleasure of motoring is freedom from tire trouble. A good rule to follow is to have both tires and rims inspected fortnightly. When rim trouble is found it may usually be corrected by careful tapping with a ball hammer.

CARE OF THE GENERATOR.

The engine should never be run when the storage battery is out of the car, or disconnected, unless the generator has first been rendered inoperative. Whenever the generator is being run it is delivering current to the battery, but if the battery is not there to receive the current, the generator simply piles up a voltage that may damage or burn out the windings, not to mention what it may do to the commutator and brushes. The engine can be run if the field winding of the generator is first disconnected. In some instances, where the generator is equipped with thermostatic control, the device may be short-circuited across the terminals.

WHEN CLEANING LEATHER.

Do not use gasoline to clean the leather upholstery of your car unless you want to crack it. Plain water with a few drops of ammonia will remove the dirt, after which the upholstery should be rubbed briskly with a soft cloth. An excellent leather dressing is made by combining two parts linseed oil to one part turpentine.

LACQUERING BRASS.

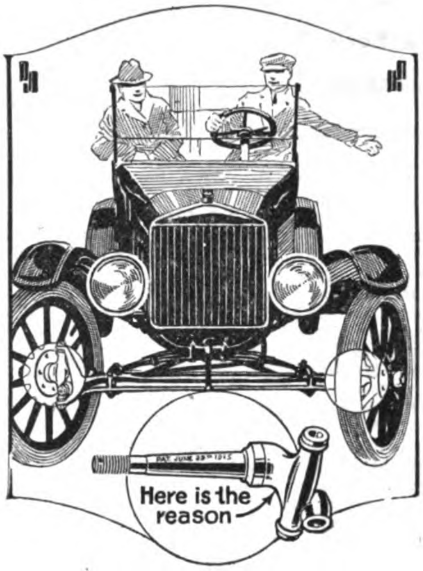
It is possible to protect metal surfaces by applying several coats of lacquer or celluloid varnish. The lacquer should be applied with a camel's hair brush, after the metal has been polished highly. There must be no trace of grease on the brass or other metal when it is lacquered.

Here Is Ready Money For Accessory Dealers and Garages

People buy Ford cars because of their low price and low running cost. But every driver of a Ford knows how he has to "hang on" to the steering wheel every minute, to be safe.

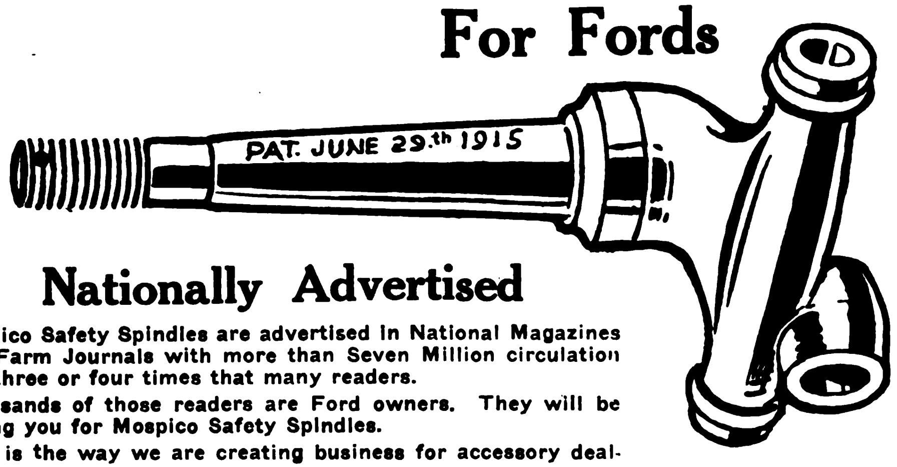
Show a Ford owner something that will make his Ford safe and easy to drive and you've made a sale, especially if it means only a small investment.

Mospico Safety Spindles are the biggest profit-making accessory for Fords that has ever come out. Just the minute you show them to the Ford owner he sees their value. As one Ford owner says: "They take the shimmy out of a Ford."



Mospico Safety Spindles

For Fords



Nationally Advertised

Mospico Safety Spindles are advertised in National Magazines and Farm Journals with more than Seven Million circulation and three or four times that many readers.

Thousands of those readers are Ford owners. They will be asking you for Mospico Safety Spindles.

This is the way we are creating business for accessory dealers and garage owners.

Sold With Money-Back Guarantee

Every pair of Mospico Safety Spindles is sold with the guarantee that they will do everything we claim for them or refund the price.

You Make a Real Profit On Every Pair

The Retail Price Is $9.75 a Pair

Every Ford owner is a sure prospect and sales records show that two out of five buy Mospico Safety Spindles when they have the opportunity. These Safety Spindles enable a Ford to run through mud, sand, snow and over rutty roads without the usual danger of overturning. They prevent the front wheels from locking.

The driver can turn a corner at 20 miles an hour, release the steering wheel, and the car will straighten up like the big cars with their spiral steering gears.

These spindles set the front wheels seven-eighths of an inch back of the center line of the axle. They act on the caster principle.

Ask For Our Special Proposition to Established Dealers

Get complete information on the Mospico Safety Spindles and how we are creating a demand for them among the several million Ford owners in the United States. Write us TODAY.

Motor Spindle Corporation, 145 E. Jefferson, Detroit, Mich.

Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK MARKET.

Week Ending Dec. 25, 1920.

Company	High	Low	Last	Change
Advance Rumely	15	22	22	—4
Advance Rumely, pfd	45⅛	40	45⅛	+ ⅛
Ajax Rubber	26	24	25¼	— ¾
American Bosch Magneto	54⅛	45⅛	48½	—6½
Bethlehem Motors	2⅞	2½	2½	— ¼
Chandler Motor	69⅝	60	*63	—7
Emerson-Brantingham	7	6¼	6½	— ½
Fisher Body	80¼	78	80¼	—3⅝
Fisk Rubber	10½	10	10⅛	— ¼
General Motors	13⅞	12¾	13¼	+ ¼
General Motors, pfd	67⅝	66½	66½	— ½
General Motors, 7% deb	70¾	69	70½	+ ½
General Motors, 6% deb	60¾	58¾	59½	—1
Goodrich, B. F.	34	27	32	— ⅞
Goodrich, B. F., pfd	75	70	*72	—1¾
Gray & Davis	11	9	10	—1
Hendee Mfg	15	13½	15	+1
Hupp Motor Car	10¾	9¼	9⅞	+ ¼
International Harvester, new	96	93⅛	*93⅛	+1¾
International Har., pfd., new	104	101½	104	+3
International Motor Truck	32⅞	29	32½	+2⅝
International M. T., 1st pfd	70½	70⅛	70½	+ ½
Kelly-Springfield Tire	33¾	25½	32⅛	— ½
Kelsey Wheel	38	36	36⅞	—2⅛
Kelsey Wheel, pfd	82	82	82	.....
Keystone Tire & Rubber	7¼	6¼	7	.....
Lee Rubber & Tire	17	15⅝	17	+ ½
Maxwell Motors	2½	2	2	— ½
Maxwell Motors, 1st pfd	4¾	3½	3½	—1⅜
Maxwell M. cts. of. dep. sta. as.	4	3⅛	3½	+ ½
Mullins Body	20½	19⅜	20½	.....
Pierce-Arrow	19	15	17	—2
Pierce-Arrow, pfd	72	61	64	—8
Republic Motor Truck	18	17	17½	— ¼
Saxon Motor	3⅛	2⅛	2¾	— ⅛
Stewart-Warner Speedometer	26¼	24½	26	— ½
Stromberg Carburetor	28½	28⅛	*28¼	+ ¾
Studebaker Corp	41⅞	37¾	41⅛	+1¼
Times Square Auto Supply	8¼	6⅞	8¼	+ ⅜
United States Rubber	61½	55	56⅞	—4¼
U. S. Rubber, 1st pfd	99⅛	97	97½	—2¼
White Motors	33½	30½	32½	—1½
Willys-Overland	5¾	5⅛	5¼	— ½
Willys-Overland	30¾	26	29⅞	—1¼

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*Extra dividend.

AKRON CRUDE RUBBER PRICES.

	Oct. 15 Bid	Oct. 15 Asked	Dec. 1 Bid	Dec. 1 Asked
Amer. R. & T. com	..	75	..	70
Amazon Rubber	..	75	..	50
Firestone Tire & R com	105	110	..	85
Firestone Tire & R. 6% pfd	88½	90	87	89
Firestone Tire & R. 7% pfd	82½	83½	78¼	80
General T. & R. com	..	600	..	500
General T. & R. 7% pfd	..	..	..	90
B. F. Goodrich, com	49	51	42	43½
B. F. Goodrich, 7% pfd	84½	85½	77	79
B. F. Goodrich, 5 yr., 7% pfd	90½	91½	88¾	89¼
Goodyear T. & R. com	70½	72½	43	44
Goodyear T. & R. 7% pfd	77	78	67	68
India Rubber com	140	150	..	130
India Rubber com. 8% pfd	..	80	..	80
Mason T. & R. com	20	22	15	17
Mason T. & R. 7% pfd	..	..	56	60
Marathon T. & R. com	..	40	..	4
Miller Rubber com	108	112	..	95
Miller Rubber 8% pfd	..	..	85	87
Mohawk Rubber	125	200	99	110
Portage Rubber com	..	50	..	38
Portage Rubber 7% pfd	65	67	56	60
Republic Rubber com	2	2½	1¼	1¾
Republic Rubber 7% pfd	..	40	..	40
Republic Rubber 8% pfd	22	25	20½	22
Rubber Products	..	100	..	100
Star Rubber com	..	150	..	110
Star Rubber 8% pfd	..	100	..	100
Swinehart T. & R. com	..	60	..	40
Swinehart T. & R. 7% pfd	..	70	..	70
Phoenix Rubber com	..	20	..	20
Phoenix Rubber pfd	..	90	..	90
Standard Tire com	..	175	..	125
Standard Tire pfd	..	90	..	90

CRUDE RUBBER, NEW YORK PRICES.

	Nov. 22 Cts. Per Lb.	Dec. 5 Cts. Per Lb.
Ceylons		
Smoked sheets ribbed, spot	.17 @ —	.18 @ —
Smoked sheets ribbed, Jan.-Mch.	.19½ @ —	.20½ @ —
Smoked sheets rib., Jan.-June	.21½ @ —	.22½ @ —
Smoked sheets plain, spot	.16½ @ —	.16 @ —
First latex pale crepe	.21½ @ —	.21½ @ —
Amber crepe, No. 1	.16½ @ —	.16 @ —
Amber crepe No. 2	.15½ @ —	.15 @ —
Amber crepe, No. 3	.14½ @ —	.14 @ —
Clean brown crepe	.14¾ @ —	.14 @ —
Light clean brown crepe	.17½ @ —	.16 @ —
Roll brown crepe	.14½ @ —	.13½ @ —
Grand Central crepe	.15 @ —	.13½ @ —
Africans		
Rio Nunez string	— @ —	— @ —
*No. 1 Benbuella	.12 @ —	.11 @ —
*No. 2 Benbuella	.08 @ .10	.08½ @ —
Paras		
Up-river fine	.21 @ —	.21 @ —
Up-river medium	.20 @ —	.18 @ —
Up-river coarse	.14 @ .14½	.14 @ .14½
Caucho ball	.15 @ —	.14 @ —
Islands fine	.19 @ —	.18 @ —
Maderia fine	.25 @ —	.23 @ —
Cameta	.14 @ —	.13 @ —
Knapsack	Nominal	Nominal
Centrals		
Corinto prime	.14 @ —	.14½ @ —
Esmerelda prime	.14 @ —	.14½ @ —
Miscellaneous		
Guayule wet	— @ —	.18 @ —
*Balata block Panama	.28 @ —	.28 @ —
Balata sheets	.69 @ —	.69 @ —
Palembang	— @ —	— @ —
Columbian Block Balata	.46 @ —	.46 @ —
Prime Pontianac	.07½ @ —	.07½ @ —
Bangermassin	.07½ @ —	.07½ @ —

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*Nominal.

DIVIDENDS DECLARED.

Company	Rate	Period	Payable	Stock of Record
Allis-Chalmers Mfg	1%	Quart.	Feb. 15	Jan. 24
Allis-Chalmers Mfg., pfd	1¾%	Quart.	Jan. 15	Dec. 24
American Bosch Magneto	$2.50	Quart.	Jan. 2	Dec. 15
American-La France Eng	2½%	Quart.	Feb. 15	Feb. 1
Amer.-La France Eng. pfd	1¾%	Quart.	Jan. 3	Dec. 20
Apsley Rubber pfd	3½%	Semi-An.	Jan. 1	Dec. 27
Auburn Automobile	$1.00	Quart.	Jan. 1	Dec. 20
Auburn Automobile pfd	1¾%	Quart.	Jan. 1	Dec. 20
Auto Sales pfd	4½%	......	Dec. 31	Dec. 15
Avery pfd	1¾%	Quart.	Jan. 1	Dec. 21
Chandler Motor	$2.50	Quart.	Jan. 3	Dec. 20
Cleveland Automobile, pfd	$2.00	Quart.	Jan. 3	Dec. 20
Delion Tire & Rubber, pfd.	2%	Quart.	Jan. 1	Dec. 24
Electric Storage Battery, com. and pfd	$3 00	Quart.	Jan. 3	Dec. 15
Fairbanks, 2d pfd	2%	Quart.	Jan. 1	Dec. 20
Goodrich, B. F., pfd	$1.75	Quart.	Jan. 1	Dec. 21
Hendee Mfg., pfd	1¾%	Quart.	Jan. 3	Dec. 20
Hupp Motor	2½%	Quart.	Feb. 1	Jan. 15
Hupp Motor pfd	1¾%	Quart.	Jan. 2	Dec. 20
International Harvester	1¾%	Quart.	Jan. 15	Dec. 24
International Harvester	2%	Stock	Jan. 25	Dec. 24
International Motor Truck, 1st and 2nd pfd	$1.75	Quart.	Jan. 3	Dec. 15
Kelly-Springfi'd Tire, 6% pfd.	$1.50	Quart.	Jan. 1	Dec. 17
McCord Mfg. pfd	1¾%	Quart.	Jan. 3	Dec. 23
Magor Car	$1.00	Quart.	Dec. 31	Dec. 24
Magor Car	$2.00	Extra	Dec. 31	Dec. 24
Magor Car pfd	1¾%	Quart.	Dec. 31	Dec. 24
Maibohm Motors	4%	Stock	Dec. 15	....
Packard Motor Car pfd	1¾%	Quart.	Dec. 15	Nov. 30
Paige-Detroit	1%	......	Dec. 10	Nov. 30
Pennsylvania Rubber	1½%	Quart.	Dec. 31	Dec. 15
Pennsylvania Rubber pfd	1¾%	Quart.	Dec. 31	Dec. 15
Pierce-Arrow pfd	2%	Quart.	Jan 1	Dec. 15
Reo Motor	2½%	Quart.	Jan. 2	Dec. 15
Republic Motor Truck pfd	$1 75	Quart.	Jan. 1	Dec. 20
Stearns, F. B	$1 00	......	Jan. 10	Dec. 31
Stromberg Carburetor	50c	Cash	Jan. 3	Dec. 20
Stutz Motor Car	$1 25	Cash	Jan. 12	Dec. 20
Times Square Auto Supply	62½c	8% Scrip.	Jan. 27	Jan. 5
Union Twist Drill	62½c	Quart.	Jan. 3	Dec. 15

TEMCO

Trade Mark

Portable Electric Tools

More Profitable Repair Work

MAKE your repair work show more profit. Double your shop capacity by speeding up repair jobs. A job quickly done makes way for more work—more profit.

Temco Portable Electric Tools eliminate slow, expensive hand labor. They work easier, faster and better. They pay for themselves in time saved on costly repair work.

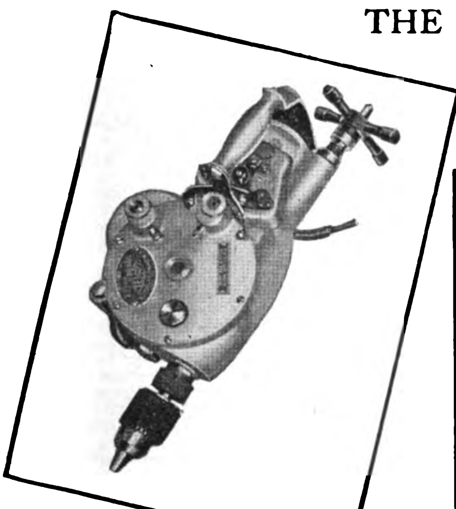
Temco Portable electric Tools are for drilling in steel, iron or wood, tapping, tool sharpening and valve grinding—hundreds of miscellaneous uses make them indispensable for automobile repair work.

They do jobs that stationary equipment cannot handle. They save expensive tear-downs. They reach repair work easily and quickly in any part of the garage—inside or outside. They attach to any drop cord or lamp socket. They are easy to handle and operate and the cost of operation is extremely low.

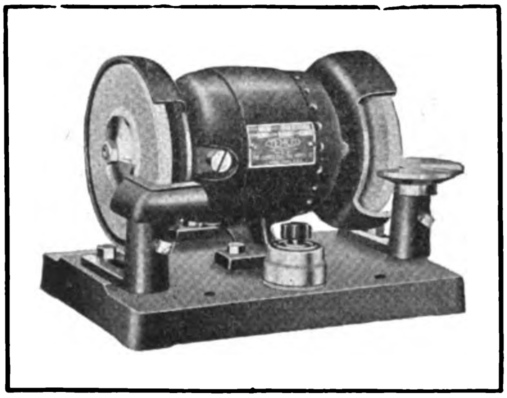
Temco Portable Electric Tools are the result of years of specialization in repair shop needs. With them you can save half of the time on repairs, do twice as much work and add big profit.

Prepare for a big and profitable season now. Equip *your* garage with Temco Portable Electric Drills and Grinders. Write for catalog.

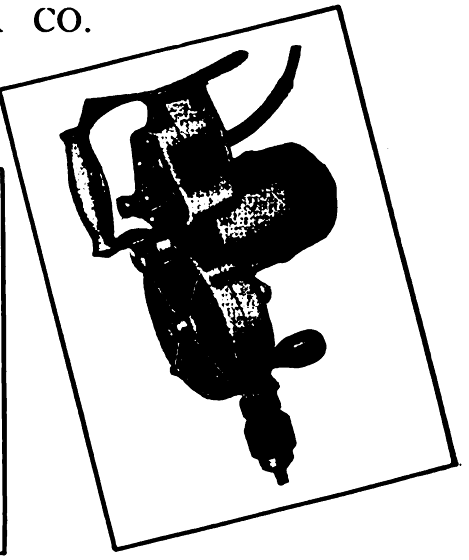
THE TEMCO ELECTRIC MOTOR CO.
1101 Sugar Street Leipsic, Ohio



Model "C" Electric Drill
Capacity 0 to ½" Steel



Type "G" Electric
Bench Grinder



Model "B" Electric Drill
Capacity 0 to ⅝" Steel

Calendar of Automotive Shows and Conventions

Jan., 1921—Little Rock, Ark., Annual Meeting, Arkansas Good Roads & Drainage Association. Robert O. Schaefer, Secretary, Masonic Temple, Little Rock.

January—Toledo, O., 13th Annual Show, Passenger Cars, Trucks, Tractors and Accessories. Terminal Auditorium. H. V. Buelow, Manager.

January—Seattle, Wash., Passenger Car, Truck and Accessories Show, Motor Car Dealers' Association.

January—Spokane, Wash., Passenger Car and Truck Show, Automobile Chamber of Commerce. E. M. Stock, Manager.

Jan. 3-8—New York, N. Y., Motor Truck Show, Motor Truck Association of America, 12th Regiment Armory. Theodore D. Pratt, Manager.

Jan. 4—New York City, Annual Meeting, Automotive Service Association of New York.

Jan. 4-7—South Dakota Implement Dealers' Association, Sioux Falls; Secretary, C. J. Bach, Sioux Falls.

Jan. 5-7—Midwest Implement Dealers' Association, Omaha; Secretary, James Wallace, Council Bluffs, Ia.

Jan. 7—Sydney, Australia, Australian Motor Show.

Jan. 8-15—New York City, National Passenger Car Show, Grand Central Palace.

Jan. 11—New York City, Meeting, Eastern Automotive Equipment Association.

Jan. 11-13—New York City, 11th Annual Meeting, Society of Automotive Engineers, Hotel Astor.

Jan. 11-13—Minneapolis, Minn., Annual Convention, Minnesota Implement Dealers' Association, West Hotel. C. I. Buxton, Secretary, Owatonna, Minn.

Jan. 11-13—Mississippi Valley Implement Dealers' Association, at St. Louis; Secretary, F. E. Goodwin, Kirkwood, Mo.

Jan. 16-22—Milwaukee, Wis., Annual Passenger Car and Truck Show, Milwaukee Automotive Dealers' Association, Auditorium. Bart J. Ruddle, Manager.

Jan. 16-22—Schenectady, N. Y., Show, Company E, F and Machine Gun Company, State Armory. J. J. Callahan, Manager, Box 1186, Pittsfield, Mass.

Jan. 17-22—Lowell, Mass., Sixth Annual Show, Passenger Cars, Trucks and Accessories, Casino. Dan O'Dea, Manager, 154 Moody Street.

Jan. 18-20—Pacific Northwest Hardware and Implement Association, Spokane, Wash.; Secretary, E. E. Lucas, Spokane, Wash.

Jan. 18-20—Western Retail Implement, Vehicle and Hardware Association, Kansas City; Secretary, H. J. Hodge, Abilene, Kan.

Jan. 18-20—Texas Hardware and Implement Association, Dallas; Secretary, A. M. Cox, Dallas.

Jan. 19—Milwaukee, Wis., First Annual Convention, Wisconsin Automobile Dealers' Association.

Jan. 22-29—Cleveland, O., Passenger Car Show, Cleveland Automobile Manufacturers' & Dealers' Association, Wigmore Coliseum. Fred H. Caley, Manager.

Jan. 22-29—Ceylon, India, Automobile Show, Ceylon Motor Show Syndicate.

Jan. 22-31—Sydney, Australia, Second Annual M. T. A. Motor Show. N. Kingsley-Strack, Secretary, Challis House, Martin Place, Sydney.

Jan. 23-29—Amsterdam, N. Y., Annual Automobile Show, Benefit Company H, State Armory. J. J. Callahan, Manager.

Jan. 24-29—Atlanta, Ga., Annual Convention, Georgia Automotive Dealers' Association. P. A. Magahee, Secretary.

Jan. 25-27—Kentucky Hardware and Implement Association, Louisville; Secretary, J. M. Stone, Sturgis, Ky. Exhibit.

Jan. 25-28—Oregon Retail Hardware & Implement Dealers' Association Convention, Portland. E. E. Lucas, Secretary, Hutton Building, Spokane, Wash.

Jan. 26-28—North Dakota Implement Dealers' Association, Fargo; Secretary, R. A. Lathrop, Hope, North Dakota. Exhibit.

Jan. 29-Feb. 4—Chicago, Ill., National Passenger Car Show, Coliseum, N. A. A. C.

Jan. 30-Feb. 5—Hudson, N. Y., Annual Automobile Show, Armory. J. J. Callahan, Manager.

Jan. 31—Chicago, Ill., Annual Meeting, National Automobile Dealers' Association, La Salle Hotel.

Feb. 2—Chicago, Ill., Winter Meeting, Society of Automotive Engineers, Hotel Morrison.

Feb. 5-12—Minneapolis, Minn., Annual Winter Automobile Show, Minneapolis Automobile Trade Association. Walter R. Wilmot, Manager, 709 Andrus Building.

Feb. 6-12—Newburgh, N. Y., Annual Automobile Show, Benefit Companies E and L, State Armory. J. J. Callahan, Manager.

Feb. 7-12—Columbus, O., National Tractor Show, Columbus Tractor and Implement Club, Ohio State Fair Grounds.

Feb. 7-12—Parsons, Kan., Fifth Annual Automobile and Accessory Dealers' Association Show, Passenger Cars, Trucks, Tractors and Accessories. W. N. Chapman, Secretary, 1818 Broadway.

Feb. 8-10—Oklahoma Hardware and Implement Association Convention, Oklahoma City. W. B. Porch, Secretary-Treasurer, Oklahoma City.

Feb. 10—Columbus, O., Tractor Meeting, Association of Automotive Engineers.

Feb. 12-19—Kansas City, Mo., Annual Passenger Car and Truck Show, Kansas City Motor Car Dealers' Association. Ed. E. Peake, Manager.

Feb. 14-19—St. Louis, Mo., 14th Annual Show, Passenger Cars, Trucks and Accessories. Robert E. Lee, Manager, 3124 Locust Street.

Feb. 18-28—San Bernardino, Cal., Show, Passenger Cars, Trucks, Tractors and Accessories. Fred M. Renfro, Manager, Chamber of Commerce Building.

Feb. 19-26—Newark, N. J., Passenger Car, Truck and Accessory Show, Newark Auto Trade Association, First Regiment Armory. Claude E. Holgate, Manager.

Feb. 20-26—Pittsfield, Mass., Annual Automobile Show, Benefit Company F, State Armory. J. J. Callahan, Manager.

Feb. 21-26—Deadwood, S. D., Eighth Annual Automobile Show, Auditorium, Passenger Cars, Trucks, Tractors and Accessories.

Feb. 21-26—Bethlehem, Pa., Seventh Annual Show, Passenger Cars and Accessories, Coliseum, Broadway and Montclair streets. J. L. Elliott, Manager, 1038 Norway Place.

Feb. 21-26—Elmira, N. Y., 11th Annual Passenger Car Show, Elmira Auto Club, State Armory. H. S. Bryan, Manager, 210 East Water Street.

Feb. 28-March 5—Bethlehem, Pa., Truck and Tractor Show, Coliseum, Broadway and Montclair Streets, J. L. Elliott, Manager, 1038 Norway Place.

March—Buenos Aires, Argentina, Exhibition of American Products.

March—Ardmore, Okla., Fourth Annual Show, Passenger Cars, Trucks, Tractors, Accessories, Oils and Tires. R. F. Beede, Manager, Beede-Witt Co., North Washington Street.

March—Fort Dodge, Ia., Closed Car Show, Armory, Fort Dodge Auto Dealers' Association.

March or April—New Orleans, La., Passenger Car Show, Automobile Dealers' Association of New Orleans.

March 1-5—Quincy, Ill., Third Annual Auto Show, Passenger Cars, Trucks and Accessories. J. W. Hart, Secretary, Whig Journal.

March 7-12—Indianapolis, Ind., 22nd Semi-Annual Show, Passenger Cars, Trucks, Accessories and Farm Lighting Outfits. John B. Orman, Manager, 338 North Delaware Avenue.

March 7-12—Paterson, N. J., Fifth Annual Show, Passenger Cars. Trucks, Tractors and Accessories, Fifth Regiment Armory. H. MacGinley, Manager.

March 7-12—Scranton, Pa., 11th Annual Show, Passenger Cars, Trucks, Tractors and Accessories. Hugh B. Anderson, Manager, Board of Trade Building.

March 12-19—Boston, Mass., 18th Annual Automobile Show, Boston Automobile Dealers' Association, Mechanics' Building. Chester I. Campbell, Manager, 5 Park Square.

March 14-19—Trenton, N. J., Sixth Annual Passenger Car and Truck Show, Trenton Automobile Trade Association, Second Regiment Armory. Frederick Perry, Jr., Manager, West, State and Willow Streets.

March 15—Fort Worth, Tex., 24th Annual Southwestern Exposition and Fat Stock Show. Passenger Cars, Trucks and Tractors. M. Sasson, Jr., Secretary.

March 20-26—Torrington, Conn., Show, Company M, State Armory. J. J. Callahan, Manager, Box 1186, Pittsfield, Mass.

March 25—York, Pa., Passenger Car, Truck and Tractor Show, York Auto Dealers' Association.

April 3-9—Gloversville, N. Y., Annual Gloversville-Johnstown Automobile Show, State Armory. J. J. Callahan, Manager.

CHANGES IN NAMES.

Downs, Kan.—South Side Garage to Allred & Giltner Garage.

Osborne, Kan.—B. F. Harvey Garage to Harvey & Lechard; Chas. L. Lechard, owner.

Lexington, Ky.—Jewell-Hawthorne Motor Co. to Southern Motor Car Co.; Chas. W. Waught, owner.

Salisbury, Md.;—Weldon Fooks, Fordson dealer, to Riverside Motor Car Co.; J. Gunby, H. Fooks.

Grand Rapids, Mich.—Auto Indicator Co. to Automobile Signal Co.

Howell, Mich.—S. E. Frisbee, tractor business, to Monke Bros.

Jackson, Mich.—Buell Auto Co. to Gilbert-Loomis Motors Co.

Wyandotte, Mich.—Murphy Auto Sales Co. to Murphy, Ertz, Inc.

Minneapolis, Minn.—Erickson Garage, 421 E. Lake St., repairing, rebuilding and storing autos, to Dew Inn Garage.

Carthage, Mo.—Carroll Garage, 4th and Lyon St., to Heisten Bros.' Garage; R. M. and H. A. Heisten, owners.

Flat River, Mo.—Wilson Garage to Owl Garage; Byron Ball, owner.

Grain Valley, Mo.—Grain Valley Garage to Terry & Brown; C. E. Terry and Omar Brown, owners.

Springfield, Mo.—Springfield Auto Electric Co., 423 W. Walnut St. to Tillman's Auto Electric Service Co., 414 St. Louis St.

Thayer, Mo.—Crane Auto Supplies Co. to Hass-Gamel Motor Co.; G. E. and Millus Gamel and Ralph Hass, owners.

Brooklyn, N. Y.—Pitts Motor Car Repair & Sales Corp., to Pitts Motors.

Youngstown, O.—Standard Auto Sales Co., distributor of Dodge cars, to Van Baalen Auto Co.; I. Van Baalen, vice president.

Bartlesville, Okla.—All Night Garage, 118 E. 2nd St., to Dawson's Garage; Robt. A. Dawson, owner.

Bigheart, Okla.—Brown Motor Sales, Dodge Bros. cars and parts, to Presbury Motor Co.; J. A. Presbury and A. W. Bruce, Pawhuska, owners.

Philadelphia, Pa.—Michigan Garage, 1229-33 Belmont Ave. to Gulf Garage; Chas. A. Sander and Herman Frosch, owners.

Knoxville, Tenn.—Cadillac Sales Co. to Mahan-Kerr Motor Co.

Del Rio, Tex.—H. C. Knowles & Son, vulcanizing plant, to Val Verde Vulcanizing Co.; E. J. Wagner, owner.

El Paso, Tex.—Miller Tire Sales Co. to Cannon Tire & Accessory Co.; moved from Texas and Kansas Sts. to Mills and Kansas Sts.; C. E. Cannon, owner.

San Antonio, Tex.—F. L. Shaw Co., succeeded by Lewis-Morris-Costley Co., 715 Ave. C.; L. D. Lewis, president and general manager.

Stephenville, Tex.; Mayer-Smith Motor Co., Chevrolet and Buick agency and service station, to Mayer-Spell Motor Co.

Chippewa Falls, Wis.—Yates & Johnson Mfg. Co., foundry and machine shop, to Northlite Mfg. Co.; capital increased from $25,000 to $100,000.

Racine, Wis.; Hexmen Motor Co., carburetors and auxiliary carbureting device, to Ames Carburetor Co.

Spooner, Wis.; Landerude Garage to Landerude & Davis; Jos. L. Davis, owner.

The ACCESSORY and GARAGE JOURNAL

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New York Show Predominant in Quality and Dignity

Period of Returning Prosperity Foreshadowed in Car and Accessory Field by Character and Amount of Business in Prospect.

THE predominant characteristic of the 1921 New York show in the Grand Central Palace may be tersely expressed in the one word "Quality," considered in its broadest sense as applicable to the exhibits themselves, both of cars and accessories, the thousands of enthusiastic and interested representatives of a critical buying public in attendance and, comprehensively, to all the arrangements and accompaniments which go to make up a successful event of this kind. It was distinctively a high class show. There was, moreover, in evidence a high spirit of optimism combined with business like dignity which go far to indicate that the dark cloud is passing and the silver lining of returning prosperity is beginning to show. All interests were determined to get together and work in harmony for the greatest good of all.

While this season's exhibition cannot be said, perhaps, to have surpassed all previous shows in number of cars shown, attendance and sales, it may, in a way, be characterized as a record breaker considered in the light of the vicissitudes through which the industry has recently passed.

The exact figures for the various sections do not vary greatly from those for 1920. Thus the total number of exhibitors is reported as the same for both years, 307, divided this year into 83 manufacturers showing gasoline cars, three electrics, one steamers and 221 accessories. A total of 341 cars were exhibited: 334 gasoline, seven electrics, one steam, 38 chassis and one four-wheel brake.

As to body styles, the gasoline cars displayed may be classified as follows: Total open cars, 163; sub-divided into 40 two and three-passenger roadsters, 91 four and five-passenger touring cars and 32 six and seven-passenger touring cars. Total enclosed cars, 120, including 23 two and three-passenger coupes, 80 four and five-passenger sedans and 27 other six and seven-passenger enclosed models.

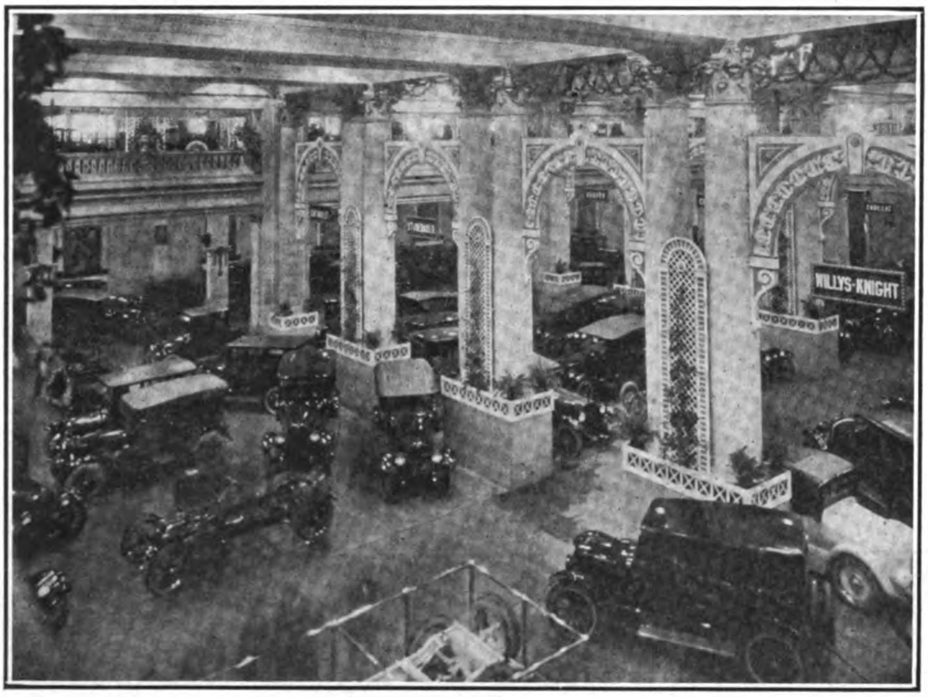
In regard to the actual amount of business transacted, while comparisons showed the average sales to have been only 50 to 75 per cent. of those for last year, yet this surpassed the highest hopes of exhibitors, the individual percentages running from 20 to 110.

To summarize, it might be said that sales of cars priced at above $3000 ran about 50 per cent. below those of last year. Contracts in

Main Floor of Grand Central Palace, Looking Towards Entrance, Showing the Elaborate Setting for the National Automobile Show.

the $1500 to $3000 class aggregated about 75 per cent. of those of 1920, and those in the class below $1500 a little under 75 per cent.

It should be kept in mind, however, that any comparison with previous years is very apt to be misleading. There was a great demand last year from the newly prosperous class—mechanics, small merchants, manufacturers and the like—who had accumulated the price of a car and a desire to own one on account of post-war prosperity. This year this element was not present, but was replaced by a type of prospect that appears to be nearer the solid class that is motor wise, knows about what it wants and makes intelligent investigation of the various models shown. During the first one or two days the question of price seemed to be the predominant consideration in the mind of the prospect but, as the show continued, buying began, as the downward trend that was expected did not materialize, and it was realized that it was not probable that further reductions would be made at least until the expiration of the guarantee period.



General View of New York Show, Main Floor of Grand Central Palace.

It cannot be said, however, that the show has put buying back to a normal basis. This was not expected. But the so-called "buyers' strike" was broken and new spirit was put into the selling organizations of New York and the entire East. Dealers went to the show with a determination to be optimistic and were prepared to be encouraged if actual sales reached a quarter of the average at a New York show. What happened is accepted by both manufacturing and merchandising interests as evidence that the tide has turned and that the buyers are back in the market.

More Prospects Than a Year Ago.

With prospect lists obtained at the show superior to those of previous years in size and quality, it seems logical to assume that these may develop into a considerable amount of business before the regular spring selling season opens. Many people were more willing than formerly to give their names as prospects, and the percentage of those naming a definite date when they expected to buy was unusually high. One exhibitor who checked up prospects obtained at the show, reports that he had 400 names that were not on his pre-show list.

The experience of the Haynes Automobile Co. may be cited as perhaps typical to a greater or less degree of many others. General Manager Alton G. Seiberling of that company reports that during the period of the show contracts for 4000 Haynes cars were made, and expectations at Chicago were even greater.

Another "quality" feature of the show was the constant and efficient endeavor on the part of manufacturers' and dealers' representatives and salesmen to round up every possible prospect and make it appear that his personal attention and inspection of the exhibits was sought, and this undoubtedly resulted in the public obtaining a better idea than ever before of the outstanding points of the various makes and placed it in a position to make intelligent comparisons.

Again referring to the spirit of optimism on the part of manufacturers and dealers, it should be understood that this enthusiasm is not of the self-complacent type. It is recognized that in all probability the buying habit is not going to return spontaneously, but that it will take extra inducements and much hard team work on the part of all interests to swing it back to normal even with the stimulation of the big shows. There is an unmistakable revival of the thinking, doing spirit which has brought the automobile industry to greatness in half a generation.

The show again revealed that the industry is more alert than it ever has been to the customers' wants. The dealer, who knows the public from intimate association far better than the manufacturer ever can, has had his ear to the ground and the show shone with efforts to please on his part.

One evidence of this is the fact that there was more "color" to this 1921 exhibition than has been seen in many years. What is meant is that more and varied choices in finish were offered in standard production than has heretofor been the rule. Quite a few makers who have been finishing out their cars only in blacks, blue-blacks and green-blacks, now have real blues, greens and perhaps maroons alongside the blacks on their standard lists, recognizing the universal desire on the part of mankind for a little color and individuality in their belongings. And there were not a few exhibits which attained the height of brilliancy in the presentation of specially finished jobs and in the artistic contrasting of colors.

In addition to this item of color, an unusual quality was manifested on the part of several exhibitors in the make-up and arrangement of displays such, for instance, as that of the Marmon, which had its complete line in miniature mounted on pedestals, and the General Electric Co., which showed a line of "Prosperity" garages, one for general service work, a second for battery work and a third for car owners, all fully equipped with models typical of the company's products.

Improvement in Assembly and Inspection.

Then, not so spectacular as the colorings, but even more important to the future of sales, is the improvement in assembly and inspection. All through the show the careful observer noted a sort of climax in the thing the industry has been talking about for several months—the evidences of painstaking workmanship in putting cars together. This was apparent in mechanical assembly and in the paint and upholstery work, which bore the earmarks of intelligent care.

There were some improvements tending toward economy of operation and some toward greater accessibility as facilitating serviceability, all adding to the salability of the cars.

The Accessory Exhibits.

Undaunted by weeks of depression the automobile parts and accessory maker has responded to the call of 1921 by rallying in greater numbers than ever before at the big opening national show. In actual numbers the 1921 list of accessory exhibitors, some 300 strong, completely outclassed its predecessors. It might also be added that it ranked second to none in interest, for there was more than the usual quota of new devices and refinements in familiar articles to attract the attention and interest of the spectator. But perhaps most significant of all was the general spirit of optimism expressed in many directions.

While willing to confess that matters in his line have been decidedly slow during the past few months, the accessory

PRICE FEATURES AT NEW YORK SHOW.

Reductions.

AUBURN—$200 on all models.

DAVIS—$200 to $290 on open cars; $390 on enclosed.

JACKSON—$200 on all models except new four-passenger.

PEERLESS — Four-passenger, $3230 to $2990; roadster $3200 to $2990.

Increases.

DORRIS—Increase of $200 practically effected through elimination of extra equipment, though refinements in construction were added.

DORT—$130 on new touring and roadster models.

FRANKLIN—$100 on open cars, Jan. 1; $100 on enclosed cars, Jan. 15.

MOON—$200 on model 6-68, $2685; 6-48, $2185; enclosed, $3185. (Prices on Moon cars had been previously cut $400.)

VELIE—$325 on new model 48 sedan at once; $100 on new model 34 touring, Feb. 15.

New Models.

COLUMBIA — Five-passenger touring, $1995; coupe, $2895.

DETROIT ELECTRIC—Brougham, $4000.

HAYNES—Five-passenger touring, $1985.

MAIBOHM—Coupe, $2395.

MITCHELL — Five-passenger touring, $1995.

PILOT—Five-passenger touring, $2285.

SAXON-DUPLEX—$1675 on open models; $2475 on enclosed. (Represents a reduction of $220 on former open models and $320 on former enclosed.)

and parts maker now sees plenty of business ahead. As to when the turn for the better will arrive there is a difference of opinion. Some there are who are ready to believe that the sky will clear immediately following the national shows. Others, viewing the matter more conservatively, see next spring as the time when some of the strain will be relieved. Indeed, reports are not infrequent of better business now than a month ago, with factories running at greater capacity and shut downs becoming a passing nightmare. However, notwithstanding these signs of better times there is generally felt to be every need for the most careful guidance of business activities over a considerable period to come.

Getting back again to the exhibits, nearly all of the lines that have become standard through years of intimate association with and service on the well known makes of automobiles, were found on view as usual, but there were enough new devices, however, to add interest. Stability in the products shown augured well for the success of the enterprises backing them; that is to say, there was a decided tendency to get away from the ephemeral novelties and merely ornamental fads which have previously mingled with the more reliable products, and to substitute in their places articles which fill a real need.

Thus there was disclosed much to interest the car owner along the line of bumpers, curtain windows, searchlights and upholstery and top materials, together with various other products with which he is gradually coming to have more than a mere superficial acquaintance, among which may well be included carburetors, batteries, axles, wheels, etc. There was a tendency on the part of the exhibitors, too, to emphasize the question of service, this indicating the greater care which the owner is expending in making an investment. In this connection it was interesting to note that one manufacturer well known in the piston ring field, instead of displaying his line in its various sizes highly finished to attract the attention of the passerby, rather sought to win instead through showing rings that had been in service for many thousand miles. These were displayed on stands with the mileage record that each had achieved clearly indicated.

Many of the displays were not only attractive, but artistic in their setting and arrangement.

In regard to quantity and quality of business, both present and prospective, this was such as to encourage even the more pessimistic. It is an undeniable fact that genuine optimism exists in this branch of the automotive industry. What is more, it is generally felt that when once readjustment is accomplished conditions will be better than ever before. Business streaming in with little or no effort undermines the efficiency of the selling organization. A product that must be sold to a public that is not incessantly clamoring for it places new and perhaps salutary burdens upon the sales force. It promises to restore the salesman to his proper place in the organization as a salesman and not as merely an order taker. Intensive selling methods must of necessity take the place of haphazard systems thrown together as occasion demanded.

Chicago Show Jan. 29-Feb. 5.

A majority of the displays will again be seen in the Chicago Coliseum and Annex and First Regiment armory, Jan. 29-Feb. 5. But there will be, in addition a number of makes of cars that have not been seen heretofore.

NEW CARS OF 1921 AT A GLANCE.

AT THE SHOW.

Car	Model	Price
Friend	Roadster	$1585
	Touring	1585
	Coupe	2485
	Sedan	2585
	NEW MODELS.	
R. & V. Knight, 4-cylinder	Touring	2,150
	Sedan	3,150
Jackson, 4-cylinder (also	Touring	†1,445
Coupe, sedan and roadster)	Touring	(Not announced)
Oldsmobile, 8-cylinder	Model 501*	2,100
Fiat	Model 505*	2,300
	Model 510*	4,100
	NEW BODY MODELS.	
Templar	3-passenger coupe	
Anderson	2-passenger speedster	2,195
Kissel	Coach sedan	
	Tourster	
	Speedster	
Davis	Special roadster	2,150
Westcott	Coupe	3,390
Elgin	Coupe	2,685
Monroe	Coupe	2 500
	Sedan	2 500
Maibohm	Coupe	2,395
Allen	Roadster	1,595
Mitchell	7-passenger	
	4-passenger sport model	
Velie	7-passenger	
Columbia	5-passenger touring	1,995
Lexington	4-passenger sedanette	4,400
	5-passenger sednnette	4,500
Dixie Flyer	Speedster	1,895
Hansen	Sedan	3,165
American	4-passenger sport	2.550
Sayers	Derby roadster	2,595
	AT THE HOTELS.	
Navarre	5-passenger touring and sedan	(Not announced)
Northway	7-passenger touring	$4 200
	2-passenger roadster	4 200
	Sedan	5,200
Ace	Touring	
	Roadster	
Parenti	Touring	2.000
	Sedan	3,000

*Chassis only. †Approximate.

Ford Factories Resume Operation in Face of Financial Complications

THE name of Ford has, from the earliest days of the practicality of the automobile, been associated with unusual and oftentimes sensational features in production, administration and publicity. And the hectic period through which the industry has been passing for some months was virtually inaugurated last September by the cut in the price of Ford cars, placing them again on a pre-war basis.

This was followed by a reduction, more or less general, in the prices of other makes of cars, material and equipment, and a period of marked general depression through the closing months of the year. During all this time, however, reports were rife concerning the activities of the Ford interests, such as the acquiring of railroad, mining, timber and other outside properties, and of unrestricted production at the big Ford plants.

Then, with the opening of the new year, came rumors of changes of policy and a reorganization in certain departments, which were apparently confirmed by the resignation of a number of prominent executives who had been long and closely asociated with the Ford organization. These included Frank L. Klingersmith, vice president and treasurer; L. E. Turrell, chief auditor, and Charles A. Brownell, advertising director.

But the most recent and perhaps most significant turn in Ford affairs is the report, seemingly authenticated by New York bankers conversant with the financial situation of the concern, that the corporation was negotiating for a large loan to meet maturing obligations, the payment of federal taxes, and for working capital. These financial requirements are stated to be around $75,000,000, of which $44,500,000 is required to pay 1920 taxes during 1921. This same authority states that the total liabilities of the company are around $130,000,000, with assets above $160,000,000. The valuation of the Ford plant is estimated at $200,000,000, while the amount invested in the new steel furnace enterprise is placed at $30,000,000. And it is reported that the Ford Motor Co. has on hand at the present time about 130,000 unsold cars.

No Statement from Officials.

While no direct statement has been given out by any official of authority in the Ford Co., up to the time of going to press, as to the verity of this reported application for financial assistance, a close business associate of Henry Ford is quoted as stating that the company has not initiated negotiations for a loan of upward of $50,000,000, as was reported in New York banking circles, but that offers of a loan have been received, it was said, from a number of banks whose representatives called at the Ford company's offices in Detroit, but that they have been declined.

Henry Ford, the Dominant Spirit in the Gigantic Ford Enterprises.

No matter what the present stringencies in Ford financial affairs may be, there is no one at all conversant with the history and marvellous growth of this gigantic enterprise which has at all times been dominated by the remarkable personality and business acumen of Henry Ford, who does not believe that he will triumph over these difficulties and that, in all probability, he will eventually be able to place the Ford enterprises on a sounder and more substantial footing than ever before.

Big Detroit Plants to Resume Production.

And this would seem to be borne out by the most recent report of the starting up of the big factories at Detroit on Feb. 1 with the prospective employment of some 25,000 men on a production schedule starting at 1500 to 2000 cars a day and the return to normal output perhaps not far distant.

Another significant fact is that the company began the distribution of approximately $8,000,000 in bonuses to its employees Jan. 17.

Reviewing the incident of the Ford company's price cut last fall and the recent incursions of the chief figure in that enterprise into other lines of activity, it appears that the motive underlying the slash in prices was a daring attempt to stimulate buying and at the same time to materially reduce the cost of products entering into the makeup of Ford cars. Mr. Ford apparently recognized before anyone else that the automobile price structure was toppling and he determined to forestall, if possible, the calamity insofar as Ford interests were concerned. The effect of his pre-war price thunderbolt was immediate and it gave a temporary impetus to the price-cutting campaign in all lines of industry, but some of the big interests, notably the steel mills, remained firm.

Cars Sold Below Cost.

A month of manufacturing at the new scale of prices confirmed what Mr. Ford undoubtedly realized when it was decided to put the cut into effect, that the cars were being sold to the dealer below cost and that they could not possibly be produced to be sold at a profit at the reduced rates unless the company should find itself in a position to obtain materials at a substantial decrease. It is stated that touring cars, sedans and coupes were selling at from $25 to $40 below what it cost the Ford company to build them, but there was, however, still some profit on the chassis and tractors.

For a time business at the Ford plants was stimulated, but it failed, it is stated, to develop into the tremendous buying rush that was anticipated. Soon production caught up with the consumption in spite of the fact that the public was offered Ford cars at a price below the cost of manufacture. The Ford plant continued to turn out cars until it had a great surplus on its hands sufficient to supply the demand for six weeks or two months. Detroit credits the report that there are some $33,000,000 worth of cars on hand in the Ford storage houses. Naturally, the only thing left to do was to close the factories until the demand again caught up with the supply. And this was done.

Real Cause of Reported Stringency.

But all this is, perhaps, incidental to the real cause of the shortage of ready cash which the Ford interests are reported to be experiencing at the present time. When Mr. Ford found that the effort to force the prices of raw materials down at his bidding was only partially successful, he evidently realized that he was not sufficiently independent of the material makers to fulfill his vision of an even more stupendous programme of production and development of the Ford enterprises, so he made another move, almost Napoleonic in its scope, and fully as daring as the others which have brought him fame and fortune. He would make the great Ford works independent in reality. From the raw ore in the mine and the growing timber in the forest to the last speck of paint on the car, it should be a bona fide Ford product. And then he began to put out the millions. He bought vast iron ore tracts, coal deposits, lumber lands and the entire control of the Detroit & Ironton railroad—in fact whole

(Continued on Page 88.)

ORGANIZING 24-HOUR REPAIR SERVICE ON CHAIN STORE PLAN

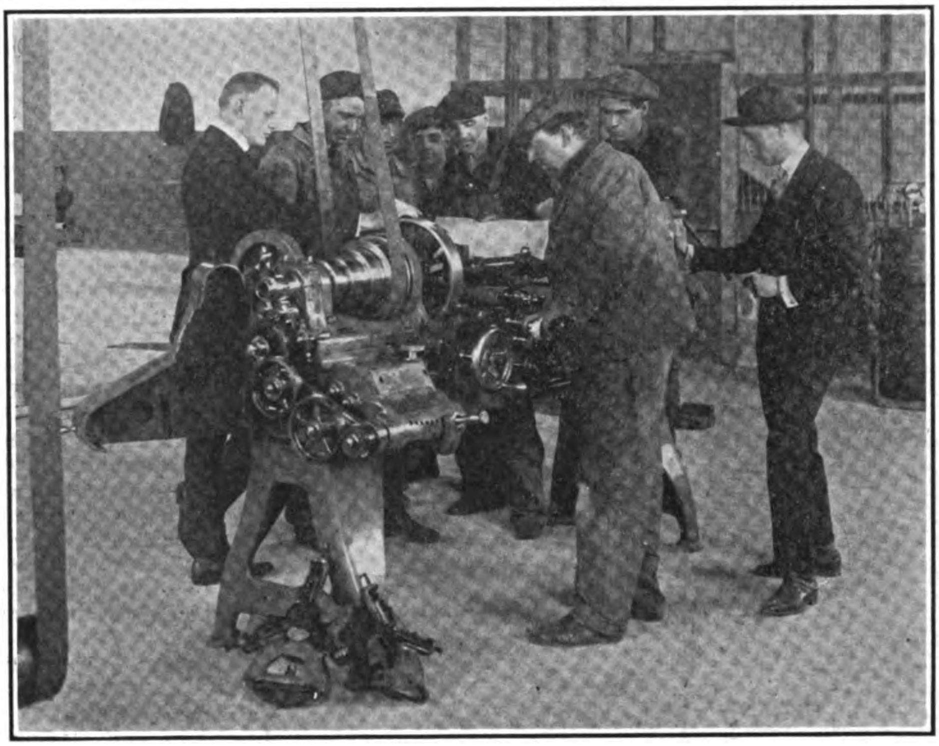
— *By S. G. SWIFT.* —

THE automobile industry has always been characterized by rapid development and the biggest forward strides have usually been the result of exploited innovation. The plan of yesterday has ever been the reality of today, and the abnormal growth of the business has been marked by daring and expensive experiment. Growing efficiency has long demanded more general standardization, with consequent saving of time and money, and now, in answer to that demand, comes 24-hour truck and car service, dispensed by the chain store method.

The National Chain Motor Service Corporation was formed in May, 1920, for the purpose of standardizing motor repair service by the chain store idea of merchandising. The paramount endeavor will be to give adequate truck and car repair service at a minimum of time and expense, and every shop in the proposed vast chain will be strongly organized on a factory production basis with experts in every department, in addition to being fully equipped with the most modern labor and time saving machinery. All of which will make for perfection in service.

Through scientific methods of management and quantity purchase of material, overhead expenses will be at a minimum. A system of popular charges will be inaugurated as a result of these savings to take the place of the arbitrary and extravagant rates frequently met with at public service stations not properly equipped as to merchandise and machinery.

A glance at the personnel of officers and directors shows the names of men of prominence in the automotive and engineering world and as the success of an industrial organization depends almost wholly on its management, the new concern seems assured of competent administrative supervision.



Company School for Mechanics—A Number of These Young Men Are Destined to Be Service Station Managers.

The president is John C. Speirs, formerly general manager of the Autocar Co., factory manager of the Mercer Automobile Co., and the Locomobile Co. He is well known in the automotive world and much of the success of various companies with which he has been connected has been credited to him. The other officers are: Vice president, Frank Mossberg, president of the Mossberg Pressed Steel Corporation, vice president of the Standard Machine Co. of Rhode Island and member of the American Society of Mechanical Engineers; treasurer, Robert J. Holmes, member of the firm of Holmes & Worthen, corporation attorneys; director of Mexican Investment Co., Inc., Darien Estates, Inc., treasurer of International Abrasive Corporation and treasurer of the Fidelity Capital Corporation; director, Jeremiah G. Long, chief engineer of the Boston Woven Hose and Rubber Co., director in the United States Fuel Corporation, member of the American Society of Mechanical Engineers, the Boston Chamber of Commerce and the Cambridge Board of Trade; director, Harry Eisner, president of the Eisner-Lenk Electrical Co. and member of the Society Automotive Engineers; director, Nathan C. Harrison, treasurer of the Harrison Supply Co., director Fidelity Capital Corporation, president of the International Abrasive Co. and of the Queen's Mills (manufacturers cotton thread), director of the Manufacturers National Bank, Cambridge, Mass., of the Citizens National Bank of Boston, of the Dorchester Savings Bank (also a trustee), director of the John West Thread Co. and member of the National Association of credit men; director, William J. A. Bailey, formerly president of Bailey & Co., investment securities, Boston, formerly connected with Federal Reserve Bank of New York, government loan division and formerly president of the American Hardware and Machinery Export Corporation.

William T. Richardson, formerly of W. T. Richardson & Co., engineers, is in charge of the development and expansion programme for the company and is formulating many plans in regard to future building operations. Mr. Richardson is amply fitted for this position, having built the Boston arena and several of the larger theaters in Boston.

First Unit Operating Successfully.

The first unit of the chain is located at 128-134 Cambridge street, Charlestown, Mass. It has been in operation since September and is already on a paying basis the management announces. Plans for the next station are not yet complete, but it is possible that it will be located in the city of Norwood, Mass., where a location is said to have been offered by the local chamber of commerce, which is also ready to place at least half of the stock necessary to establish the plant locally.

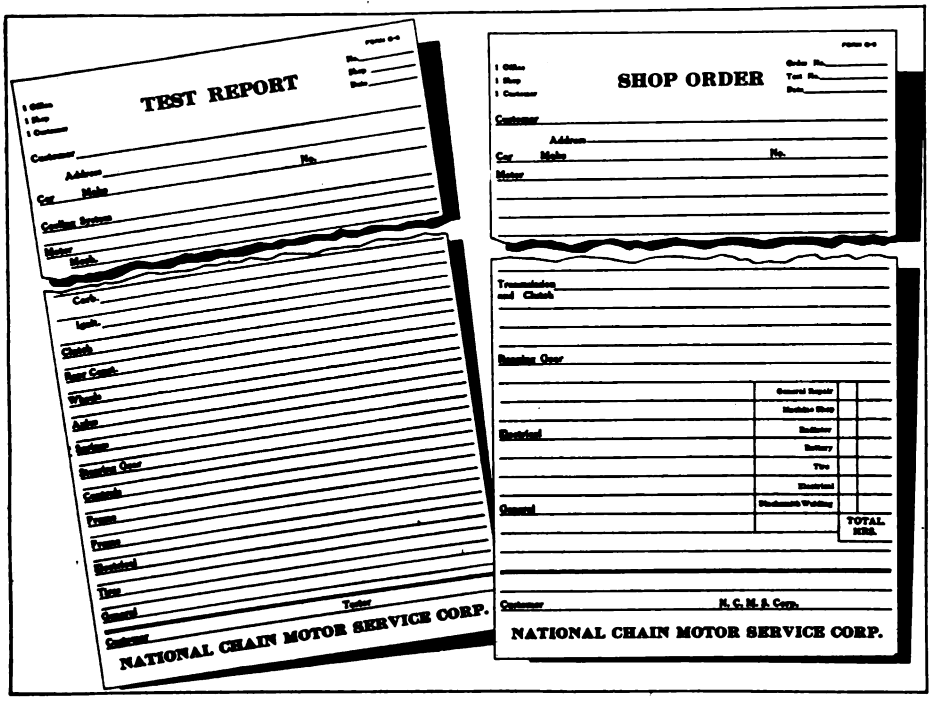
Locations are already being sought in Worcester, Springfield, Providence, Hartford, New Haven, New London, Bridgeport, South Norwalk and New York, and it is planned to have the main highways between Boston and New York well covered within the next two years.

The station, now in operation, along the general lines of which the other will be designed, was erected at a cost of $125,000, and is strictly fireproof. It contains approximately 20,000 square feet of floor space, and is about 100 feet long and 90 feet wide. The upper floor is used wholly as a repair shop and is reached by means of a ramp driveway with an angle of 30 degrees, which permits of easy entrance.

Space on this floor is alloted to the following departments: Tires and vulcanizing, battery, ignition, electrical, general repairs, machine shop, tool crib, radiator and sheet metal, accessory and stock, blacksmith and welding. It is well lighted by Fenestra type windows, and the roof is of truss construction, admitting of clear floor space.

Machinery to Make Any Part.

The equipment of the shop was installed at a cost of $39,074, and contains practically every time and labor saving device known to the modern repair shop.


TEST REPORT

Customer
Address
No.
Car
Make
Cooling System
Motor
Carb.
Clutch
Wheels
Frame
Electrical
Tires
General
Tester
Customer

NATIONAL CHAIN MOTOR SERVICE CORP.

SHOP ORDER

Order No.
Date
Customer
Address
Car
Make
No.
Motor
Transmission and Clutch
Running Gear
Electrical
General

General Repair	
Machine Shop	
Radiator	
Battery	
Tire	
Electrical	
Blacksmith Welding	
	TOTAL HRS.

Customer
N. C. M. S. Corp.

NATIONAL CHAIN MOTOR SERVICE CORP.

These Forms Tell the Story of Every Operation Concisely and Yet with All Necessary Detail.

As a matter of fact it contains more than this, being specially equipped with machinery for the manufacture of any desired part, and the personnel includes mechanics capable of turning out first class machine jobs. It is the intention of the company to buy all parts needed from dealers so far as this is possible, but if time can be saved by manufacturing the necessary part, the shop is equipped to do this.

All of the chain shops to be started will contain the same layout as the parent shop, which is as follows:

Two Manley two-ton portable floor cranes.

Six portable steel benches.

One Cincinnati universal cone-driven Miller.

One 24-inch G. & E. shaper.

One Champion 20-inch by 10 foot plat-lathe.

One Champion 14 inch by six foot lathe.

One 14-inch Washburn sensitive hard metal drill.

Two St. Louis floor standard grinders.

One No. 60 Heald cylinder grinder.

One Landis 16 inch by 28 inch universal grinder.

One Landis 24 inch plain grinder.

Three Greenerd arbor presses (20-ton capacity).

One No. 1 Racine power hacksaw.

One Franklin valve grinder.

One Morris radial drill.

One Silver upright 20-inch drill.

One Waterhouse welding outfit (complete).

One G. & L. turret lathe.

One Cataract precision lathe.

Thirty complete sets of small tools for mechanics, in addition to which a complete list of seldom used tools is available to the tool crib.

Department Heads Responsible.

Each department is in charge of a competent mechanic who is a specialist in his own particular line He is paid at the rate of $1 an hour. His helpers are general line men, the idea being that they can be used by departments other than their own if press of business warrants. These men are paid on an average of 85 cents an hour, depending on their proficiency. The department head is responsible for the time of the men under his charge and keeps detailed records of the jobs worked on, which are checked with the record in the main office each night.

Company Provides All Tools.

The mechanic who enters the employ of the company is requested to leave his own tools at home. The management has selected specially designed tools to be used in the work, and each man starting in is given a complete set. The chest is fitted with a Yale lock and the user is charged with the full value of the outfit. The kits are inventoried each week and the value of any tool unaccounted for is deducted from the weekly wage.

If a tool is broken while in use the inspector in charge of the tool crib is authorized to replace it and makes an account of the way in which the breakage occurred. All tools taken from the crib are charged to the man using them and must be turned back at the end of each working period. Lost tools are frequently a heavy item of expense in the operation of a repair shop and the management intends to keep this bill as low as possible.

Three-Shift System Used.

All mechanics work on the three-shift principle. Watchmen and tool crib men work 12 hours, and the office hours for the clerical staff are from 8:30 in the morning to 5 in the afternoon, there being no night force in the latter department.

All repairs and general service are laid out in a special manner. When the vehicle to be worked on enters the station the head inspector first looks over the job and then assigns different department heads to the case.

As the work goes forward he makes a general inspection of the machine, giving his report on a blank form specially prepared for such work. This blank gives detailed information regarding the running condition of the vehicle and approximates the time and money necessary to put it in first class condition, in addition to the charge made for doing the work requested in the first place. It is mailed to the owner, who is then solicited by a salesman with a view to getting the overhaul job at such time as the truck can be spared from the regular work.

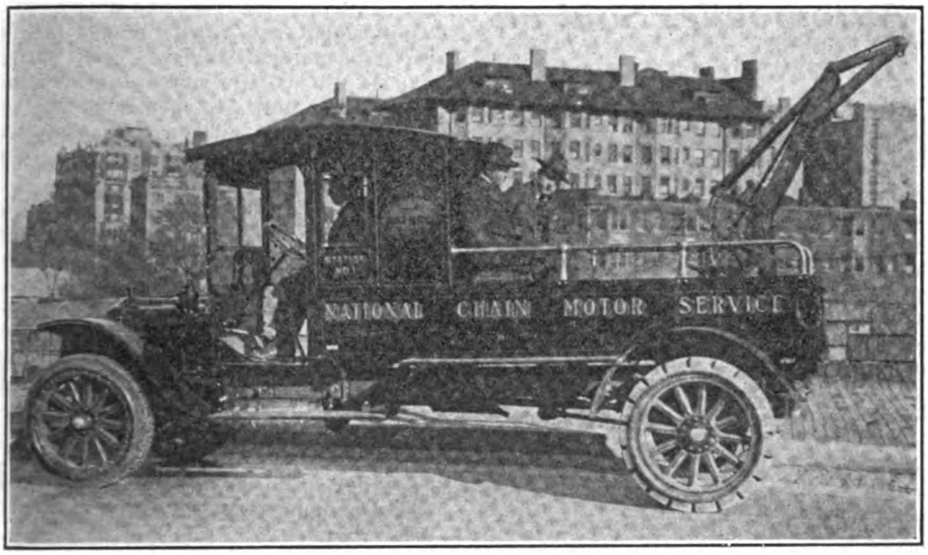
$25,000 Stock of Parts.

The time of each operation is kept by each department by means of a clock with time stamping device, and the different cards are turned in to the general office, where the final charge is computed and the bill made out. The repair work is based on a flat charge of $1.50 an hour, and all accessories and parts used, of which a $25,000 stock is carried, are figured from a retail standpoint, thus assuring a profit on this end of the business.

It might seem to the uninitiated that the charge of $1.50 an hour is somewhat exorbitant, but the opposite is more often true. Only such time as is actually used is charged, and the labor saving devices tend to speed up each operation to a great extent.

The writer was somewhat surprised to see a valve grinding job taken care of in 20 minutes by the efficient Franklin valve grinder, and the saving of time and money over the old fashioned hand method was very noticeable. All repairs made are guaranteed for a certain period of time, depending on the nature of the work, and it is apparent to even the lay man that the amount charged, taking all things into consideration, is comparatively nominal.

The business of the truck owner is solicited by two salesmen who were formerly connected with one of the large truck agencies. They call on all respon-



Service Truck on White Two-Ton Chassis with Kelly-Springfield Tires, Which Is First Aid to Trucks and Humans.

sible owners and sign them up for the service. Cards are given to the different drivers, which allow the men to get work done at any branch station of the company. The bill for the work is sent to the owner and settlement is made monthly.

An extensive drive for business is now being made under the direction of Murray Breese, sales and service manager for the concern. Mr. Breese was formerly connected with the New York Sun, and has had much experience in publicity and advertising work. He plans to circularize every prospect in Boston and vicinity, the letters to be followed up by personal solicitation by his service salesmen, and in addition to this, will spend an appropriation of $30,000 in newspaper advertising. It is to Mr. Breese that much of the present success of the plan is due, and he already has plans formulating which should do much to increase future business.

The first floor of the building is devoted wholly to general offices, storage space and vehicle and parts washing machines. A Polarine oil tank of 500 gallons capacity and a gasoline tank of 20,000 gallons are placed on either side of the front door, although no gas or oil will be sold to any other than customers, as the concern has no desire to get into that end of the business, wishing to keep strictly within the confines of repair shop work.

Service Truck Has a Pulmotor.

The service truck deserves a paragraph to itself. It is a two-ton White chassis, equipped with Kelly Springfield caterpillars, and is specially geared to attain a speed of 40 miles an hour in emergencies. It carries a first aid kit and a pulmotor, the driver being trained in the use of both, and the authorities have made a special concession, allowing the machine to be equipped with a fire truck gong. They have also extended unusual speed privileges, so that the truck is a first aid for both automobiles and humans.

The body is especially built to allow the carrying of a large equipment, and a three-ton, one-man operated Manley crane is mounted on the rear.

Carries Complete Outfit.

All sorts of tools are carried to enable the speedy salvage of a wrecked machine, a complete list of which follows:

One Basline autowline, 1 Powersteel truckline, one wrecking truck, rubber tired; one towing pole, four crowbars of various sizes, two shovels, two Fairbanks log chains, four Fairbanks white lanterns, four Fairbanks red lanterns, one Presto tank, one Prestolite storage battery, one Beamolite searchlight, eight oak plank, one Prentiss vise, two sets Weed tire chains, one small tool equipment, two Fairbanks steel tackle blocks, 150 feet manila rope, six jacks of various sizes up to five tons.

This truck presents a very fine appearance with its neatly painted body and lettering, and has attracted much favorable comment.

Special School for Mechanics.

In keeping with the policy of the company to render perfect service to the truck and automobile owner, the engineering department recently decided that the average automotive factory trained man is not of sufficiently high caliber to insure service in keeping with the ideals of the organization. A number of tests were made among average mechanics to determine the analytical powers of these men, with the result that it was found that while approximately 60 per cent. of them could efficiently repair defects in a machine where such defects were pointed out to them, not more than 15 per cent. could analyze the car's trouble.

As a result of the test it was decided to allow the department, under the personal supervision of the engineer, H. G. Spangler, to institute and operate classes for the men in such branches of the work as was thought advisable. A schedule was prepared calling for two one hour lecture periods weekly, the subjects taken up being: Theory of Engine Construction, Rear-End Construction, Common Motor Troubles, the Care of the Car, Transmission, Ignition and the Electrical System. The men have shown a hearty response to the training and much good is expected from the courses, which will be kept up through the winter at least.

Station Managers from Ranks.

All station managers will be recruited solely from the main plant at Charlestown, and all standardization of parts and methods of operating will also be worked out at that plant, which will be known as the main service station. Men who show exceptional merit will be carefully educated in the policies of the company, and from time to time, as occasion demands, will be sent to the new branches. It is practically impossible to exactly standardize the details of repair work, but so far as possible all shops will be operated alike and, with this in view, it is necessary for all managers to get information at first hand in order to conform to the standard.

Purchasing Power Money Saver.

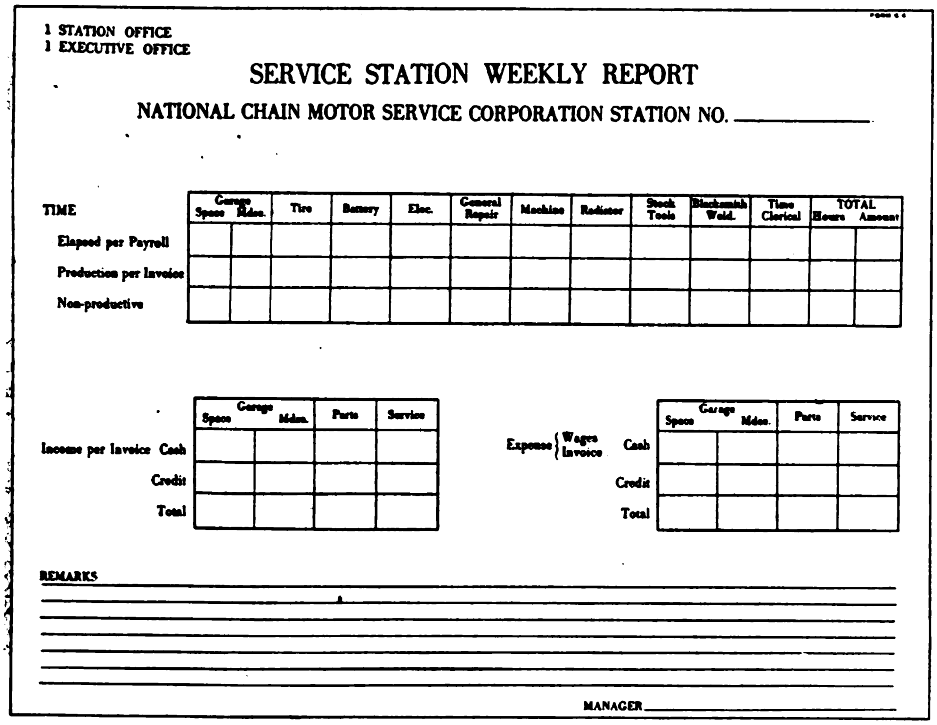
The establishment of the many stations contemplated will go forward just as fast as it is possible for the management to perfect its plans. The great buying power of a chain of stations is apparent. The profit resulting from quantity purchasing is obvious, and

First unit of National Chain Motor Service Corp., located at 128-134 Cambridge St., Charlestown, Mass. The entrance to the right leads to a ramp, the grade of which allows trucks to be driven to the repair shop on second floor on high speed.

LINK
NATIONAL CHAIN OF
NO. 1
MOTOR SERVICE
HOPS

forms the keystone of the money making possibilities of the organization, while the standardization of the various operations of repair work should also effect a material saving.

It is upon the shoulders of the pioneer that progress rests. Hewing and carving his way through forests of doubt and uncertainty his trail marks the progress of civilization. This is true of life in general and may be applied to the automotive industry in particular. Chain merchandising seems to offer the fundamental idea of reduced merchandise costs. It has already worked out along many lines and while its application to truck service seems unusual, it nevertheless appears logical. The opportunity is here and the field is large. The National Chain Motor Service Corporation as a pioneer in the field deserves and will undoubtedly achieve the goal toward which its efforts are directed.



1 STATION OFFICE
1 EXECUTIVE OFFICE

SERVICE STATION WEEKLY REPORT

NATIONAL CHAIN MOTOR SERVICE CORPORATION STATION NO. ______

TIME	Garage		Tire	Battery	Elec.	General Repair	Machine	Radiator	Stock Tools	Blacksmith Weld.	Time Clerical	TOTAL	
	Space	Mdse.										Hours	Amount
Elapsed per Payroll													
Production per Invoice													
Non-productive													

	Garage		Parts	Service
	Space	Mdse.		
Income per Invoice Cash				
Credit				
Total				

	Garage		Parts	Service
	Space	Mdse.		
Expense { Wages Invoice Cash				
Credit				
Total				

REMARKS ______

MANAGER ______

This Service Station Weekly Report Records the Financial Transactions of the Organization in a Nut Shell.

NATIONAL IMPLEMENT CONVENTION DATE.

The National Implement and Vehicle association has set the date for its 28th annual convention as Oct. 12-14, and Chicago has been chosen as the place.

The association has appointed the following to serve on its emergency and publicity for the ensuing year:

W. H. Stackhouse, French & Hecht; William Black, B. F. Avery & Sons; C. S. Brantingham, Emerson-Brantingham Co.; G. N. Peek, Moline Plow Co.; F. R. Todd, Deere & Co.; H. M. Wallis, J. I. Case Plow Works Co.

The Electric Storage Battery Co., Philadelphia, Pa., on Jan. 1 put into effect a reduction of 28 per cent. on all sizes and types of Exide batteries for starting and lighting.

Automobiles Sold on Deferred Payments

BETWEEN 45 and 55 per cent. of all motor cars being sold today are being marketed on some plan of deferred payment. This is stated to be the first authoritative answer to a question that has puzzled many sales executives of the automobile industry and has interested leaders in other lines of activity, including banks and agencies which advance money on such security. It is obtained from a tabulation just completed to a questionnaire sent to over 10,000 motor car dealers by the statistical division of the General Motor Acceptance Corporation, 120 West 42nd street, New York city.

The period for which the questionnaire asked information was from Aug. 1, 1919, to July 31, 1920, and, therefore, includes the latter half of a summer selling season, the following fall, winter and spring seasons, and the first half of the succeeding summer selling season. It is, therefore, a comprehensive sweep of sales conditions over a full yearly cycle of the industry.

In this report the General Motors dealers gave separate figures on sales to city dwellers and to farmers, and in each class listed the number of sales of new and used passenger cars and new and used trucks for cash and on deferred payments. It is interesting to note that of the sales to farmers, 38,216 were sold on time, the cash sales number 18,326. As was to have been expected, city dwellers paid cash more frequently than the farmers, only 44.9 per cent of cars sold to the former being through credit arrangements, there being 61,081 cash sales out of a total of 110,920. Of the new passenger cars reported sold to city dwellers and thus largely placed in the service of mercantile houses, were partly financed. It is also noted in this connection that only 51.2 per cent. of the used trucks were sold on time, and 51.9 per cent of the used pasesnger cars were sold to city dwellers.

Very much the same relative position is shown by the figures representing sales to farmers of new and used passenger cars and new and used trucks, 48.2 per cent. of new passenger cars delivered to farmers being sold on deferred payments, and 58.1 per cent. of the used passenger cars being similarly disposed of, while 59.9 per cent. of the new trucks are sold on time to farmers, and 56.7 per cent. of the used trucks. This figure, of 5.9 per cent. for new trucks, is the highest percentage in the whole list.

The dealers also reported the maximum amount of time they allowed on deferred payment sales to city dwellers and farmers, the average being 9.3 months to city dwellers, and 11.1 to farmers. The average down payment on all deferred payment sales reported was 40.3 per cent. of the cash selling price.

The Acceptance Corporation has subdivided its returns into two periods of six months each and some comparisons between them are of interest. In the first six months 378 persons gave their ages, which average 35.9 years for the group. During the second six months, 15,827 state their ages, which averaged 35.1 years.

In the first period 6940 reported their occupations, and in the second 17,955. A noticeable change evidenced in the second period is the increase in the proportionate number of individuals and firms in lines of business not rated by Dun's; that is, farmers, insurance, mining and real estate. Those of every occupation have bought more expensive cars, but this is probably explained by the price raises which occurred in practically all lines during the time covered. The price of the average car for the first period was $1044.23; for the second period, $1126.81. The average note in the first period was $591.86, which was 56.2 per cent. of the sale price of the car.

The average income is less for the second period than for the first, except individuals and firms not rated by Dun's. The average income of all purchasers was slightly lower in the second period, being $268.12, as against $275.45 in the previous period. Conversely, the average real estate equities reported are considerably higher for the second period than for the first, being $8606.37 against $6632.19.

In the geographical distribution of population by town, a very great change has occurred. In the first period over one-half of the time payment purchasers resided in cities of from 100,000 and up. In the second period, only one-third did so. In the first period, only five per cent. in towns under 500, while in the second period, 25 per cent. of the customers lived in towns under 2500, where the 1910 United States census places 55.3 per cent. of the total population.

Annual Meetings of National Associations

One of the biggest events coincident with the national automobile show at Chicago, Jan. 29-Feb 5, will be the fourth annual convention of the National Automobile Dealers' association at the Hotel La Salle. "Back to selling" will be the 1921 slogan of the 35,000 motor car dealers of the country represented in this association, according to General Manager Harry G. Moock, and the programme has been arranged to embody this idea. The convention will be in session five days, with two big membership days, Jan. 31 and Feb. 1.

The principal address of the session will be made this year by Charles W. Nash, president of the Nash Motor Co., Kenosha, Wis. The committee of arrangements of the association aims each year to bring some outstanding industrial leader before the convention and the choice at this time was unanimously Mr. Nash. His subject will be the relations between manufacturers and dealers as a necessary element of the success of both. Mr. Nash came into the business as a dealer. For many years he was a sales manager and his treatment of the subject will develop the thought of a golden meaning of dealing necessary to the proper merchandising of motor cars.

Three other strong features are provided for the business session of the convention. E. St. Elmo Lewis, New York advertising expert, will discuss the relation of advertising to merchandising. Leo Piel will speak on his success in what dealers regard as the most highly competitive motor market in the world, Chicago. Mr. Piel is president of the Mitchell Motor Car Co. of Chicago, distributor, and has been a leading factor in the fight for better merchandising methods for years. He is president of the Chicago Automobile Trade association.

Something Different in Association Talks.

"Something different" in trade association talks is promised in the "team talk" of L. E. Hooker and Arthur Livingston, called "Measuring the Value of a Territory." These two men are considered the leading sales and promotion men of the Burroughs Adding Machine Co. They will show by charts, especially prepared for the dealer convention, how it is possible to tell how many automobiles or other articles of merchandise a trade territory can absorb.

Other addresses will be by H. B. Harper, president; F. W. A. Vesper, treasurer, and Harry G. Moock, general manager of the association.

A feature which was introduced last year and which has been tried since in numerous other trade associations, the forum, will be continued this year. N. H. Cartinhour of the Cartinhour Bowman Co., Indianapolis, Ind., distributor of Federal trucks, and president of the Indiana Automotive Dealers' association, will lead the truck division forum, and P. H. Greer, Maxwell-Chalmers Hupmobile distributor, Los Angeles and San Francisco, the passenger car forum.

The association has obtained from the railroads a reduced rate of fare and a half round trip for members attending the convention, subject to the following conditions:

Tickets will be sold on the certificate plan. It will be necessary for every purchaser of a ticket who expects to obtain the rate, to obtain a certificate from his ticket agent, and bring that certificate to Chicago with him. At Chicago he has this certificate validated by Harry G. Moock, general manager of the National Automobile Dealers' association, and presents it to the ticket agent in Chicago. The agent then will sell him his ticket home for half fare. Issuance of the rate is made contingent on the receipt of not less than 350 certificates.

E. H. Broadwell, Fisk Rubber Co., Who Has Been Elected President of Motor and Accessory Manufacturers' Association.

Charles W. Nash, President of Nash Motor Co., Who Will Be Principal Speaker at Annual Convention National Automobile Dealers' Association.

NEW M. A. M. A. DIRECTORS ELECTED.

At the annual meeting of the Motor and Accessory Manufacturers' association held in New York, Jan. 12, F. C. Glover, vice president and general manager of the Timken Detroit Axle Co., Detroit, Mich., and H. L. Horning, secretary and general manager of the Waukesha Motor Co., Waukesha, Wis., were elected to the board of directors. They succeed C. Girl, president of the C. G. Spring Co., Kalamazoo, Mich., and E. W. Beach, general manager of the Ferro Machine and Foundry Co., Cleveland, O., who have been identified with the association both as members and directors for a long period of years.

Two members of the board whose terms expired this year were re-elected: E. H. Broadwell, vice president, Fisk Rubber Co., Chicopee Falls, Mass., and L. M. Wainwright, president, Diamond Chain and Manufacturing Co., Indianapolis, Ind.

The board of directors is now constituted as follows:

E. H. Broadwell, vice president, Fisk Rubber Co., Chicopee Falls, Mass.; E. C. Thompson, president, Steel Products Co., Cleveland, O.; W. O. Rutherford, vice president, B. F. Goodrich Rubber Co., Akron, O.; L. M. Wainwright, president, Diamond Chain and Manufacturing Co., Indianapolis, Ind.; G. Brewer Griffin, Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa.; J. M. McComb, vice president, Crucible Steel Co. of America, Pittsburgh, Pa.; G. W. Yeoman, treasurer, Continental Motors Corporation, Detroit, Mich.; A. W. Copland, president, Detroit Gear & Machine Co., Detroit, Mich.; C. H. L. Flinterman, vice president, Detroit Pressed Steel Co., Detroit, Mich.; E. P. Hammond, president, Gemmer Manufacturing Co., Detroit, Mich.; M. L. Horning, secretary and general manager, Waukesha Motor Co., Waukesha, Wis.; F. Glover, vice president and general manager, Timken Detroit Axle Co., Detroit, Mich.

At a meeting of the new board the following officers were chosen:

President, E. H. Broadwell; first vice president, W. O. Rutherford; second vice president, A. W. Copland; third vice president, H. L. Horning; treasurer, L. M. Wainwright (re-elected); secretary and assistant treasurer, G. Brewer Griffin (re-elected).

DURANT RE-ENTERS AUTO FIELD.

W. C. Durant, whose recent retirement from the presidency of the General Motors Co. caused considerable interest as to his future activities, has announced his decision definitely by the incorporation of Durant Motors, Inc., at Albany, N. Y., with an authorized capital of $5,000,000. It is further stated that the first factory unit of the new concern will be built at Flint, Mich., and that a four-cylinder car will be featured to sell for around $1000. Mr. Durant has been joined in his new organization by F. W. Hohensee, former vice president and director of General Motors, and A. T. Sturt, chief engineer of the Chevrolet Co.

Stay "Sold" on the Industry

THE dealer, service station, garage owner and repair man, who have their ears to the ground, are hearing a rumbling that portends early business. The factory wheels are again turning. The clink of the more agile dollar on its widening round is high harmony. There is plenty of good cheer in the triumph of the New York auto show and the forecast of a similar accomplishment at Chicago.

From the financial world comes glowing news of loosening purse strings. Wages are slowly but surely reaching a right level. Prices have somersaulted and have attained a firm footing on a lower rung. The buyer is again abroad in the land.

The New York show brought orders for present and future delivery. It awakened the latent longing of the car prospect. It advertised the industry to the nation. It focussed on the automobile the interest of the more than 9,000,000 who own motor vehicles and the 99,000,000 who would like to be listed in the owner column.

Figures gleaned on registrations from state executives by the B. F. Goodrich Rubber Co. definitely tell the man who has staked his all in the distribution, maintenance, equipping and repairing of the automobile that his lot has been cast in a pleasant place and that he has builded well.

This tabulation taken from official data shows that there are 9,295,252 passenger cars and trucks in use throughout the United States, 1,691,236, or 22.2 per cent. more than on New Year's Day, 1920. There is encouragement here for the dealer and work enough to keep every service station, garage and repair shop in the country going at full tilt the year around.

Yet the period of depression in the closing days of 1920 was long enough to offset the abnormal business of the early year and indicates that the marketing of 1,691,236 trucks was a feat that can be repeated this year. Another basis on which to look for business in equal or greater volume in 1921 is the wonderful strides made within 12 months in grounding into the public mind the utility of both truck and car. The business man knows now—what he but faintly suspected a year back—that his car is not only an adjunct to the speed and efficiency of his operations, but an absolute essential, which he cannot afford to be without. The truck, too, has won a place which no other agency can fill.

The last, lingering doubt as to the business economy of car and truck has been obliterated, which is perhaps the greatest forward stride the industry has achieved. There is no longer uncertainty as to whether the motor vehicle is a successful unit in modern business. The only question today is: "Can I Afford to Get One?" The only answer is: "Can You Afford Not to Get One?"

In the running down of business when the pendulum swings to the zero hour in the spring the progressive business man is not going to be handicapped with a back number car. The new demand founded on the teaching of automotive utility and the natural call, plus replacement, is bound to create an impetus that will plant every branch of the automobile business on solid ground.

In looking for signs that point to a prosperous future for the automotive industry, the Goodrich figures hold naught but brightest auguries. Every state in the Union showed a gain during the year, Virginia leading with 51.1 per cent., and Montana lowest with 2.2 per cent. Eight states have more automobiles than all of Europe, a fact that points to a vast field for export business.

One of the most significant statements in the report is that if the entire country had the same proportion of cars to population as Nebraska, one to every 5·9 persons, there would be 17,912,000 cars and trucks in use today. Who will say that the people of the other states do not need and desire motor vehicles as do the people of Nebraska? Who will deny the fact that they are going to get them at an early day?

Then "what's the matter with the automobile business?" The reply is that there isn't a single thing the matter with it and that all whose energies are engaged have an outlook commensurate with their vision, ability and energy. It's a business for trained, forward-looking men, however, and now is a good time for the laggard and sluggard to pick a stepping-off point. It's a field in which success is only for the deserving.

Business is hovering on the edge of a mighty upward surge. A roll call of conditions reveals a response for every element for an advance movement, save possibly two. One of these is the tardiness of the cut in the cost of labor, a situation which is gradually, but certainly being readjusted. When the price of labor strikes a proper balance building construction will begin all along the line and general buying and selling will be resumed.

To ensure spring delivery of normal business, commerce and industry must concentrate their forces and preach the gospel of good times. The hard luck disciple must be eliminated. The man who sees rainbows should have his inning. All this must be backed by action, quick, certain and decisive.

The automotive trade, second in majesty among the nation's industries, is equipped as none other to help the tide of prosperity roll back the shifting sands on which business has been temporarily stranded. Every last unit of this machine must be geared up to the work in hand. The manufacturer cannot do it alone. Single-handed the dealer cannot go far. Supported at every twist and turn by the service station, garage and repair man, the merged interests of the industry can be a power in restoring the business of creating, distributing and maintaining the motor wagon to the peak the product and its handlers merit.

The manufacturer looks for intensive cooperation from those who market his products. He expects unity of action throughout the entire manufacturing and merchandising operation. Furthermore, he gets it.

Dealers are taking a common sense view of the situation and are meeting conditions manfully. Most of them accept the better outlook in textile, steel, iron and financial lines as a forerunner of brighter days. They have decided that the storm has spent itself and are preparing to bask in the sunlight of coming prosperity.

The manufacturer must recognize that the duty he owes to the dealer has been accentuated by adversity. The backing which the factory owes in theory must be paid in fact. It must be actual and constructive. The bond between the two cannot be too close. The dealer needs the manufacturer more than ever and the factory needs the distributor at his highest productive point.

Team work that is clock-like in its perfection is the essential element that the times demand. The spark must fire at the proper cycle of the piston or the engine will stall. Both ends must serve to the limit of their capacity at the critical turn in the road or a spill threatens. Business is rounding the corner and success is just beyond the bend if the manufacturer and dealer will work in effective unison.

The owners of distribution franchises, service stations, garages and repair shops make up an integral part of the industry they serve. On their proper functioning depends the entire structure. The manufacturer knows his dependence on this department of the trade is an asset beyond price. He has faith in his associates and they must have faith in him, his product and the industry. The distribution or maintenance man should be "sold" on his industry and should stay "sold." He's on the right road now. A detour will bring him nowhere. Straight ahead at full speed leads to that somewhere for which we all strive.

NOTES OF INDUSTRY AND TRADE

Splitdorf's New Sales Building at Chicago

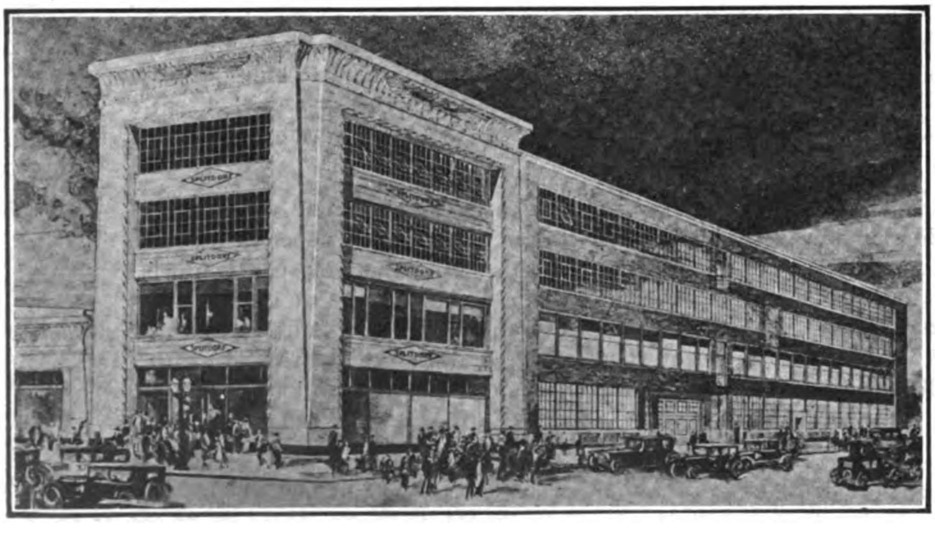
The Splitdorf Electrical Co., Newark, N. J., recently opened a new service and sales building in Chicago, Ill., at the corner of 29th street and South Michigan avenue. This structure is 40 feet wide and 178 feet four inches long and consists of basement and four stories above ground. The lower or street floor has been converted into a sales department and display room with a large garage in the rear and also includes a spacious shipping room.

On the second floor are the general offices, rest rooms, private offices of the central district and conference rooms. The third floor is entirely taken up by the repair shop and stock room. On the fourth floor is the store room for completed apparatus and parts.

The building is serviced by a commodious passenger elevator and a freight elevator for trucks.

The architecture is of the Egyptian type, both inside and out. In order to eliminate the use of artificial light as much as possible the front of the building on South Michigan avenue and the 29th street side are of patented construction embodying large glass windows. The balance of the building is steel and concrete throughout with terra cotta finish on the front and pressed brick used in the construction of the sides. No expense has been spared to install the most modern office and shop facilities.

This new building houses the headquarters for the central district of the Splitdorf Electrical Co., now known as the Splitdorf Electrical Co. of Illinois, which controls branches in Detroit, Kansas City, Minneapolis and Dallas.

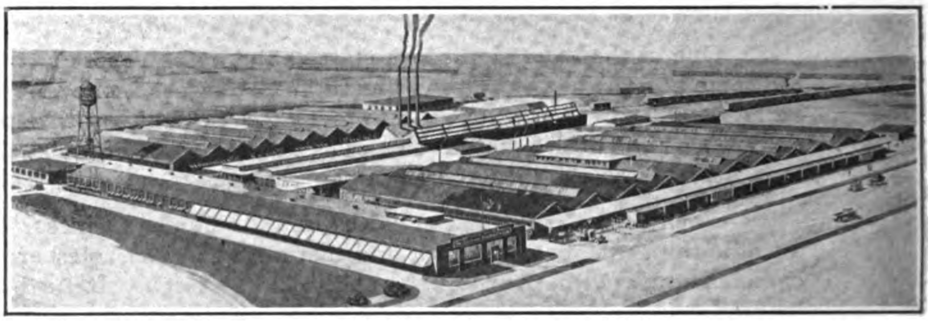


New Service and Sales Building of Splitdorf Electrical Co. Recently Opened at Chicago.

KING CO. MOVES INTO NEW PLANT.

The King Motor Car Co. has moved into its new plant on Conant avenue, Detroit, which affords greatly increased manufacturing space and permits the concentration of activities under one roof instead of being divided in three separate plants. The company, according to an announcement by its new owners, Charles A. Finnegan, A. Weber and Eugene Hofeller of Buffalo, will positively be operated as a going concern. No change will be made in the construction of the eight-cylinder chassis, but new executives will be placed in charge of certain departments and some of the policies will be somewhat revamped.

A. Weber is the new president and general manager; S. J. Feldman of New York is to have charge of the eastern and export business, and it is reported that H. C. Bradfield, who was, for a number of years, advertising manager of the company, will be associated with the new owners as advertising counsel, handling the publicity of the company through his advertising agency.



Plant of Cleveland Tractor Co. at Cleveland, O.

PLANT OF CLEVELAND TRACTOR CO.

Although the Cleveland Tractor Co. has only been building tractors since 1917, in that time the demand has grown so rapidly, both in this country and Canada, and in more than 60 foreign lands, that its factory has increased from a small experimental shed to a great industrial plant, occupying a quarter of a million square feet of floor space entirely devoted to the building of this tank-type tractor.

The home of the Cletrac is equipped with the most modern labor saving machinery, and the motor plant, shown in the right foreground, which is the newest addition to the factory, is an example of efficiency in factory construction equipment and operation, which is not excelled in the automotive industry.

YELLOW CAB CO. TO MAKE CARS AND TRUCKS.

With the opening of the new year a big automotive industry was added to the activities of Chicago. John Hertz, president of the Yellow Cab Manufacturing Co., which for several years has been making the well known line of cabs which bears its name, has just announced that his organization will begin immediately the manufacture and distribution on a large scale of passenger cars and light trucks.

Manufacture will be in the great new factory of the Yellow Cab Co., Menard and Dickens streets, northwest, and will mean an investment of several million dollars and the employment of several hundred more workers within a few months.

The star of the line will be a 12-cylinder car, called the Ambassador, which Mr. Hertz characterizes as "the most beautiful car ever made." Several of these big machines already have been made and are in use in the city. The Ambassador will be made in touring, closed, sports and imperial sedan models. It will be of two, four and seven-passenger sizes.

Production, however, will be largely concentrated on a four-cylinder car of moderate price, worked out on the Yellow Cab chassis. This line will consist of coupe, sedan, touring car and roadster.

To complete the line the Yellow Cab Manufacturing Co. will get out a one-ton speed wagon truck and 1¼ speed truck.

Types of all these cars will, it is stated, be ready for exhibition at the Chicago automobile show, Jan. 29-Feb. 5. The Ambassador will be shown at the New Drake hotel and also at the show rooms of Esch & Hammond, 2216 South Michigan avenue, which has been chosen as distributor for the big car.

Optimistic Outlook for Ring Makers

An exceedingly optimistic outlook for the piston ring business during 1921, based on trade conditions in the field, was the prevailing opinion expressed by the district sales managers of the American Hammered Piston Ring Co. at its recent annual sales conference.

This conference, which covered a period of five days, during which time every phase of American Hammered sales policy and plans was discussed, was the first meeting of this kind held since 1919.

The sales manager from each district in the United States attended and gave the home office a very clear idea of business conditions in his own particular field. Optimism was the key note of all the sessions.

Each man's idea of selling and of developing his territory was outlined and the exchange of thoughts proved helpful to every one present.

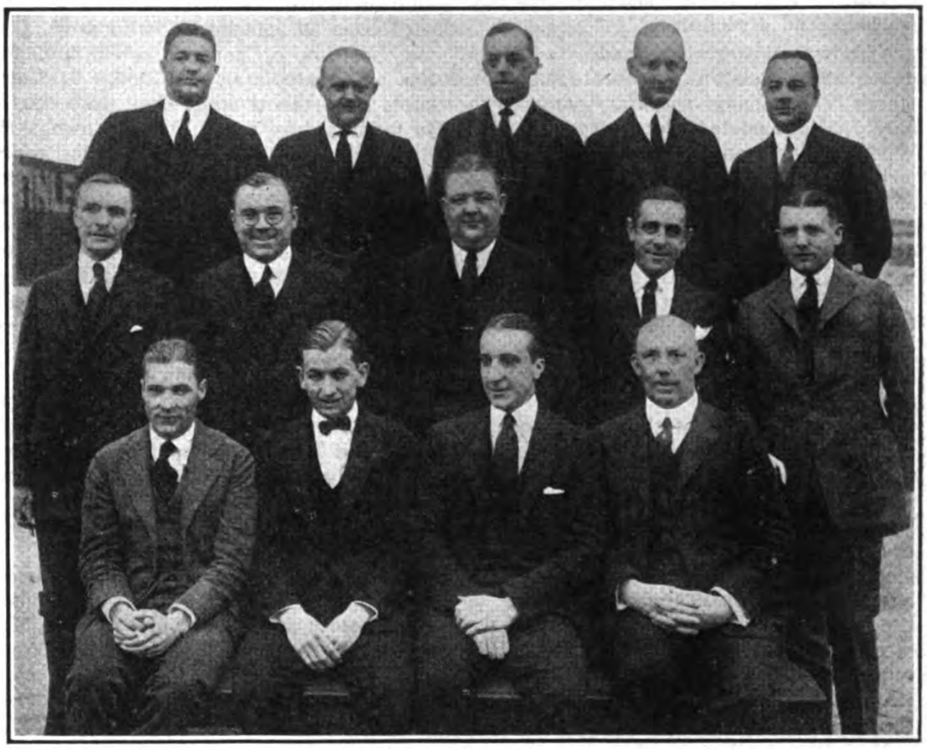
An outstanding feature of the sales conference was the fact that no changes were found necessary in the sales policy of American Hammered Piston Ring Co. notwithstanding the changed economic situation prevailing.

The group photograph reproduced herewith shows the following officials who were present at the conference:

Front row, left to right—Joseph S. Jacobs, manager advertising department; W. R. Tupps, manager sales promotion department; T. S. Blakiston, district sales manager, southern district; P. C. Little, district sales manager, New England and New York district.

Second row, left to right—C. B. Cook, advertising department; Paul Fay, district sales manager north middle and western states; J. H. Quackenbush, assistant general sales manager; H. S. Greene, south middle western states; B. H. Wolfe, Philadelphia and Pittsburgh district.

Third row, left to right—T. Latimer Ford, assistant secretary and treasurer; D. T. Preyer, district sales manager, Chicago district; C. F. Hockley, president; Walter P. Coghlan, general sales manager; C. A. Gilbert, district sales manager far western district.



Sales Managers of American Hammered Piston Ring Co. at Recent Sales Conference.

VICTOR GASKETS IN BOXES.

Having in mind the greater convenience of the trade in the handling of gaskets, the Victor Manufacturing & Gasket Co. is now sending out all cylinder head gaskets packed in heavy fiber boxes. On the end of each box is printed the name of the motor for which the gasket is designed, the gasket number and also the names of all the cars in which that motor is used.

In addition to making the gaskets easier to stock, these boxes protect them from injury until they are used.

Victor Ford gasket assortments are packed in substantial wooden boxes in quantities proportioned to the calls the dealer has for each type of gasket.

ATTRACTIVE DISPLAY OF LOX-ON PRODUCTS.

A very attractive exhibit which drew especial interest at the New York show was that of the Automatic Safety Tire Valve Corporation, space D-41, on the fourth floor.

This exhibitor showed for the first time many new items, which included a complete family of Lox-On air hose chucks. This comprised the model AA for all standard hose couplings, model B in a fluted stem solid cast body design, especially adapted to manufacturers' standard factory equipment purposes; model C, a solid bronze chuck with an overhead acting lever engaged and released by a simple easy pressure of the thumb up or down and intended for use in the case of pumps or air compressors not having a tank or air reservoir, and the Lox-On Junior model chuck, a neat, little heavy pressed steel body hose connection with a solid brass piston and engaged to the valve stem by bringing the thumb and index finger together and released by reversing the operation. This latter has been adopted as standard factory equipment by 14 prominent manufacturers of foot pumps and light portable garage equipment.

The Automatic Safety Tire Valve Corporation has also announced that the Converse Rubber Shoe Co., Tire Division, Malden, Mass., has adopted the Whistler, the automatic pressure regulator manufactured by the Automatic Corporation, as standard factory equipment on the Converse heavy duty inner tubes.

Dodge Brothers, Detroit, has distributed bonuses in excess of $2,000,000 to employees of five years' service, the rate being 10 to 15 per cent of salary.

Development of Wolke Batteries Co.

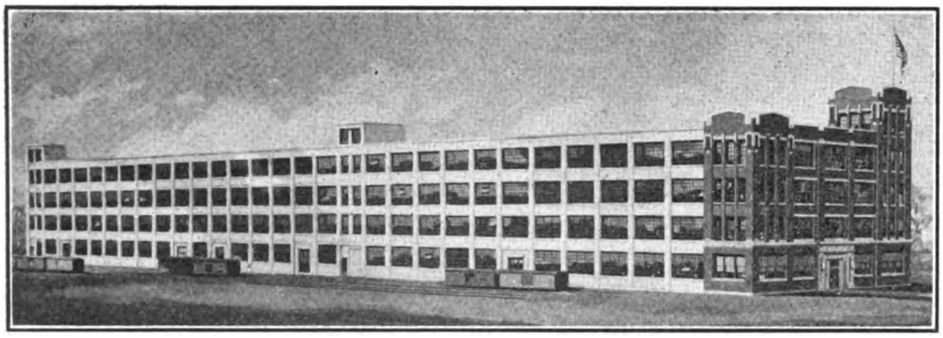
Louisville, Ky., is the home of a battery company which, in point of production and number of dealers and distributors is stated to rank about fifth among the battery companies doing business in the United States. This is the Wolke Lead Batteries Co., maker of the "Wolkee" Red Cap storage batteries, located at 914 to 920 East Main street. From plans already under consideration the company will soon expand to one of the largest of its kind in the country, and will own its home on one of the railroad tracks entering the city.

During the past year the Wolke Lead Batteries company purchased its present home, but the business has grown to such an extent that this home has been entirely outgrown.

Sales of the company for this year should run well over a million dollars, the managers state, basing their belief on the amount of business carried on during 1920.

PURITAN ADDS CAR TO ORPHAN PARTS LIST.

The Puritan Machine Co., Detroit, Mich., has added another car to its already long list of orphan cars which it is prepared to service. This is the Moore car, formerly made by the Moore Motor Vehicle Co., Danville, Ill. The entire stock of repair and service parts is being moved to the headquarters of the Puritan company at Detroit, Mich., from which Moore car owners may be supplied in the future.



Factory of Cleveland Automobile Co, Now Being Built in Cleveland, O.; Estimated Capacity, 40,000 Cars a Year.

NEW PERSONNEL OF DODGE BROS.

The recent announcement of the election of Frederick J. Haynes as president and general manager of Dodge Brothers, Detroit, to succeed the late Horace E. Dodge, is followed by the selection of a complete board of new executives and directors.

Arthur T. Waterfall is made vice president and assistant general manager, Harry V. Popeney, secretary, and Reginald J. Fry, assistant secretary. Charles W. Matheson has been advanced to the position of general sales manager. Howard B. Bloomer is made chairman of the new board of directors. The other directors are Frederick J. Haynes, Arthur T. Waterfall and John Ballantyne.

Mr. Haynes' association with the two Dodge brothers covers a period of over 21 years. During this time he was not only chief executive of their great business, but was also a close personal friend. By reason of this long association there is no one more familiar with their aims and principles or more admirably qualified to carry on their work. Immediately after the death of Mr. John Dodge a year ago, Mr. Haynes was elected vice president and general manager, and has been the active head of the business during the illness of the late Horace E. Dodge. It was Mr. Dodge's request, just before his death, that Mr. Haynes be elected to the presidency of the institution.

Mr. Waterfall was for many years superintendent of the Russell Wheel and Foundry Co. of Detroit, and later vice president and director of traffic for the Detroit Board of Commerce.

Mr. Popeney joined Dodge Brothers about 10 years ago, and since that time has occupied various positions of responsibility. For some years he was assistant to the former secretary of the company.

Mr. Fry's association with Dodge brothers dates back to 1910, and he, too, has developed with the company. In recent years he has occupied positions as auditor and office manager.

Charles W. Matheson, who now takes the position of general sales manager, has been associated with Dodge Brothers' sales department since they first started to manufacture a car of their own. He first acted as New York district representative and later as director of service at the factory. Since the resignation of the former sales manager he has been the acting head of Dodge Brothers' sales department. Mr. Matheson has been connected with the industry since the inception of it, and was for 12 years a manufacturer of one of the high priced cars.

Mr. Bloomer, chairman of the board of directors, was for many years the close personal friend and legal advisor of both John and Horace Dodge. He has been a member of the board since the reorganization which followed the death of John F. Dodge last January. He is a prominent Detroit attorney.

Shortly before Horace Dodge's death, John Ballantyne was elected to the board of directors. He is president of the Merchants National bank of Detroit. For a great many years he has been a close personal friend and confidential advisor to Horace Dodge.

DETROIT CONSOLIDATED SALES CO.

The Detroit Consolidated Sales Co., Inc., has been organized, with offices at 2631 Woodward avenue, Detroit, Mich., bv E. H. Herman, C. H. Hinckley, J. F. Nebrick and W. G. Sparling, to act as selling agents for manufacturers of equipment for the automotive trade.

This firm will operate in Minnesota, Iowa, Missouri, Arkansa, Louisiana and all the territory east thereof to the coast. It is officered by former members of the Universal Tool Co. and in addition to the products of that firm it will distribute exclusively to the jobbing trade other products made by the Electric Machine Co., Indianapolis, Ind., and the Federal Screw Works, Detroit.

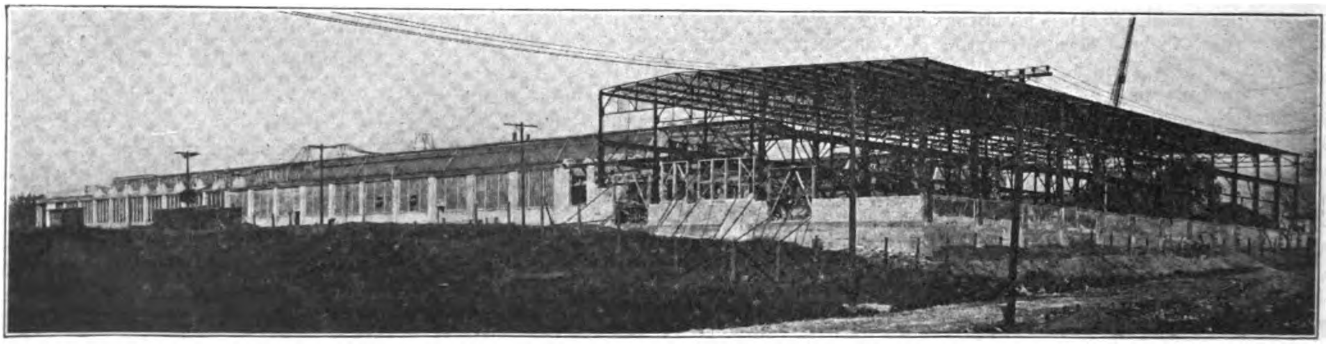
MAXWELL-CHALMERS REORGANIZATION.

The reorganization plan of the Maxwell-Chalmers Motor Co., which has been under consideration for some time, has been declared operative as originally formulated by the managing and reorganization committee headed by Walter P. Chrysler and J. R. Harbeck. This assures an additional capital of $15,000,000 and puts the company under powerful management with a new and strong organization. More than 87 per cent. of the outstanding stock of the two companies has been deposited under the plan, but the committee is extending until Feb. 1 the time under which deposits of stock and unsecured claims can be made without penalty.

It is stated by Mr. Harbeck of the reorganization committee that "the new company is now placed in an extremely fortunate position to face the conditions confronting the automobile industry. The net outstanding obligations of the Maxwell and Chalmers companies have been reduced, through liquidation, by approximately $11,000,000.

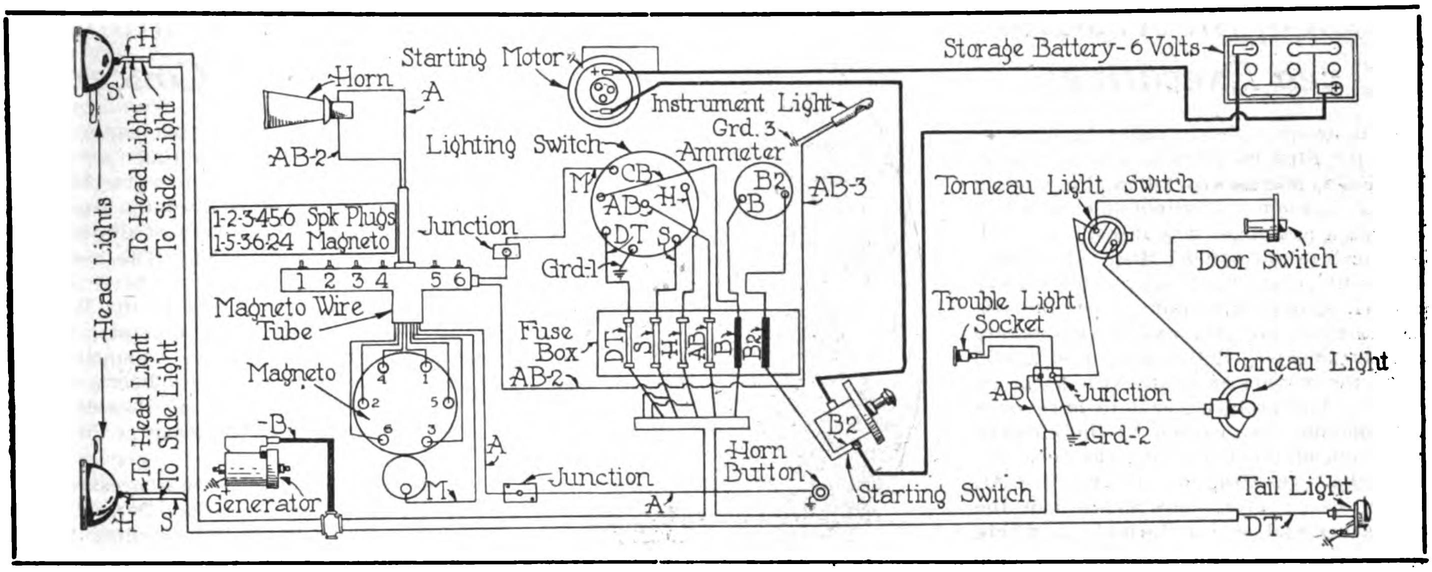
"The new company's balance sheet shows net current assets of about $41,000,000 after depreciation, and net current liabilities of about $6,000,000, the ratio of current assets to current liabilities being approximately seven to one. Inventories have been substantially written down, so that the reorganized company will not be handicapped by having to take into 1921 operations losses chargeable to previous years.

"The reorganized company may be regarded as being upon a sound basis for profitable operation on the basis of reduced sale prices. During the reorganization period points of contact with the public have been more than doubled through establishment of additional selling agencies and branches."



Latest Addition to Plant of Heil Co., Milwaukee, Wis., Which Makes This the Largest Steel Dump Body and Hydraulic Hoist Plant in the World.

Monthly Wiring Diagram, No. 12


H
S
Head Lights
To Head Light
To Side Light
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Starting Motor
A
AB-2
Lighting Switch
Instrument Light
Grd. 3
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DT
S
B2
B
AB-3
Storage Battery-6 Volts
Tonneau Light Switch
Door Switch
1-2-3456 Spk Plugs
1-5-3624 Magneto
Junction
1 2 3 4 5 6
Grd-1
Magneto Wire Tube
Fuse Box
AB-2
Magneto
Trouble Light Socket
Junction
AB
Grd-2
Tonneau Light
-B
Generator
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Horn Button
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Starting Switch
Tail Light
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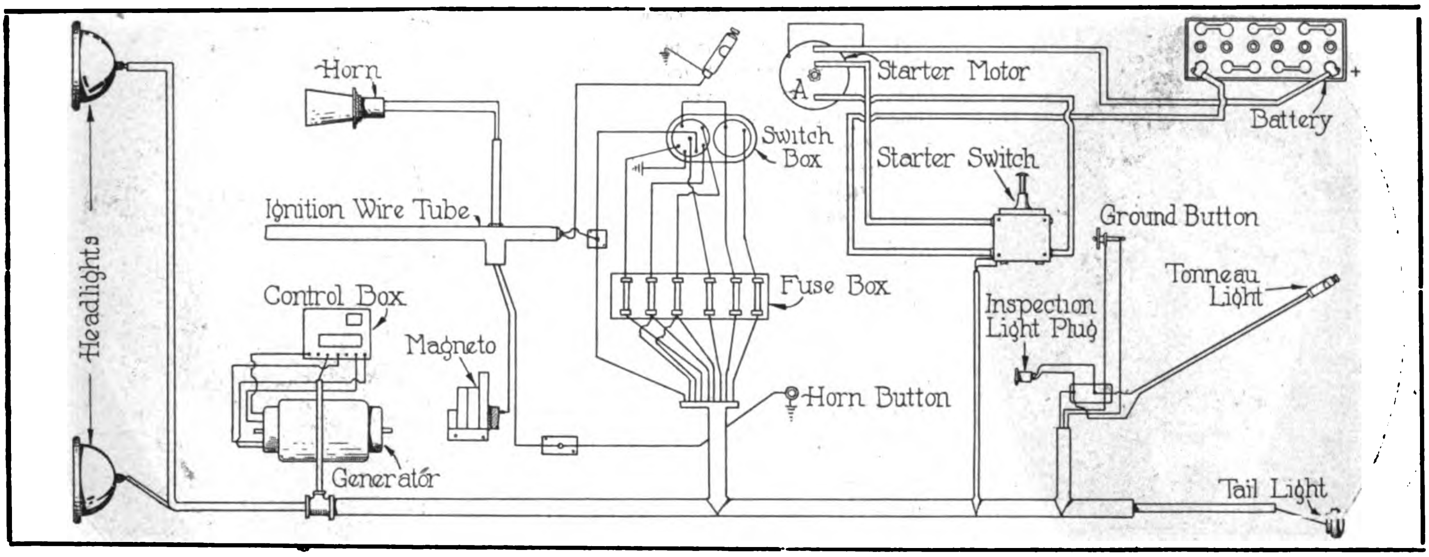
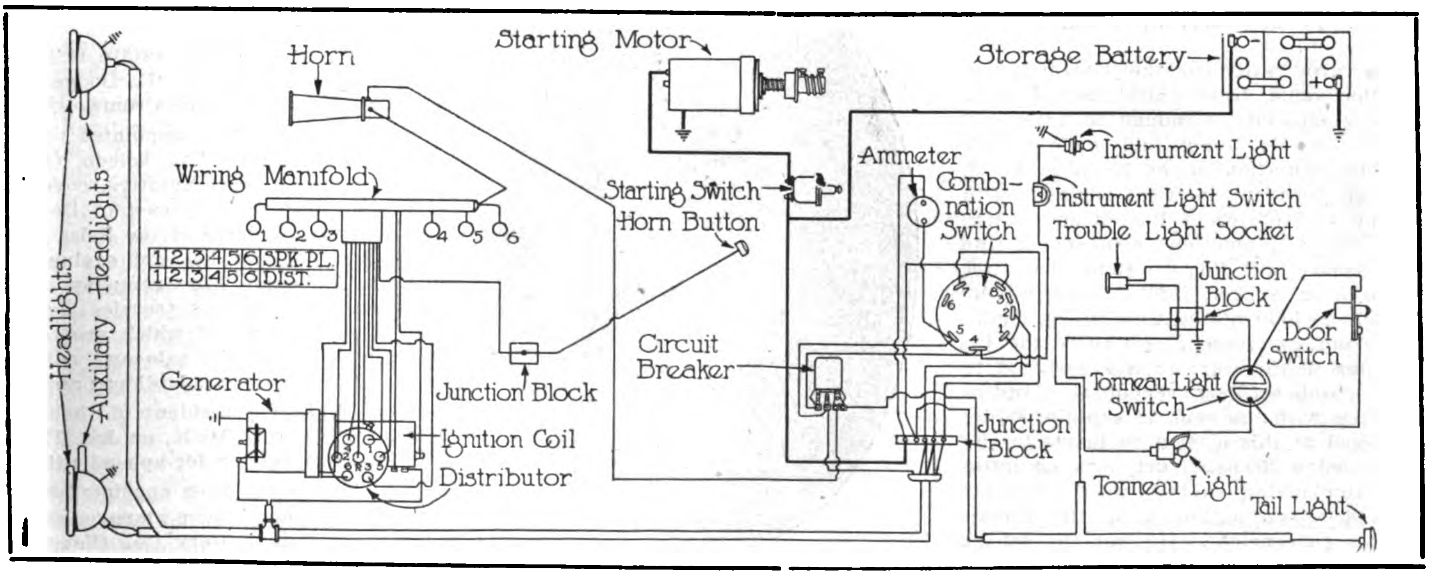
Marmon Model 34, 1918, High Tension Magneto, Delco Starting and Lighting.


Horn
Starter Motor
A
Battery
Switch Box
Starter Switch
Ignition Wire Tube
Ground Button
Headlights
Control Box
Fuse Box
Tonneau Light
Inspection Light Plug
Magneto
Horn Button
Generator
Tail Light

Marmon 1916, Bosch Starting, Lighting and Ignition.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Starting Motor
Storage Battery
Headlights
Auxiliary Headlights
Wiring Manifold
1 2 3 4 5 6
Ammeter
Instrument Light
Starting Switch
Horn Button
Combination Switch
Instrument Light Switch
Trouble Light Socket
1 2 3 4 5 6 SPK.PL.
1 2 3 4 5 6 DIST.
Junction Block
Door Switch
Circuit Breaker
Generator
Junction Block
Tonneau Light Switch
Ignition Coil
Junction Block
Distributor
Tonneau Light
Tail Light

Marmon Model 34, 1920 Delco Two-Unit System, for Starting, Lighting and Ignition.

Personal News of Industry and Trade

Death of Stevens-Duryea Executive

R. B. Jones, sales and advertising manager for Stevens Duryea, Inc., of Chicopee Falls, Mass., was killed the evening of Jan. 5 when the automobile in which he was a passenger was in collision with a taxicab in Springfield, Mass. Mr. Jones, who was returning from his office, was thrown against a building when the machines came together and did not regain consciousness. Both cars were turned over, the drivers escaping with slight injuries. The accident, said to have been unavoidable, was caused by the slippery condition of the pavement, due to heavy rain that was freezing as it fell. Mr. Jones was a prominent member of the younger social set in Springfield, where he lived at the Nyassat club. He was also a prominent athlete, having been known as one of the best football men who ever attended the University of Pennsylvania, from which institution he was graduated. Although in 1915, still under 30, Mr. Jones had made an enviable reputation in the business world, having been an electrical engineer with Stone & Webster of Boston and assistant sales promotion manager of the Willys-Overland Co., resigning the latter position in August, 1920, to take the one which he held at the time of his death. Entering government service at the beginning of the war, he was assigned to the coast artillery school at Fortress Monroe with the rank of captain. While engaged at this station as instructor he compiled a 300-page text book on internal combustion engines which was accepted as an authority by the United States government. He was the son of Mr. and Mrs. O. T. Jones of Sumner, Ill., who survive him.

H. M. Daniels, Manager New York Branch, Four Wheel Drive Co.

Ralph B. Jones, Sales and Advertising Manager, Stevens-Duryea Co.

H. M. Daniels, who is back after an absence of more than 18 months abroad in the interests of the export business of the Four Wheel Drive Auto Co., Clintonville, Wis., has been appointed manager of the New York branch of the company. Before joining the Four Wheel Co.'s organization he was in the Motor Equipment section of the United States Ordnance department, where he acquired a practical knowledge of automotive equipment.

Frank B. Willis has been made sales manager of the Duplex Truck Co., Lansing, Mich. He has been continuously connected with the automotive business since its inception, having served in every branch. During recent years he has been specializing on the merchandising of motor trucks and his methods and policies led to his appointment with the Duplex Co.

J. A. Young, Vice-President and General Manager, Dunkirk Axle Corporation.

Young Will Manage New Axle Concern

James E. Young, a former executive of the Sheldon Axle and Spring Co., is the general manager and vice president of the Dunkirk Axle Co., recently organized to take over the business of the Empire Axle Co., Dunkirk, N. Y. The new corporation is reported to have been formed by interests connected with the Watson Products Corporation, Canastota, N. Y., and is expected to go into quantity production by spring. The officers, in addition to Mr. Young, are: President, A. A. Keesler; secretary-treasurer, William A. Poad.

Horace E. Dodge, former president of the Dodge Brothers Co., Detroit, who died a few weeks ago, according to his will, filed for probate, leaves the bulk of his estate, estimated at $50,000,000, to his wife, Mrs. Anna Thomson Dodge, and upon her death the estate is to go to two children, Horace E. Dodge, Jr., and Mrs. Delphine Dodge Cromwell.

Frank B. Willis, Sales Manager, Duplex Truck Co.

W. J. Surre has been appointed by the Seiss Manufacturing Co., Toledo, O., as its direct house representative, covering at present the territory east of Denver, Col., and the products of the Seiss company are now to be sold exclusively through jobbers. The company will, however, continue its service department, the functions of which are to assist the dealer in the sale and application of Seiss horns and other products.

Edsel B. Ford, president of the Ford Motor Co., Detroit, Mich., on Jan. 17 underwent an operation for appendicitis.

H. L. Hurley has been appointed by H. C. Gardner general sales manager of the Willard Storage Battery Co., Cleveland, O., as manager of the St. Louis distributing agency of the Willard company.

Sherriff Is District Sales Manager

Guy M. Sherriff has been appointed district sales manager of the Automatic Safety Tire Valve Corporation in charge of sales which, after Feb. 1, will be handled direct from the New York office of the company, 1753-55 Broadway. The Automatic Safety Tire Valve Co.'s products have been marketed through the well known manufacturers' representative, Asch & Co., 16 West 61st street.

Ernest M. Culver has been appointed assistant sales manager of Willys-Overland, Inc., Toledo, O. He has been for the past three years division manager of the company, supervising the entire southern division, with headquarters at Atlanta, Ga. He started as a clerk in the parts department 10 years ago and after entering the sales department as a sales representative, covered the territories of North and South Carolina, Wisconsin, Ohio and Indiana respectively. He was then made special representative, covering the territory from Baltimore to New Orleans, and was appointed manager of the southern zone five years ago. Later he became southern district manager, with headquarters at Toledo.

J. I. Krall, Treasurer, Cleveland Automobile Co., Cleveland, O.

L. H. Amrine, formerly vice president and general manager of the Scudder Motor Truck Co., has joined the sales organization of the Dorris Motor Car Co., St. Louis, Mo.

W. G. Jarman has resigned the position of general manager and secretary-treasurer of the Hamilton Motors Co., Grand Haven, Mich., maker of the Panhard motor truck. Mr. Jarman was sales manager of the Jackson Automobile Co., and before that was Canadian manager for the Briscoe company, and earlier still was connected with the Maxwell-Briscoe and Ford organizations.

A. R. Johnson, Assistant Sales Manager, Auburn Automobile Co.

A. R. Johnson has been added to the executive staff of the Auburn Automobile Co., Auburn, Ind., in the capacity of assistant sales manager, supplementing the work of J. I. Farley, vice president in charge of sales. Mr. Johnson was in the selling and advertising departments of the Cadillac Motor Car Co. for three years, subsequent to which he was in the sales department of the Hyatt Roller Bearing Co.

Thomas H. Bingham is now production manager of the Matthews Engineering Co., Sandusky, O., which is preparing to enlarge its manufacturing schedule with the completion of its new factory additions. For the past five years Mr. Bingham has been general superintendent of the Akron works of the International Harvester Co.

J. G. Sinclair, 110 East Kelsey street, Bloomington, Ill., has announced his resignation as chief engineer of the Illinois Tractor Co. of that city and states that his future plans are not as yet defined.

~~Sid~~ J. Black, Vice President in Charge of Sales, Cleveland Automobile Co.

Prof. Tilden Directs Highway Work

C. T. Tilden, professor of engineering mechanics at Yale university, and one of the best known engineering educators in the United States, has been named as director of the work of the National Highway and Highway Transport Education committee, with headquarters at Washington, D. C. He has been granted a year's leave of absence by Yale to devote his attention to his new duties of suggesting and formulating a comprehensive programme for courses in highway and highway transport education. The membership of the committee also includes P. P. Claxton, commissioner of education, as chairman; T. H. McDonald, chief of the Bureau of Public Roads; Paul F. Sargent, president of the American Association of State Highway Officials; Roy D. Chapin of the National Automobile Chamber of Commerce; H. S. Firestone of the Rubber Association of America; Mason M. Patrick of the War Department, and F. L. Bishop, secretary, Society for the Promotion of Engineering Education.

J. V. Whitbeck, President and Designer of New Cleveland Automobile.

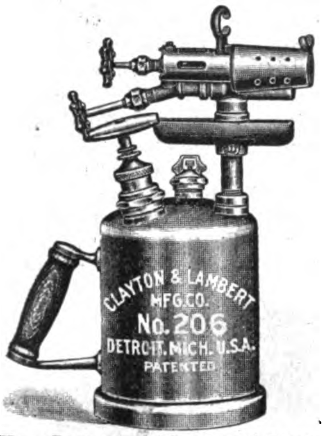
Millard S. Binney was recently appointed a member of the staff of the Ross-Gould Advertising Agency, 10th and Olive streets, St Louis, Mo. Mr. Binney was recently advertising manager of the Traffic Motor Truck Co., St. Louis, and prior to that was connected with the Chalmers organization. He will specialize in automotive accounts with the Ross-Gould agency.

L. G. Hartdorn, for several years with the Emil Grossman Manufacturing Corporation, Brooklyn, N. Y., and for the last two with the Beckley-Ralston Co., New York city, is to cover Greater New York and Long Island for the E. G. Manufacturing Co., 250 West 54th street, New York city.

H. L. Van Wyck, advertising manager for the Mitchell Co., has resigned.

CLAYTON & LAMBERT BLOW TORCH.

The new and improved double blunt needle blow torches recently introduced by the Clayton & Lambert Manufacturing Co., Detroit, Mich., are made in three sizes, two quart, quart and pint capacity. The two quart torch, No. 206, herewith illustrated, is of special interest to all who require a heavy duty torch. The burner is extra large and powerful; the maker claims it produces about 300 degrees more heat than any other blow torch and burns with a pure blue flame remarkable for its intensity and "pep"—either gasoline or kerosene can be used in operating it. The No. 206 torch is recommended by the maker for preheating, brazing, tempering and annealing and, in fact, for all kinds of heavy work. It is also stated to be a most excellent torch for automobile repair work, such as heating and straightening axles and frames and brazing brake rods, etc. This torch is also equally satisfactory for use outdoors in extremely cold or windy weather.



New Improved Clayton & Lambert No. 206 Double-Needle Blow Torch.

Three very important features are combined in its construction and use, maximum efficiency, minimum cost of operation and nominal expense for upkeep. This is due to the improved double blunt needle construction of the burner, which causes perfect combustion of the fuel and at the same time prevents the vital parts of the burner from being destroyed by the carelessness of the operator. The lower needle is a shut-off and the upper a cleaner needle, which automatically removes any obstruction in the orifice, thus making a clear passage for the gas under all conditions. The burner orifice cannot be enlarged by forcing the needle.

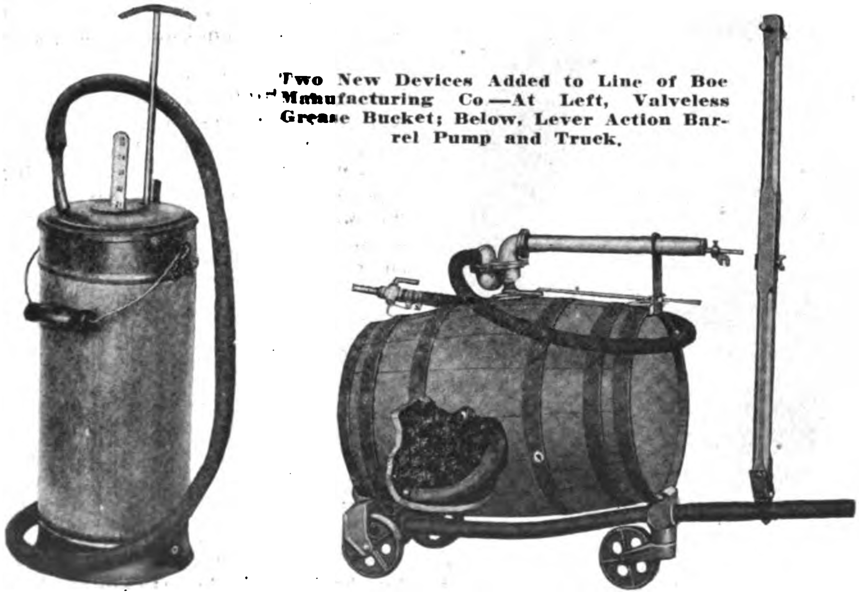
Complete information, together with a catalogue showing the full line of Clayton & Lambert torches and fire pots can be secured by writing the manufacturer.

BOE CO. AUGMENTING LINE.

The Boe Manufacturing Co., Minneapolis, Minn., is adding two new devices to its well known line of automatic and repeater grease and oil pumps. These are the Boe lever action barrel pump and truck and the Boe valveless grease bucket, illustrations of which are shown herewith.

In the former the entire truck and pump can be set up ready for business in a few seconds. The truck tongue acts as a pump handle for operating the pump. The piston stroke is adjustable to dispense one-half pound or one-half pint to each stroke. It obviates the lifting and rolling of heavy barrels, as the truck may be rolled up to the barrel, the barrel hooked on and laid down. It has the same patented piston plunger construction as is used in the Boe valveless bucket. It has extra large choke-proof valves, 1⅛ inches in diameter, and six feet of one-inch discharge hose is included. The barrel pump is suitable for attaching to either wood or steel barrels, from 25 to 60-gallon capacity. It easily handles grease up to such consistencies as will barely flow or gravitate.

The Boe valveless grease bucket is extremely simple in construction. There are no valves to stick, the piston is air tight and the entire lower end of the pump cylinder is wide open on the intake stroke, but closes automatically on the discharge stroke. It is equipped with a three-way pump. It has a unique measuring indicator graduated to show both pounds and pints, and thus inspires the customer's confidence. It strains the grease. The lubricant can be pumped out or into the bucket. and other gear lubricant can be handled without disturbing the contents of the bucket.



Two New Devices Added to Line of Boe Manufacturing Co—At Left, Valveless Grease Bucket; Below, Lever Action Barrel Pump and Truck.

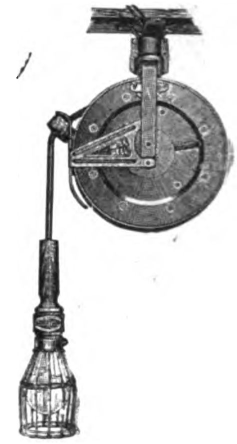
The price of the Boe valveless grease bucket, 20 by eight-inch heavy iron, 25 pounds capacity, is $15. The Boe lever action barrel pump, complete, with heavy all iron truck, is listed at $40.

AUTEX AUTOMATIC EXTENSION REEL.

In the Autex Automatic Extension Reel for electric lamps, the Cincinnati Specialty Manufacturing Co., Inc., Powers street at Sylvan avenue, Cincinnati, O., offers a device that is stated to combine the advantages of safety, economy and convenience. It is particularly designed for use in garages, machine shops, factories and all places where an extension lamp is required.

The illustration shows the Autex reel in position for use. Its actual size is 9¼ inches in diameter by two inches in width and is equipped with 25 feet of reinforced weather proof cord. The "head" is provided with a swivel joint, enabling the lamp to be carried in any direction from the reel, while an automatic lock permits a positive stop at any desired point.

To operate, grasp the lamp handle and walk in any direction from the reel to the desired distance, when a slow movement backward causes the automatic lock to catch and hold the cord at that point. To release, give a slight pull. This unlocks the latch and the cord is automatically rewound as the operator walks towards the reel with lamp in hand. Each reel is equipped with 25 feet of packing house cord, weather proof socket, handle and lamp guard (less globe), all complete for installing.



Autex Automatic Extension Reel.

The Cincinnati company, after one year's experimental work, has provided a type of extension reel for electric lamps that carries 50 feet of cord, the operation of which is stated to be as successful as the regular type, which carries 25 feet. This reel is being used by railroads in machine shops, round houses and loading platforms and is especially adapted for use where an unusually long extension is required. The reel is an exact counterpart of the 25 foot type with the exception that it has a disc measuring 12 inches, and is made proportionally as large in all other parts.

The Autex reel has been approved and listed as standard by the National Board of Underwriters.

Cincinnati Specialty Co. will furnish full particulars and prices on request.

JORGENSEN VAPOR PRIMER.

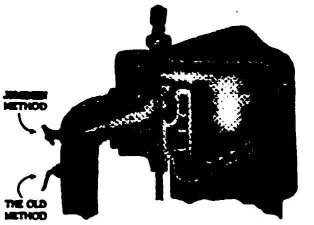
The need of some device which will insure the instantaneous and never-failing starting of the motor is recognized by every motorist as a cold weather necessity. Gasoline of itself will not vaporize below a certain temperature and therefore the need of some means of warming and vaporizing it, when the car is to be operated in low temperature, is manifest.

The Jorgensen vapor primer, which is being distributed by the United Motors Service, Inc., Detroit, Mich., not only provides a highly efficient means of warming and vaporizing the gasoline, but it also meets the demand for a device that makes a very neat application to either the instrument board or the dash board, and requires the least possible inconvenience to operate. By lifting the plunger stem of the pump a charge of gasoline is drawn from the main supply, and on the down stroke this is forced through the connections to the special spraying nozzles, which are inserted in the intake manifold, as shown in the diagram. Here the gasoline is both warmed and vaporized at the same time, being forced directly over and against the intake valves as shown in the cut. With this rich gas mixture at the most effective point, starting on the first or second quarter turn of the motor is stated to be a positive result in the coldest weather.

Jorgensen Vapor Primer, Slant Style No. A 3, for Dash Boards.

Another point in its favor is that the present day low grade of fuel can be successfully used and at the same time equal power and a surer and easier start are obtained.

The secret of the simplicity, neatness and ease with which the Jorgensen Vapor Primer is operated is found in its patented combination cutting off valve. This combination being made as a part of the lower end of plunger stem, allows of several parts being made in one, at the same time enclosing all on the inside of pump. A positive means is thus provided for shutting off connections from both the motor and the gasoline line at one time, and the several parts that one is generally obliged to operate are reduced to only the large thumb screw on upper end of plunger stem.



Interior View Showing Operation of Jorgensen Vapor Primer.

It is made in two styles, both being practically flush mounted. Style Slant No. A 3, which is shown, is generally used on dash boards, while Style Straight No. A 4 is especially designed for instrument boards.

The finest of workmanship is incorporated in it and it is handsomely finished in nickel plate. It is guaranteed to give permanent satisfaction.

The price, complete, with tubing and fitting, is $5. When ordering the style wanted should be given and the outside diameter of the main gasoline line tubing. Connections are furnished for one-quarter, 5/16 or ⅜-inch gasoline line or special connections for vacuum tanks or Ford cars.

FOSTER TIRE DISPLAY RACK.

The Foster Brothers Manufacturing Co., Utica, N. Y., offers, in the Foster tire display rack, a practical device for the attractive showing of 25 to 40 tires. It affords the advantage of keeping the stock clean and dry and prevents deterioration. It is substantially constructed of steel tubing and angle iron and constitutes a desirable and permanent store fixture. It takes up but little room and can easily be moved about. The list price is $20.

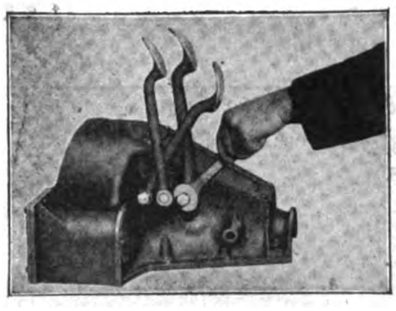
Foster Auto Repair Creeper.

The Foster Brothers Manufacturing Co. is also marketing the Foster Auto Repair Creeper for garages and automobile repair shops. It is stated to be the logical equipment for its purpose in that its frame is strongly built of metal and therefore practically indestructible. The bed is of link spring construction and, therefore, resilient, affording comfort to the repair man while in use. It is equipped with ball bearing casters of large size, which make the device freely movable. It can, moreover, be anchored in any position by a positive locking device which enables the workman to get a sufficient purchase when turning a stubborn nut.

The list price of the Foster Auto Repair Creeper is $5.

NEW FORD ACCESSORY OFFERED BY MICHON CO.

One of the most recent and useful accessories offered in the Ford car field is a brake and reverse band adjusting device, manufactured by the Michon Manufacturing Co., Toledo, O. By the use of this device the maker claims that it is not necessary for the Ford owner or driver to remove the transmission case cover to effect an adjustment of the brake and reverse bands, as the adjusting lock nuts for both bands, are carried through on a shaft to the outside of the transmission case—as is done with the clutch band adjustment only, on the Ford car as manufactured. In this way all three bands can be adjusted by the mere application of a wrench to the proper bolts outside the transmission case.

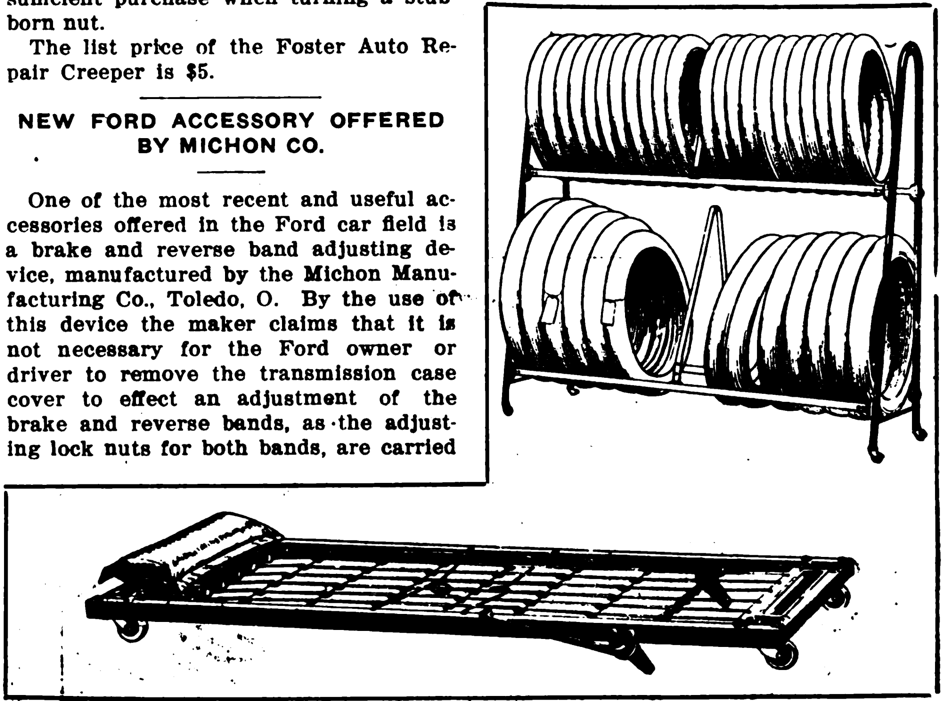


Michon Brake and Band Adjusting Device for Fords.

"We thus eliminate," states Mr. Michon, president of the company, "the dirtiest job on a Ford, that of removing the transmission cover and plunging the hand and a small wrench into the oily recesses of the housing and attempting to connect with the proper lock nut before the wrench slips from the fingers and disappears into the delicate mechanism of the transmission, clutch, flywheel and magneto. Every garage and repair man knows of scores of instances where this exceedingly aggravating accident has happened, necessitating, as it does, the tearing down of the whole Ford transmission housing in order to retrieve the wrench before one dares to start the motor."

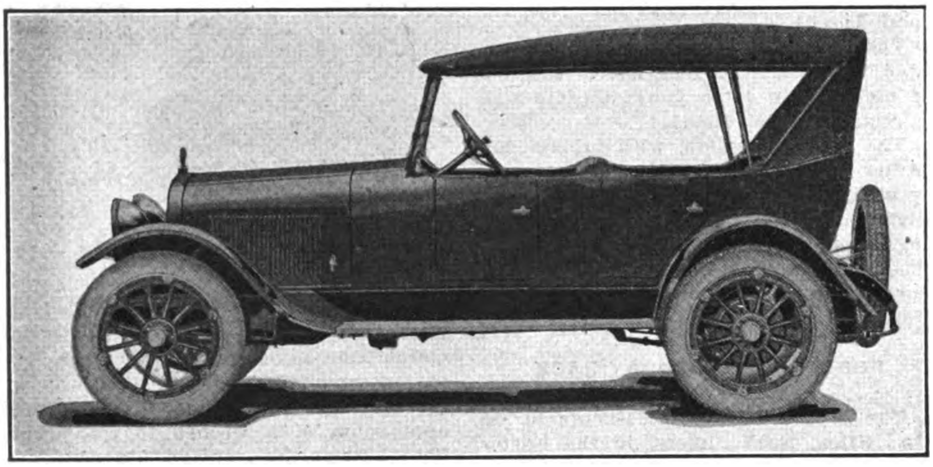
The Michon Manufacturing Co. is now in production on this device, which is being distributed to motorists through garage and accessory dealers the country over.

California has more motor cars than entire registration of European countries.



Garage Equipment Being Featured by Foster Manufacturing Co.—Above, Foster Tire Display Rack; Below, Foster Auto Re pair Creeper

New Models of 1921 Cars, Trucks and



Stanwood Six Model A Touring Car, Made by Stanwood Motor Car Co., St. Louis, Mo.; Price, $2050.

NEW STANWOOD SIX CAR.

Motor—Continental Red Seal, six-cylinder, 3¼ by 4½, 25.3 horsepower, S. A. E.

Lubrication—Full pressure feed.

Cooling—Centrigugal water pump.

Carburetor—Stromberg.

Clutch—Borg & Beck, 10-inch.

Transmission—Grant-Lees selective, three speeds and reverse.

Starting and Lighting—Westinghouse, two-unit.

Ignition—Atwater Kent.

Battery—Willard, six volts.

Drive—Hotchkiss.

Brakes—Service and emergency.

Wheels—Wood, artillery type demountable rims. **Tires**—Firestone, 33 by 4.

Body—Five-passenger, streamline.

Wheelbase—118 inches.

Finish—Body, Brewster green; upholstered in genuine leather.

Equipment—Motor driven Kellogg tire pump; rain vision windshield; Klaxon horn; duplex head lights, Rex tonneau light; Neverleak De Luxe top, door-opening curtains; motometer; foot rest in tonneau; robe straps; set of tools; jack; extra rim and tire carrier.

* * *

KELSEY SIX-CYLINDER CAR.

Engine—Six-cylinder Falls, valve-in-head, 3⅛ by 4¼, 23.44 horsepower, S. A. E.

Lubrication—Pump and splash.

Carburetor—Tillotson.

Fuel Supply—Stewart vacuum; 14-gallon rear tank.

Ignition—Atwater Kent.

Starting and Lighting—Bijur, six-volt, two-unit.

Battery—Willard, six-volt, 94 ampere.

Transmission and Clutch—Patented Kelsey friction.

Brakes—Service external on rear wheel drums and emergency on jackshaft.

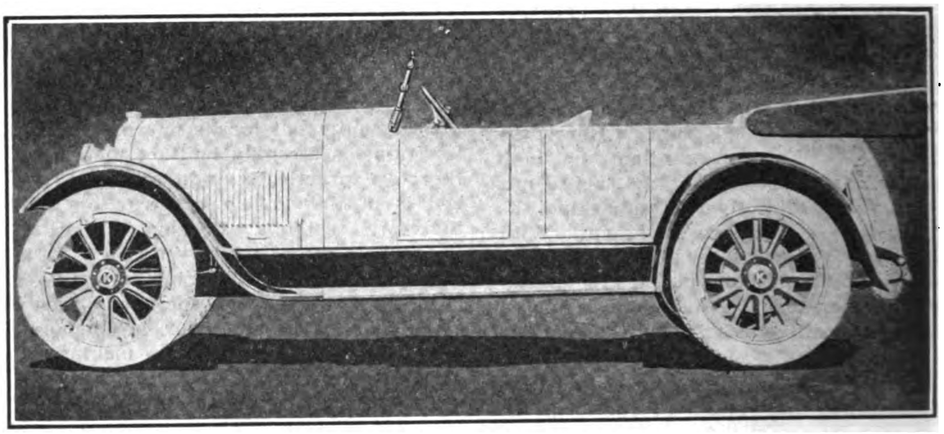
Wheels—Artillery. Timken roller bearings. **Tires**—Fisk 32 by 4, non-skid rear **Rims**—Stanweld split type.

Wheelbase—116 inches; road clearance, 10 inches.

inish—Dark green; upholstery, real leather tan Spanish, French pleats. Sedan. French gray cloth.

Equipment—One-man Neverleak top; 75-mile Stewart-Warner speedometer; spare rim; tool kit; jack; pump; tire repair kit; starting crank; rim wrench; switch keys; curtain rods.

Price—Touring car, $1800; Runabout, $1750; Sedan, $2700.



Kelsey Touring Car, Made by Kelsey Motor Co., Newark, N. J.

* * *

NEW GLOBE FOUR.

Engine—Supreme four-cylinder, en bloc, L-head, 3⅝ by 4, 18.2 horsepower, S. A. E.

Lubrication—Force.

Ignition—Delco.

Starting and Lighting—Delco.

Clutch—Borg & Beck.

Transmission—Special Warren; three speeds forward and reverse.

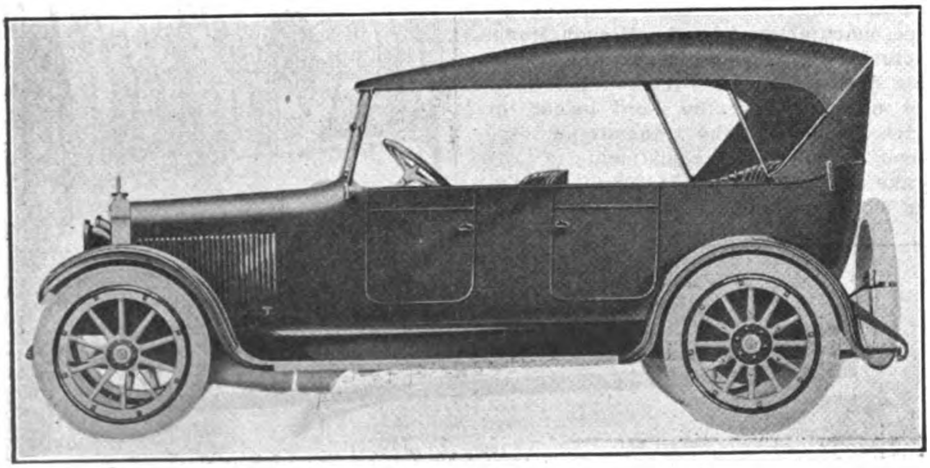
Wheels—Wood, artillery type. **Tires**—Firestone, 32 by 4, oversize cord. **Rims**—Firestone.

Body—Five-passenger touring, two-passenger roadster.

Wheelbase—115 inches.

Finish—Holland blue, natural wood wheels, or English vermillion red wheels; upholstery, finest quality, extra cut leather, Marshall springs.

Equipment—Extra heavy Neverleak top; side curtains contained in compartment back of front seat; black walnut instrument board; electric motor driven horn; speedometer; motometer; extra tire and tube; tire repair kit, jack and tools.

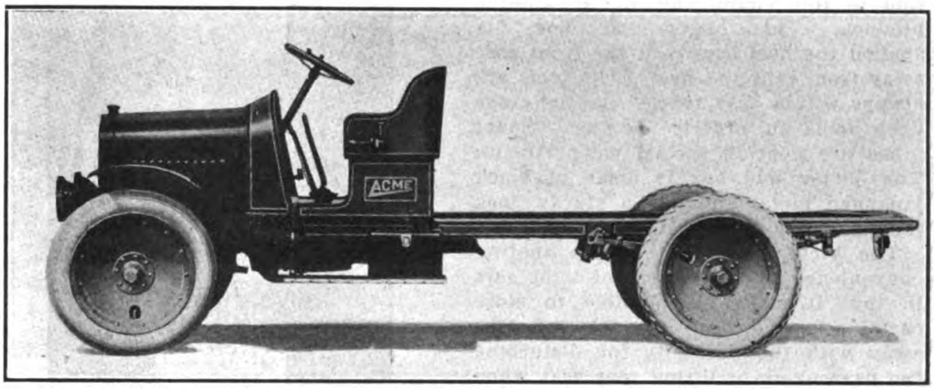


Globe Five-Passenger Touring Car, Made by Globe Motors Co., Cleveland, O.

Tractors Now Being Offered to Trade

NEW ACME SPEED TRUCK IN PRODUCTION.

Engine—Continental, Model N, Red Seal. Bore, 3¾ by 5 inches, S. A. E. rating, 22.50 horsepower; actual 35 horsepower block test.
Wheelbase—120 inches.
Wheels—Steel disc, regular.
Tires—34 by 5 inch, pneumatic.
Rear Axle—Timken worm, semi-floating type.
Price—$1790 f. o. b. Cadillac, Mich.



Acme Model G Truck, Manufactured by Acme Motor Truck Co., Cadillac, Mich.

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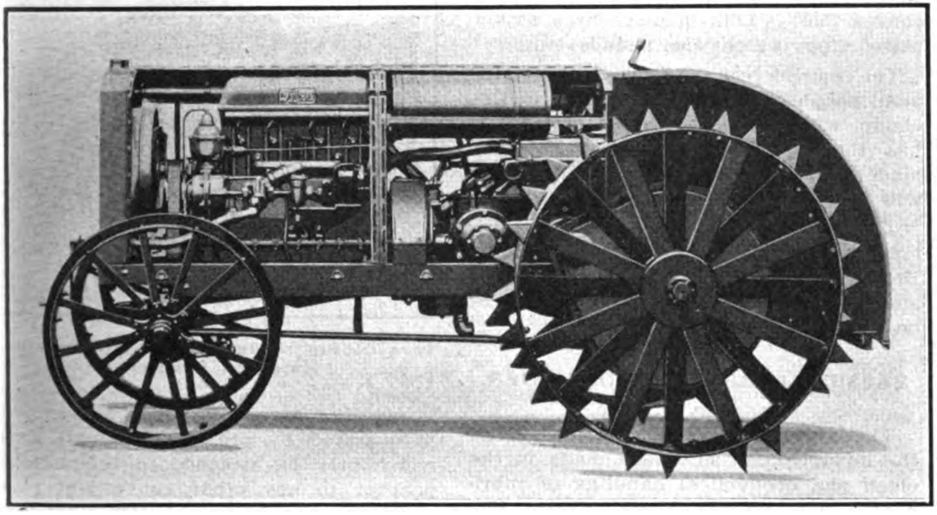


Model 12-25 Tractor, Manufactured by John Lauson Manufacturing Co, New Holstein, Wis.

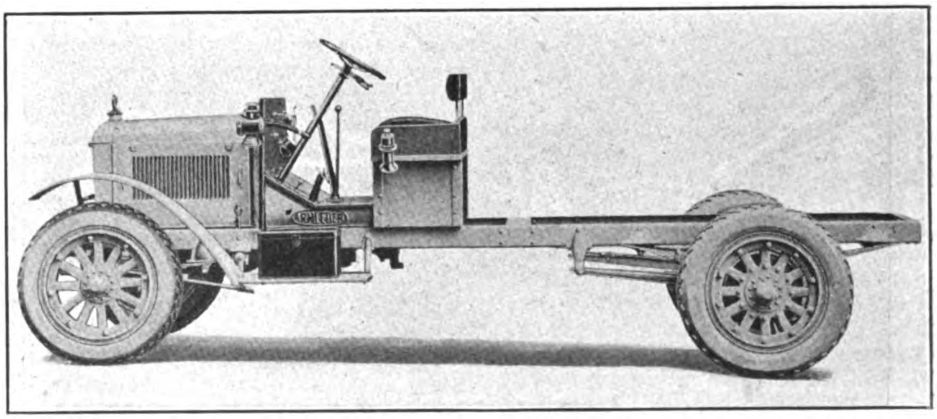
NEW THREE-PLOW 12-25 LAUSON TRACTOR.

Engine—Lauson four-cylinder, valve-in-head type. Develops 30 horsepower at belt, 20 horsepower at draw bar.
Plowing Speed—Slow, two to 2½ miles an hour; high, 2½ to 3¾ miles an hour.
Speed—Controlled by Taco ball bearing governor.
Cooling—Water pump and fan.
Price—$1595 f. o. b.

◆

ARMLEDER ONE-TON TRUCK CHASSIS.

Engine—Cast en bloc. Bore, 3¾ inches. Stroke, 5¼ inches. S. A. E. rating, 22.50 horsepower; actual, 30 horsepower at 1500 revolutions.
Wheelbase—148 inches.
Tires—Solid, 34 by 3½ inches front, 34 by 5 inches rear.
Rear Axle—Full floating, worm type.

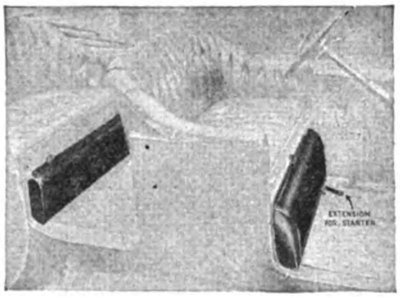


Armleder Model 20 Speed Truck, Equipped with Oversize Pneumatic Cord Tires; Made by O. Armleder Co., Cincinnati, O.

TWO NEW CORCORAN VICTOR PRODUCTS.

The Victor tool box is the latest addition to the Victor line of automotive products. This handy tool box fits against the heel boards of the front seat away from rain and dust. The tools are always within easy reach. Special trays keep tools in orderly manner. Spare tubes are kept in special compartment. The Victor tool box is made of black japanned metal and has a sturdy lock that makes contents safe from theft.

The Victor curtain holder is another convenience to the drivers of light cars in that it makes it possible to store curtains in an orderly manner, and does away with the necessity for disturbing the passengers or lifting rear seat when curtains are needed. The curtains are held in two neat rolls and are protected from tearing or twisting. The Victor curtain holder is made of black japanned metal and is attached to the heel boards of the rear seat by two screws. It is especially adapted for Ford, Chevrolet and Overland cars.



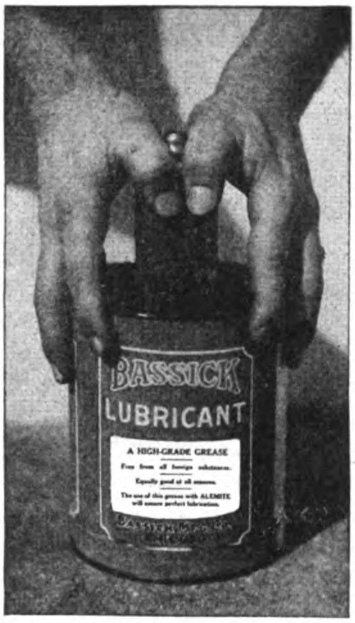
Corcoran Victor Tool Box at Right and Curtain Holder at Left.

Both of these products are manufactured by the Corcoran-Victor Co., Cincinnati, O., and prices and literature will be furnished on request.

CINCINNATI INNER CONTROL SPOT LIGHT.

The Cincinnati Inner Control spot light is designed so as to be controlled from closed cars of the sedan and curtain types, eliminating all inconvenience in cold or wet weather.

The bracket, designed for attachment to sedans of all models, is all brass, nickel plated, with the exception of the handle, which is polished aluminum. All reflectors are spun from 22-gauge brass, silver plated and highly polished. The convex lens is held in place by a nickel plated ring; weight two pounds.



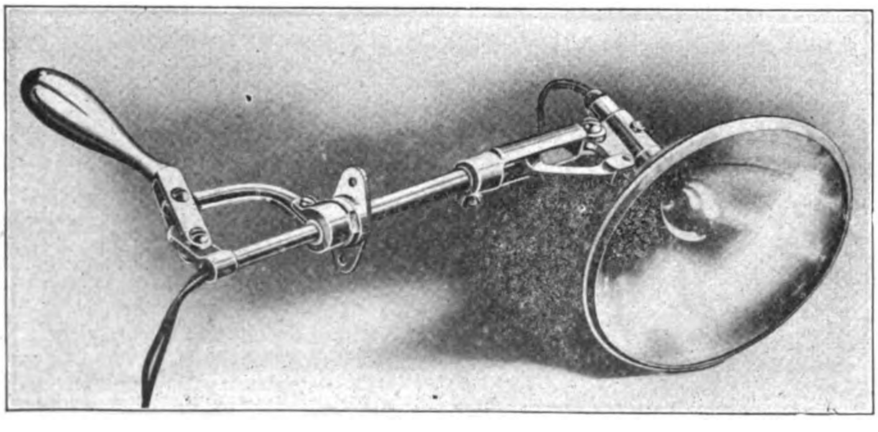
Bassick Lubricant Container.

The touring car bracket is of aluminum, polished, with the exception of the clamp, which is brass, nickel plated. It has the same reflector as the sedan model, and its weight is two pounds. It will fit all types of touring cars.

The Inner Control Spot Lights are manufactured by the Cincinnati Lamp & Bracket Co., northwest corner of Third and Race streets. Prices and literature on request.

BASSICK LUBRICANT CONTAINER.

The accompanying illustration shows the advance that has been made in the clean and economical handling of lubricants. The Bassick Manufacturing Co., Chicago, Ill., is marketing the Bassick lubricant can or container, which is made with a cone shaped plunger. It is designed to fill the compressor of a high pressure lubricating system. By simply pressing down firmly with both hands the lubricant is forced into the cylinder until it is completely filled and ready for use. The tube is operated in the same manner as a tube of tooth paste; by rolling the lower end of the tube the grease is forced into the compressor, which fits over the top of the cylinder.

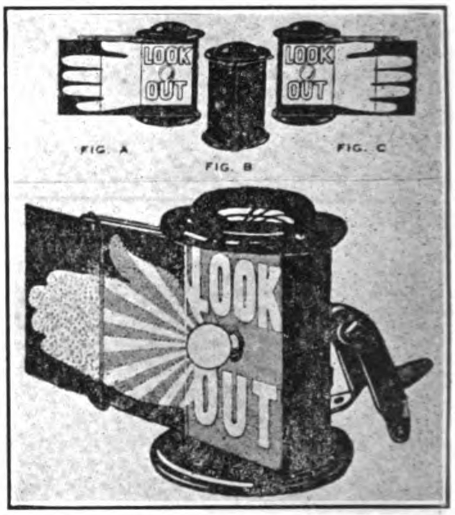


Cincinnati Inner Control Spot Light, with Sedan Bracket.

THE TURN-O-STOP SIGNAL.

Among the many devices that have been designed to supplant the necessity of a car driver signalling with his hand his intention to turn or stop, one of the most ingenious, and it is claimed, effective, is the Turn-O-Stop, now being manufactured by the Turn-O-Stop Manufacturing Corporation and distributed by Mitchell & Livingston, 21st street and Fifth avenue, New York city.

The Turn-O-Stop consists of two electric safety signal lamps fastened on the rear mud guards of the car. When not in use they are closed as in figure B. It is operated by pressing a small lever, which may be attached to the steering post or to any other convenient place within the driver's reach. For right turn, press lever to right; right hand signal snaps open, flashes a hand, warning letters, electric light and emits a buzzing sound. (Fig. C.) For left turn, press lever to left; left hand signal snaps open with similar warnings. (Fig. A.) For full stop, press lever down; both signals snap open.



Turn-O-Stop Signal, Showing Closed and Extended Positions.

It would seem to be impossible, even to the least observant, to mistake the meaning of the direction pointing, flaring hand, with light and sound signal.

A careless operator cannot leave the switch on after the turn has been made, as the sound of his own signal will warn him of his error. Turn-O-Stop cannot be trifled with while the owner is absent, as the lever is easily removed like any switch key.

It works in all kinds of weather, day or night. It is indorsed and recommended by insurance companies and safety experts.

The outfit includes signal lamps, cable connections, switch key, bolts, etc. Each set is guaranteed. Price, $25 a set, complete, including installation.

Remarkable Record of Automobile Industry

By Charles Clifton, President National Automobile Chamber of Commerce.

THIS will be a transportation year. Every business and every product is called upon to face its part in the reconstruction. Waste must be cut. Extravagance must be eliminated. Efficient methods must prevail.

This is to be a year of conservatism, when the weak will go to the wall and the strong will add to his strength.

Fundamental Business Conditions Sound.

Let us examine the fundamental business conditions. The country is rich. Products abound. Eventual prosperity is inevitable. The 1920 harvests have been better than average. Labor is more plentiful and more efficient than during the war and post-war years. The foreign exchange situation is improving. Railroads are better able to handle long haul business. Cars and trucks are available in greater numbers than ever before.

Business contraction has been due to a shortage of credits, not to a lack of goods. After the war, after the high prices and speculation, a period of pruning was inevitable. When one looks back to 1873 and 1903, one realizes that the readjustment has come with surprisingly small discomfort. Price declines have taken place rapidly, and as soon as the public realizes that the lowest price levels have been reached there will be a resurge of trade.

With these factors in mind it is clear that the industries which are guided by keen minds and serve a useful purpose will go forward.

Automobile Industry's Record Remarkable.

The degree of business ability to be found among manufacturers of cars and trucks is shown by growth of industry. For twenty years the making of motor vehicles has been gaining steadily. One exception is to be found in the year 1918 when the producers of passenger cars voluntarily curtailed their output in order to make air planes, parts and other instruments of war. Here is the record:

Manufacture of Cars and Trucks.

Year	Number
1899	3,700
1903	11,000
1904	21,975
1905	25,000
1906	34,000
1907	44,000
1908	65,000
1909	127,731
1910	187,000
1911	210,000
1912	378,000
1913	485,000
1914	569,045
1915	892,618
1916	1,583,617
1917	1,868,947
1918	1 153,637
1919	1,974,016
1920	2,240,000*

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*Estimated.

In 1903 general business conditions were bad, but motor vehicle production advanced over the only preceding year for which statistics had been gathered (1899), and probably showed some gain over 1902, although there were no records kept for 1900, 1901, 1902. The 1899 figure is from the government census, whereas not until 1903 did the manufacturers collect statistics for the industry as a whole.

In 1907 the output of many industries was heavily curtailed, but all records for the making of automobiles were broken. This gives some idea of the vitality of the automobile industry, causing it to advance in times of depression.

This stamina is not due solely to the creative brains of the automobile industry. It rests on an even firmer basis: The insistent demand of modern civilization for better transportation, coupled with the break down of street railway lines in many suburban communities.

There are 7,000,000 cars in the country and about 800,000 trucks. The passenger mileage of automobiles in 1919 was 68,000,000,000, whereas the passenger mileage of railroads was 46,000,000,000. Of the motor cars 90 per cent. are used more or less for business. 60 per cent. of the mileage is utilitarian, and the full service of trucks, of course, is devoted to commercial efficiency.

When one looks forward, therefore, into 1921 with its readjusted finances, its storehouses filled with goods, one must read there a steady demand for automotive products. Especially is this so when it is realized that automobile salesmanship is in the early stages of development.

Fully as significant are the facts that are being brought to light concerning the productive use of the passenger car.

The compiled testimony of thousands of car owners shows that the user increases his productivity 57 per cent. as a result of owning an automobile.

Official records of New York city show that 154,700 cars and trucks enter and leave the Metropolis daily, bringing 420,000 persons for their errands in and out of New York.

The trend of population to the cities is certain to make the suburban market for cars an important factor in the industry.

This is but one consideration, however, in the growth of the automobile industry. Various classes of business and professions are finding out that cars are essential. The degree to which the automobile is useful to some of the major occupations may be seen in the following figures averaged from the reports of car owners in these groups:

Occupation	Increased Efficiency
Real estate and insurance	113%
Doctors	104%
Salesmen	103%
Clergymen	98%
County superintendents	72%
Farmers	68%
Contractors	51%
Manufacturers	33%
Bankers (incl. rural)	33%
Merchants	25%
Lawyers	23%

These figures speak for themselves as an index of the business field for passenger cars and trucks.

Modernized Rolling Stock Essential.

Keeping the rolling stock in modern condition will be another factor in the automobile business of 1921. Obsolete cars must be replaced by new cars. One of the worst ravages of the war in Germany was manifest in the depleted condition of its railroad equipment, and in its breakdown in motor transportation.

A people who live in peace and prosperity will keep the avenues of communication in good condition.

If we assume that the life of an automobile is five years, the entire output of 1916 (1,583,617) will need replacement during the coming year. It should be remembered, however, that the cars of the past several years have been great improvements over earlier models and consequently will not need as rapid replacement, so the need from this source may not pass the million mark.

The export market has hardly been touched. The foreign shipments of motor vehicles in the fiscal year 1920 was nine times as large as any pre-war year. The ratio of cars to population in the United States is one to 14, in Great Britain it is one to 180.

But the business appeal is not the sole claim of the car.

The fact that the automobile is a vital transportation unit serves as a firm foundation for the industry. It assures stability in the times of commercial upset, and it entitles the car and truck to the highest consideration in the public mind. The utility of the car and truck is a fact to which we may point with pride.

But the car wins its way into the heart of the people also because it aids them in the fundamental right of the pursuit of happiness.

The family car is one of the greatest relaxations for our high speed civilization. I have no patience with those who wish to cut out healthful play. The emphasis today is too much in the other direction. It is splendid to think of the car adding to the efficiency of over 7,000,000 owners; but it is fully as gratifying to think of these families thereby gaining a relaxation and recreation to which they are justly entitled.

The car is also in demand in governmental departments. We find 30,000 cars and trucks owned and operated by states and 10,000 automobiles serving municipalities.

For work or play the car has its place. Just now the world has its coat off and 1921 will be a year when motor vehicles will serve primarily a business purpose; but incidentally the whole social fabric will benefit from healthful recreation, and from that fact that each car owning citizen will have a fuller knowledge of how the country surrounding him lives and grows.

SALESROOM AND SERVICE STATION

A Fire-Proof Four-Story and Basement Structure Equipped with Every Facility for Display, Storage and Restoration and Repair.

THE accompanying drawings illustrate a building that would be suitable for the combination of a sales room and service station. The layout presented is four stories with basement, although a plan for a basement is not shown, owing to the limitation of space and also the fact that no difficulty should present itself in providing for this.

The structure is designed to have 100 feet frontage and 90 feet depth and to be located on a street with a court or drive at the right side to afford egress and ingress of machines.

The basement could be used for storage of a general nature, receiving and shipping room, storage of parts, oils, greases, etc.; a large boiler room and the other units that logically should be located in that part of the structure.

On the street floor, flanking the entire front of the building, is a show and sales room, which has two separate entrances, one on either side of the large central window.

In conjunction with the sales room there is an office for the sales manager, located at the rear of the show room. A toilet for members of the sales organization has also been provided.

There is a passenger elevator running from the basement to the top floor, a stairway from the basement to the top floor, and also a stairway from the show room to the second floor.

At the rear is a general garage section, with an entrance from the court or side street. There is an elevator for hoisting cars to all floors, and alongside of the elevator there extends a stairway from the basement to the room. A wash stand will be found on this floor.

The second floor is devoted partly to the main office, which is located at the front end, directly above the show room. There is a women's toilet in connection with the office. This toilet leads from the waiting room at the head of the stairs. The passenger elevator opens into the waiting room as shown.

Provision has been made for a large stock room, where parts and accessories may be kept on hand at all times, so that the needs of customers for repairs and renewals of equipment may be met as they are developed.

There is a storage space for new cars awaiting owners' call, and adequate area can also be provided for used cars that are for sale. This affords in reality a sub-show room and yet has the utility of a storage department for cars. A large toilet is also in this section. This is lighted and ventilated from a court or light shaft.

The third floor is generally given over to repair work. Here is located the general repair department, where all kinds of work may be done. There is an engine repair section, where engines may be overhauled and tuned up.

An electrical department is also illustrated, where batteries, magnetos, etc., may be rebuilt or repaired.

At the rear of this floor are three units that form the heart of the service departments. These are the machine shop, the forging department and the welding section.

A tool room has been shown in connection with the machine shop. By having a system of record of the issuance of all of the tools and that will necessitate their return to the tool room when the workmen are through with them, excessive losses of tools can be avoided. A toilet and a wash stand are shown.

The entire fourth floor is turned over to the finishing department. This floor has a wood working section, a trim department, where all kinds of leather work is done; a general paint shop, two varnish rooms and one enamel room.

The general paint shop occupies the larger portion of the floor. Immediately at the rear of this floor are located the varnish and enamel rooms.

The construction is of reinforced concrete throughout, with brick, granite or artificial stone. The same treatment as that of the trimmings for the first story is to be used for the manufacture of the cornice and inserts in same.

Electric lamps have been placed on either side of the entrance doors, adding much to the appearance and greatly conveniencing ingress and egress at night. A large sign has been incorporated into the design, something just a little different from most signs.

Instead of the unsightly, common place steel frame, an endeavor has been made to weave in a little refinement, and, therefore, the ornamental iron frame work shown. Exceptional individuality may be attained in this respect, and it is believed greater consideration should be given such projects. The cost is a little more, but is well worth it.

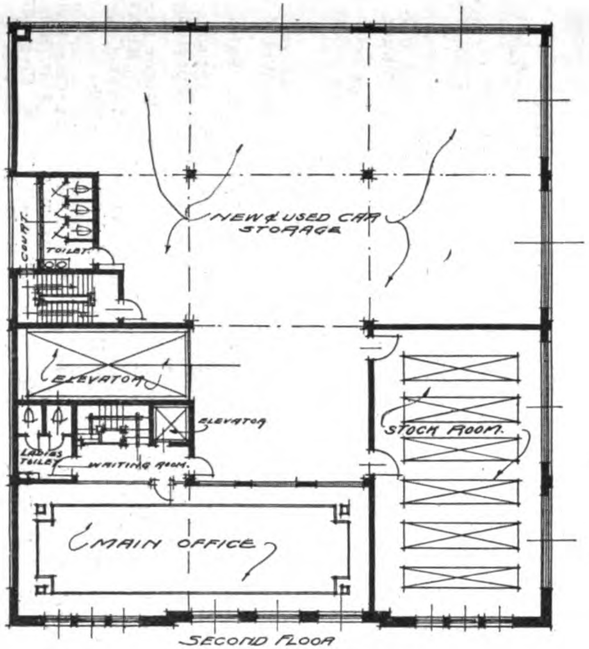
The building is fireproof. Steel sash, wire glass, metal doors, etc., are used throughout, complying with the fire prevention laws.

The cost of such a structure would be from $60,000 to $75,000.

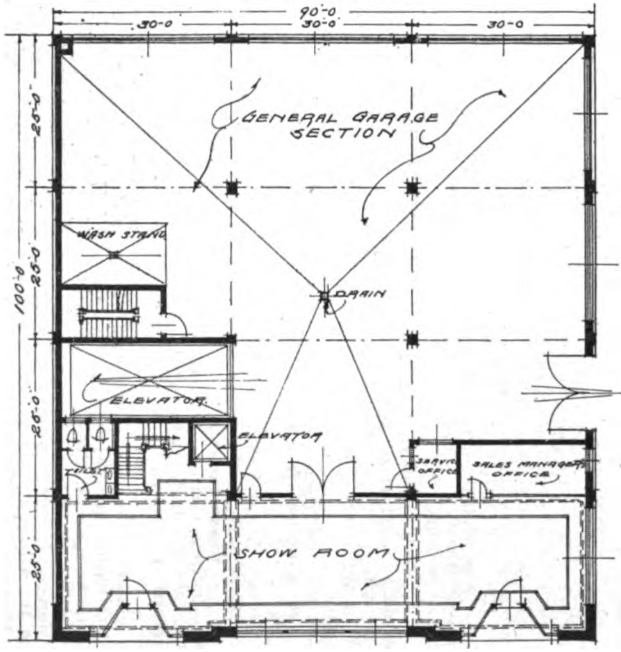
Any further information relative to this plan will be supplied on application to the Architectural Department of this publication.

PLATE XXXVIII

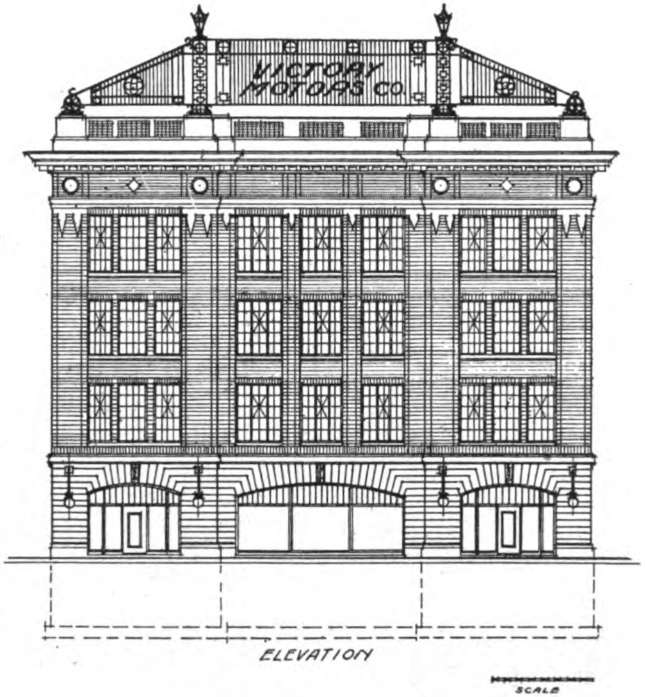
SERVICE STATION.


NEW & USED CAR STORAGE
COURT
TOILET
ELEVATOR
ELEVATOR
LADIES TOILET
WRITING ROOM
STOCK ROOM.
MAIN OFFICE

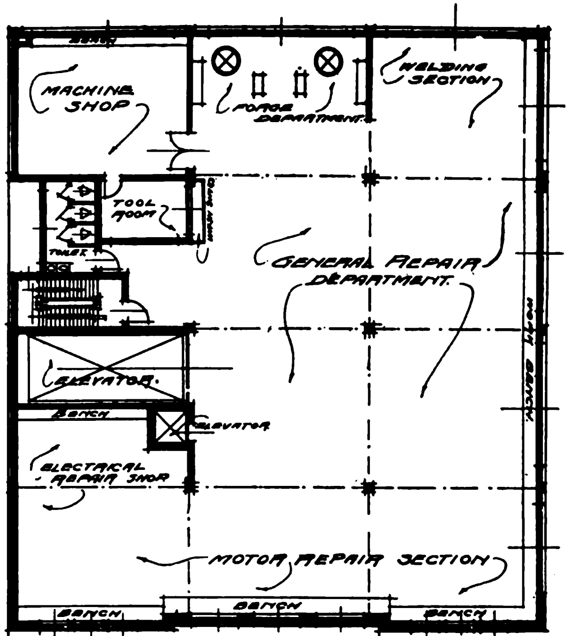
SECOND FLOOR


90'-0
30'-0
30'-0
30'-0
25'-0
25'-0
25'-0
25'-0
100'-0
GENERAL GARAGE SECTION
WASH STAND
DRAIN
ELEVATOR
ELEVATOR
SERVICE OFFICE
SALES MANAGER'S OFFICE
SHOW ROOM

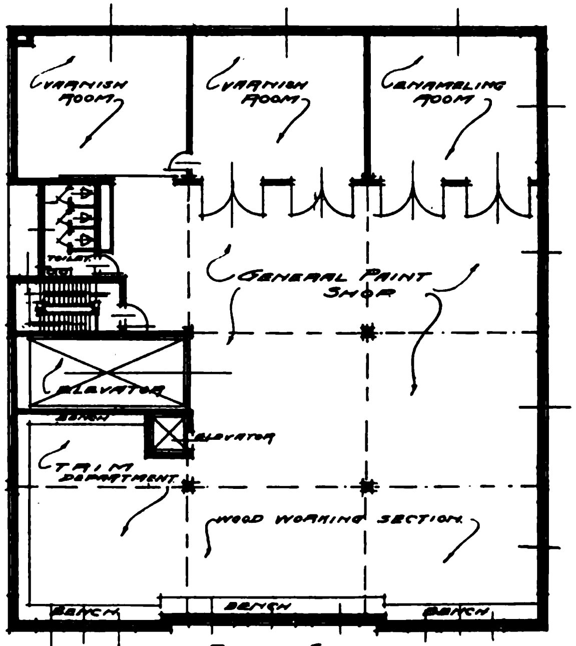
FIRST FLOOR


VICTORY MOTORS CO.
SCALE

ELEVATION


BENCH
MACHINE SHOP
FORGE DEPARTMENT
WELDING SECTION
TOOL ROOM
GAME ROOM
TOILET
GENERAL REPAIR DEPARTMENT.
WORK BENCH
ELEVATOR.
ELEVATOR
BENCH
ELECTRICAL REPAIR SHOP
MOTOR REPAIR SECTION
BENCH
BENCH
BENCH

THIRD FLOOR


VARNISH ROOM
VARNISH ROOM
ENAMELING ROOM
TOILET
GENERAL PAINT SHOP
ELEVATOR
ELEVATOR
BENCH
TRIM DEPARTMENT
WOOD WORKING SECTION
BENCH
BENCH
BENCH

FOURTH FLOOR

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN MOTOR CARS, TRUCKS, TRACTORS, ETC.

Arkansas.

Ft. Smith—Light Car Sales Co., buy and sell autos and accessories; $10,000; W. A. Strozier, J. C. and J. C. McCord, J. C. McGann.

Jonesboro—Griffith Motor & Sales Co.; $50,000.

California.

Ft. Bragg—M. S. M. Motor Co., motor vehicles; $15,000.

Marysville—Sam Britton Auto Co, cars and accessories; $75,000.

Connecticut.

Waterbury—Main Motor Sales Corp.; $5000; Leonardo Lorusso, J. N. and Einera Wallace.

Delaware.

Dover—Supreme Motor Co.; $50,000; F. R. Hansell, J. Vernon Pimm, E. M. McFarland. Philadelphia, Pa.

Wilmington:

- Alenglander Motor Co.; $500,000; C. T. Cohee, C. B. Outten, S. L. Mackey.
- Cole-Wilmington Motor Car Co.. autos; $100,000.
- Coulter Motors; $325,000; T. L. Croteau, M. A. Bruce, S. E. Dill.
- Homer O. Robinson, autos; $25,000; Kenneth L. and Harry Emmons, A. L. Dorsey.
- United Auto Elec. Service Corp., autos, etc.; $200,000; Cornelius A. Cole, Robt. A. Van Voorhis, Arthur R. Oakley.

Idaho.

Pocatello—Mutual Motors & Implement Co.; $1,000,000.

Illinois.

Chicago:

- Harding Motor Sales Co.; $20,000; Alfred Loeser, Jacob Kaplan, Harry G. Wexler.
- Movie Parts Co. of America, autos, supplies, etc.; $6000; B. J. Weisbrodt, S. A. Guthrie, C. Y. Freeman.

Joliet—Illinois Apex Sales Co.; $25,000; Robt. E. Manley, Albin Peterson, Jacob Mintnick.

Ziegler—Ziegler Motor Sales Co., Owen's Garage.

Indiana.

Cloverdale—Morrison Bros., agricultural implements.

Iowa.

Shenandoah—Varley & Smith Implement Co.; $25,000.

Kansas.

Atchison—Atchison Motor Co.; $40,000; H. M. Robbins, J. C. Killarney, R. C Garvin, Atchison; Jas. Patrick Smith, Earl L. Robbins, Kansas City, Mo.

Hutchinson—Southwestern Motor Co.; $100,000; Elmer J. Negry, Geo. Moliter, J. H. Tuder, Chas. S. Fulton, Frank Sutton.

Minneola—McPhaill Motor Co., Ford agency, Losey Bldg.

Kentucky.

Frankfort—A. C. Morrise & Co., Inc., implements; $15,000; A. C. Morrise, John P. Stewart, B W. Whittaker.

Louisville:

- Indiana-Brocar Truck Co.; $25,000; Thos. H. and Florence M. Brocar, Geo. M. Royce.
- Roth Motor Co.; $30,000; J. E. and Albert Roth, Ray B. Myers.

Massachusetts.

Belmont—Oakley Garage Co., auto business; $50,000; Fred H. and Mabel E. Conant, Arthur G. Carver.

Boston:

- Cape Ann Omnibus Co., auto and general freight business; $25,000; Wm Costa, Antoine A. Silva, Roy Chandler Davis.
- A. C. Jones Co., Inc., autos; $20,000; Arnold H., Albert C. and Edith A. Jones.
- C. J. Mann & Co., Inc., autos and auto equipment; $5000. Directors: President, Chas. Grossman; treasurer, Jack D. Grossman; Isidor Saltz.
- Murray Mac Motor Co., Inc., autos and accessories; $20,000; John J. McCarthy, Frank A. Hannon, Frank E. Rosendorf, Hugh J. Lally.
- Spadola Motors Co., Inc., motor vehicles; $2,000,000; Jos. Spadafora, Saml. H. Lewis, Harold A. Rudnick, Anthony J. Caldarine.

Fall River—Overland Fall River Corp., autos; $60,000; John Hall, Alban J. Gagnon, Arthur J. B. Cartier.

Lowell—Pentucker Motors Co., autos; $30,000; J. Munn, Isabel H. Andrews and Leonard J. Bartel.

Medford—Middlesex Motor Service, Inc., autos; $100,000; Chas. N. March, Guy C. Carpenter, Alson C. Smith.

Pittsfield—Cadillac Pittsfield Co.; $25,000; Fred. H. Thorp, Rigobert McFarlane, Matthew MacIntyre.

Michigan.

Bay City—Fletcher Auto Sales Co.; $100,000; R. H. Fletcher, Sr., R. H. Fletcher, Jr., Walter Fitzhugh.

Detroit—Eastern Motor Sales Co.; $30,000; Albert Shomaker, Detroit; Geo. M Lieberman, Macomb County; L. A. Poundstone, Indianapolis, Ind.

Perrinton—Beckwith, Hardeb & Morrow, Inc., farm implements, etc.

Minnesota.

Argyle—Crummy Implement Co., Inc., farm implements, autos, tractors, etc.; $50,000; Geo. F., Francis C. and Albert Crummy.

Lake City—Lake City Motor Co.; $35,000; John A. Duffus, Milton Erickson, Fred C. Fick.

Missouri.

Independence—Select Motor Co.; $5000.

Joplin:

- Hickman Motor Co., 314 W. 4th St., Hupmobile agency; T. E. Hickman, Kansas City.
- Hudson-Hughes Motor Co.; $50,000; Jas. T. Hughes, W. H. Withrow, G. C. James.

Kansas City:

- Bird-Sykes-Bunker Co., Paige distributor; Arthur S. Bunker, manager.
- Front Drive Motor Co.; $20,000.
- Kagey Motor Co.; $100,000.
- Kirkland Gravens Motors Co.; $500,000.

St. Louis:

- Boehl Motor Truck Co., Denby trucks, 3104-6 Locust St.; $25,000; pres. and treas., J. L. Boehl; vice pres., P. H. Fuchs; sec., T. Wagner; sales mgr., H. Teichman; atty., S. T. G. Smith, 1018 Federal Reserve Bank Bldg.
- Holmes Motors, Inc.; $50,000.
- Strauss Motor Car Co., Ford sales and service station, 1121-25 Pine St.

Trenton—Trenton Buick Co.; $25,000; Arthur H. Hyde.

Nebraska.

Wood River—Wood River Implement Co.

New Jersey.

Camden—S. Jersey Supply & Transportation Co., autos; $125,000; Saml. H. Beamer, Wm. McLaughlin, Camden; Geo. C. Stout, Philadelphia, Pa.

Clifton—Lexington Ave. Garage, autos; $30,000; John Arweiler, Florence E. and Edgar M. Baker.

Jersey City—Hudson County Oakland Sales Corp., autos; $10,000; H. F., Fred and Henry C. Drewes.

Newark:

- Daniel Auto Co. of N. J., autos; $100,000; Wm. W. Bingham, Benj. Newman, John Mines.
- Newark Omnibus Co., vehicles; $100,000; John Morning, John Reid, Harry Bornstein.

Paterson—Motor Car & Supply Co., general auto business; $100,000.

W. Hoboken—B. L. D. Motors Corp., autos; $100,000; Pauline Paul, Weehawken; John H. Sheridan, Edgewater; Jos. P. Briody, Jersey City.

New York.

Bayside, Queen's Co.—Genuine Auto Sales Co.; $25,000; G. Mercer, F. Hebeler, W. J. Schmelz, 557 W. 40th St.

Brooklyn:

- Armleder Motor Truck Co. of N. Y.; $100,000; C. W. Steele, J. S. Hyatt, A. Scheve, 171 3rd Ave.
- Flannery, Hale & Zimmer, motor cars; $22,500; J. Flannery, L. W. Hale, C. F. Zimmer, 273 Kingston Ave.
- Jack Roth's Auto Service, autos, merchandising and trading; $5000; J. Keating, L. Groves, J. Roth, 2056 Bath Ave.

Buffalo—Autopawn; $30,000; H. H. Schumacher, H. J. Reese. R. W. Warner.

Jamestown—Sullivan-Lounsbury, autos; $15,000; C. L. Rowery, S. H. Lounsbury, P. R. Sullivan.

New York City:

- Clinton Truck Sales Corporation, Manhattan; $150,000; A. J. Furth, S. Newman, H. H. Waller, 36 Vesey St.
- Foreign Motors Corp., Manhattan; $150,000; W. De Bille, A. B. Primrose, A. E. Foster, 49 Wall St.
- A. G. Griese, Manhattan, motor cars, boats and tractors; $40,000; A. Pollak, F. A. Connolly, A. G. Griess, Yonkers.
- H. & D. Motors Co.; $500,000; G. F. McKay. A. A. Hayes, C. J. Cahill.
- Hope Motors; $100,000; F. N. Post, M. Holmes, J. P. Orteig.
- Houdaile Co. of Del., autos and accessories; $200,000; rep., H. S. Gould, 37 Wall St.
- King Tire Co., Manhattan, autos; $50,000; P. Turk, J. and L. Werthelmer, 214 W. 69th St.
- Harry Lee, Manhattan, autos; $5000; A. Caron, H. & J. Lee, 100 St. Nicholas Ave.
- Jas. Martin Corp., Manhattan, autos, hardware and wearing apparel; $750,000; J. E. Ankus, G. and J. Martin, 105 W. 52nd St.
- Norman Trading Corp., Manhattan, autos, hardware and mill supplies; $10,000; S. Kaplan, N. J. Cowles, A. Lewis, 228 Utica Ave., Brolyn.
- Julius Weil & Co., Bronx, autos; $10,000; I. Odler, I. Oppenheimer, J. Weil, 789 166th St.

Rochester:

- Ellis & Shafer, auto business; $15,000; T. J. Nigham, C. A. Shafer, W. H. Ellis.
- Miller Lee Motors; $75,000; R. G. Miller, B. C. and G. C. Lee, Hilton, N. Y.
- Mortimore-Manley Motor Car Co.; $160,000; R. C. Schaefer, G. N. Mortimore. A. L. Manley.
- Swope-Stanley Motors; $75,000; E. E. Fairchild, J. E. Swope, O. W. Stanley.

Troy—Troy Franklin Motor Sales Co.; $10,000; R. E. and H. R. Bachan, G. W. Clum.

Yonkers—Jefferson Trucking Corp., auto trucks; $20,000; E. A. and C. Alexander, J. Andrea.

North Carolina.

Charlotte—Caldwell, Tredenic & Lambeth, Inc., autos; $200,000; Chas. E. Lambeth, T. F. Caldwell, T. S. Tredenick.

Greenville—Greenville Storage Battery Co., autos and accessories; $50,000; W. G. Downing.

North Dakota.

Bismarck—Bismarck Implement Co.; $25,000; J Willis Jones, Geo. P. Schutz, John W. Loftus.

Lansford—O'Keefe Implement Co., Inc.; $25,000; John D. and Amandan P. O'Keefe, Paul A. Reardon.

Ohio.

Covington—Morgan Motor Car Co.; $30,000; Thos. R. Morgan, L. M. Webb, F. L. Garrison.

Cuyahoga Falls—Fox-Buick Sales Co, autos and service; $100,000.

Dayton—Elliott Motors Co.; $20,000; P. C. Elliott, C. W. Lang, A. F. Purviance, A. A. Hortsman, N. F. Nolan.

Warren—Western Reserve Motor Car Co. $150,000; R. K. Johnson, L. C. Keckle.

Youngstown—Wick Ave. Motor Co., Hudson, Essex and Marmon cars.

Oklahoma.

Ardmore—Mechanics' Motor Co.; $100,000; W. F. Oakley, M. T. Steele, J. C. Nelson.

Henryetta—Chappell Truck Co.; $25,000; G. W. Chappell, B. O. Beemer, L. G. Gosper.

Oklahoma City:

- Hickman-Smith Auto Co.; $15,000; E. A. Hickman, H. E. and F. W. Smith.

Frank Miller Motor Co.; $10,000; Frank and Louise Miller, Edward Hirsch.

Patrick Truck Co.; $10,000; M. H. Adams, Roy Leffingwell, Gustave A. Erixson.

Tulsa—Tulhoma Motor Co.; $1000; Jas. Coburn, V. Goble, C. E. Olander.

Pennsylvania.

Philadelphia—Langan & Phillips, autos; $10,000; J. E. Phillips; Thos. E. Barhony, Philadelphia; Thos. Gilroy, Narberth, Pa.

Rhode Island.

Providence:

Indiana Motor Sales Co., autos and accessories; $100,000.

Luff Motors, Inc., autos; $10,000; Abraham Luff, Joshua Bell, J. C. Semenoff.

Tennessee.

Nashville—Motor Shop, Shelby county; $5000; L. B. Lowenstein, Leroy Friedlander, Leo Goodman, Auvergne Williams, W. L. Loeb.

Texas.

Amarillo—Markham Motor Co.; $100,000; W. M. Williams

Beaumont—Nash East Texas Co., successor to Lester Auto Co.; pres. and mgr., W. H. Romeser.

Dallas—Indiana Truck Corp.; $10,000; W. V. Giffen, Chas. D. Turner, J. W. Stephenson.

Eastland—Lone Star Motor Co.; $25,000; Clyde Garrett, Geo. Phillips.

El Paso:

El Paso Packard Motor Co., Packard cars and trucks, 601 Texas St.; A. S. Tatum, Z. U. Mason, Ed. Dugan.

J. C. Jarrett Motor & Finance Co.; $20,000; J. C. Jarrett, A. E. Kingston, D. C. Stelson.

Houston—Sherwood Auto Market; $350,000; W. C. Roberts, E. P. Maynard.

San Antonio:

Lewis-Morris-Costley Co.; $50,000; L. D. Lewis, John B. Morris, W. G. Costley

Paige Motor Co.; $50,000; F. O. and Mary A. Davidson, J. A. Treadway.

Teague—Alderman-Clark Motor Co.; $12,000; Dave Alderman, Townsend Clark, R. M. Thompson.

Waco—Brazos Motor Co.; $20,000; Ed., L. G. and G. W. McCullough.

Yorktown—Yorktown Motor Co.; $10,000; H. R. and J. R. Frobese, S. Schiwetz.

Vermont.

Burlington—Brodie & Niles, Inc.; $50,000; C. A. Niles, J. W. O'Neill, E. A. Brodie.

Washington.

Wenatchee—Wenatchee Truck & Tractor Co., tractors, implements and motor trucks.

West Virginia.

Huntington—Harmon-Dean Co., Westcott cars.

Wisconsin.

Ashland—Du Pont Motors Co., Inc $20,000.

Madison—Cadillac-Oldsmobile Co., 325 W. Johnson St.; N. O. Newburg, J. I. McFarland.

Milwaukee—Wm. F. Sims Motor Co., Lincoln car, 539 Milwaukee St.

Racine—Eastman Sales Co.; $20,000; Arthur S. and E. W. Eastman, Arthur Albrecht.

Sheboygan—Paige Car Sales & Service Co., 1129 Indiana Ave., Paige cars and Paige and Saxon parts; Harry Black, Geo. Roux.

Stevens Point—Motor Sales Co., Inc.; $25,000.

Waupan—Walters & Haase, implement business; Albert H. Haase, O. J. Walters.

MANUFACTURERS OF MOTOR CARS, TRUCKS, TRACTORS, ETC.

California.

Denuba—United Hardware & Implement Co.; $50,000.

Oakland—Tunison Motors Co., autos; $2,500,000; C. W. Lineker, I. W. Green, Jas. M. Oliver, Oakland; Elbert W. Davis, Berkeley.

Delaware.

Dover:

Canvas Inner Tube Co., autos; $1,000,000; M. L. Rogers, L. A. Irwin, W. G. Singer, Wilmington.

Kansas Truck & Motor Co.; $1,000,000; C. T. Cohee, C. B. Outten, S. L. Mackey, Wilmington.

Otovic Products Corp., autos and parts; $2,000,000; Harry and Kenneth L. Emmons. S. L. Dorsey, Wilmington.

Philadelphia Motorcycle Corp.; $50 000; J. M. and J. A. Frere, M. A. Alexander, Wilmington.

Wilmington:

Drexel Motors Co.; $5,030,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Du Pont Securities Co.; $7,000,000; pres., Pierre S. du Pont; vice pres., Geo. H. Gardner; sec. and treas., John J. Raskob.

Reliable Auto Parts Co.; make and sell motor trucks, etc.; $100,000.

Illinois.

Galesburg—Martin Metal Products Co., implements; $60,000; J. A. Martin, F. E. Hazlett, R. Burnside, G. Graig, L. W. Bassett.

Indiana.

Evansville—Hercules Corp., merger of Hercules Body Mfg. Co., Hercules Buggy Co., Hercules Wheel Co., Hercules Gas Engine Works and Indiana Color & Varnish Co.; $8,000,000; pres., Wm. H. McCurdy.

Ft. Wayne—Ft. Wayne Motor Car Co., autos and accessories; $150,000; directors, W. J. Filer, J. B. Renshaw, L. F. Crosby, C. G. Nickols.

Indianapolis—Auto Farm Light Co., farm electric plants and tractors; $150,000; J. D. Oldham, O. L. Kestle, V. B. Korner.

Maryland.

Frederick—Star Motor Co., implements, tractors and passenger cars; $200,000; G. H. Staley, J. M. Dronenburg, W. W. Doud.

Michigan.

Acme—Acme Beet Harvester Co., machines for sugar beet cultivation; $25,000.

Ypsilanti—Apex Motor Corp.; $1,000,000; pres., O. W. Heintz; vice pres., Fred M. Guy; sec.-treas., Thos. S. Matthews.

Minnesota.

Breckenridge—Pedapul Tractor Co ; $350,000; C. R. Lillibridge, M. E. Wheeler.

Minneapolis—McVicker Engineering Co.; $500,000; directors, W. J. McVicker, C. F. Walz, A. R. Sandt.

Missouri.

Kansas City—Front Drive Motor Co.; $200,000; Albert I. Beach, atty.

St. Louis—Louis J. Doerr Motor Works Co.; $40,000; J. B. Ruesehoff, atty., 1838 S. 8th St.

New Jersey.

Boonton—Yale Piston Ring Co., autos; $125,000; Fred S. and Irene G. Yale, Thos. G. Saxton.

New York.

Delhi—Farmers' Light & Power Co., electrical machinery and farm implements; $20,000; R. Archibald, F. W. Thomson, H. S. Marvin.

New York City—Benort Auto Skid Appliance Corp., air craft; $500,000; A. V. Britton, Robt K. Thistle, Saml. B. Howard

Rochester—Noma Motor Corp. of Del.; $2,000,000; rep., F. Ammann.

North Carolina.

Charlotte—Cole Tractor Co.; tractors; $125,000; E. A. Cole.

Ohio.

Eaton—Washington Motor Co., light six motor car; $1,000,000; pres., A. H. Christman; vice pres., supt. and engineer, E. C. Wysong; treas. and gen. man., O. M. Shipley; sec., John Voge.

Garfield—Garfield Steam Truck Corp., steam trucks and tractors; pres., Duncan MacDonald.

Toledo—Holt Farm Light Co. to take over Automatic Light Co., Ludington, Mich., maker of Holt 110-volt direct current farm light plant; $1,000,000; pres., L. W. Holt, Automatic Light Co.; vice pres., S. H. Humphries, Detroit, Mich.; sec. and treas., H. K. Greenman, Automatic Light Co.; directors, in addition to above, A E. Kowalt, John E. O. Feller, W. W. Headings, Geo. H. Moore, Jr.

Pennsylvania.

Philadelphia—Barnes Corp., tractors, parts other machinery; Arthur H. Turner, Earl G. Schwindt, Frank J. Whaley; rep., Edward J. Mingey, 505 Chestnut St.

Wisconsin.

Hurley—Maple Ridge Development Co., implements, etc.; $8000; Danl. Reid, Henry Meade, O. M. Schaus.

Milwaukee—Kearney & Trecker Co., W. Allis, Wis.; $2,500,000.

Racine—Farm Motorizer Co., machinery, equipment and devices for agricultural purposes; Jas. E. Shine, Lorillard P. Baumblott, H. J. O'Donnell.

Stevens Point—Farmers' Tractor Corp., tractors; $500,000; A. J. Patch, Wm. Mainland, A. N. Stevenson, Oshkosh.

Wausau—Balanced Valve Motor Co., passenger cars, trucks, tractor engines and farm electric plants; pres. and chief engineer, W. M. Baumheckel; vice pres., G. B. Rusco; sec., G. E. Piper; treas., E. W. Eberhardt.

MAKERS OF PARTS, EQUIPMENT AND ACCESSORIES.

Colorado.

Denver—Supersteamer (Mfg. Trust) 630 Symes Bldg., make and install boilers in heavy duty trucks, farm tractors and utility and passenger vehicles.

Connecticut.

New Haven—New Haven Stablinger Co., motor supplies; $500,000; Chas. C. Carroll, Wallingford, Conn.; Harold H. Holmes, Kelvan S. Valentine, New Haven.

Delaware.

Dover:

Acme Motor Shield Corp.; $100,000; C. T. Cohee, C. B. Outten, S. L. Mackey, Wilmington.

Ajax-Mann Auto & Aero Sheet Metal Parts Co.; $2,000,000; Harry H. Knabuschuh, Abraham Tannerhauser, Albert M. Jacobs, New York city.

Burlock Non-Skid Tire Corp., tires of all kinds; $250,000.

Collier Motor Devices Corp.; $100,000; Wm. H. Smith, Rich. M. Page, John T. Carr.

C. P. H. Motor Corp.; $27,000,000; C. T. Cohee, C. B. Outten, S. L. Mackey, Wilmington.

Decker Mfg. Co., windows for autos; $10,000; T. F. Croteau, M. A. Bruce, A. M. Hooven, Wilmington.

Dixie Tire & Rubber Assn.; $100,000; J. E. Mayo, J. D. Youngblood, R. T. Meadow.

Liberty Airless Tire Corp.; $2,000,000; Arthur J. Kingsbury, L. B. Phillips, D. D. Wharton.

Reliable Auto Part Co.; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Universal Tire Co.; $7,500,000; M. M. Lucey, M. B. Reese L. S. Dorsey, Wilmington.

Vokelhorne Corp., device for motor vehicles; $500,000; B. F. Frieble, John Matta, Adam Erdman.

Wilmington:

American Rubber Holding Co.; $1,000,000; M. M. Lucey, M. B. Reese, V. P. Lacey.

Dayton Rubber Mfg. Co., tires; $200,000.

Delaware Charter Co., 900 Market St., storage batteries (branch of Duplex Storage Battery Co., Beaver Dam, Wis.; $1,000,000; pres., Wm. Petschel.

Haidai Spring Motor Mfg. Corp.; $1,000,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

D. R. Hoffman Tire & Rubber Co.; $400,000; M. M. Lucey, V. P. Lacey, L. S. Dorsey.

Horner Motor Corp., gasoline motors; $200,000; Chas. B. Lusk, Ernest G. and Ernest L. Horner.

MacDonald Steam Automotive Corp.; $500,000; Wilbur A. McCoy, Pittsburgh, Pr.; W. I. N. Lofland, Frank Jackson, Dover.

Matthews Co., piston rings; $1,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Northern Rubber Products Co.; $500,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Peters Eastern Motor Corp.; $1,000,000; M. L. Rogers, L. A. Irwin, W. G. Singer.

Simplex No-Flote Carburetor Co., make and sell carburetors; $600,000.

Vulcwald Rubber Co., tires, etc.; $1,000,000; M. M. Lucey, V. B. Lacey, L. S. Dorsey.

Illinois.

Chicago:

Jackson Auto Radiator Co, 668 W. Washington St., auto radiators, parts, machinery, etc.; $50,000; M. Emmer, A. J Shatan, Wm. Nathanson.

Jas. P. Neerup Mfg. Co.; $11,000; Jas. P. Neerup, Carl C. Hinding, Jennings Nelson.

R. A. Schultz Mfg. Co., 1801 Belmont Ave., worm drive axles; $60,000.

South Side Tire & Rubber Co., make and deal in auto accessories; $50,000; Lawrence A. Cohen, Abraham Greenspahn, Ralph G. Grandall.

Whitney Bearing Corp., make and deal in bearings, axles, gear cases, etc.; $500,000; Julius and Harry Keller, Francis K. Busch.

Moline—Moline Engine Co., 7th St., machinery, engines, implements, etc.; $2,930,000; R. S. Tuthill, Jr., C. B. O'Neil, Frank P. Hage.

Indiana.

Anderson:

Fennessey Auto Lock Co., auto parts; $10,000; Jas. H. Fennessey, Maurice Collins, Philip B. O'Neill.

Star Automotive Specialty Co., automotive accessories; $100,000; Wm. Wikle, Harry Stahl, Wm. Estep, Guy Marts, Hans Runyan.

Goshen—White Mfg. Co., successor to Alford Motor & Machine Co. and Goshen Motor Works.

Hammond—Stern Tire & Rubber Co.; $15,000; C. M. Stern, Saml. Wolf, E. W. Bishop.

Indianapolis—North American Storage Battery Co., starting and lighting batteries for autos and batteries for electric cars.

Kentucky.

Louisville—Barbee Mfg. Co.; $50,000; John U. Field, T. M., J. E. and T. L. Barbee, B. A. Thomas.

Maine.

Portland—Eureka Tube Protector Co., tube and tire protectors and other auto accessories; $200,000; Geo. H. Noyes, B. Frank Carroll, John F. Dana.

Massachusetts.

Boston—Knight-Chase Co., electrical storage batteries and appliances; $20,000; R. R. Chase, Jr., John Knight, M. M. Reagan.

Lawrence—Lawrence Autobody Co.; $10,000; Dominick Caranci, John H. and M. A. Harward.

Spencer—Cunningham Magneto Co., magnetos and ignition equipment for auto service; $200,000; Rich. H. Cunningham, Chas. N. Prouty, Rudolph Banncel.

Michigan.

Calumet—Calumet Truck Body Corp., all-purpose bodies for trucks; $200,000; pres., W. H. Thielman; first vice pres, O. F. Bailey; 2nd vice pres., H. Haas; sec., F. S. Carlton; treas., F. J. Kohlhaas.

Detroit:

- Congdon-Russell Co., specialize in body work for auto dealer and owner; $250,000; directors, A. S. Congdon, J. W. Russell, C. H. Guider, Geo. W. Muehl, J. J. Jacobson.
- Defiance Combination Auto Lock Co., special locks and locking devices; $40,000; Jacob Sokolov, 1866 E. Grand Blvd., Robt. N. Brown, Eric F. Weineke.
- Star Quality Accessory Co., make and sell auto bumpers and other accessories; $100,000; J. C. D. Graw, Detroit; A. C. and W. D. Graw, New York city.

Jackson—Continental Garage Tool Co.; $50,000.

Maple Rapids—Zenith Cab Works, auto bodies; $15,000; Albert Richard, Harry Van Sickle, W. A. Hopper.

Pontiac—Briscoe Devices Co., carburetors, ignition equipment and other auto apparatus; $300,000; B. J. Cleaver, Emil D. Moessner, Pontiac; Wm. J. Decker, Detroit.

Traverse City—Gardner Turbine Muffler Co.; $50,000; pres. and gen. mgr., David Stark; vice pres. and supt., G. W. Gardner.

Minnesota.

Minneapolis:

- Liberty Mfg. Co., make and deal in accessories, etc.; $1,500,000; Chas. P. Smith, F. F. Hanson.
- National Triple Tread Tire Co.; $50,000; A. M. and C. P. Boxrud, S. N. Gangstad.

Missouri.

Kansas City:

- Falls Tire Co. of Missouri, 1521 Grand Ave.; $10,000; Chas. N. Bush, atty., 1115 Grand Ave. Temple.
- Goldfisch Storage Battery Co. 409 E. 11th St.; $4000; Saml. H. Liberman, atty., 1011 Commerce bldg.
- Hartford Windshield Mfg. Co.; $5000; Watson, Gage & Ess, atty.

St. Louis:

- Robinson Automatic Fender & Safety Appliance Co.; $2000.
- Tornado Auto Pump Co.; $100,000.

Springfield—Carbide Motor Co.; $100,000; A. B. Loven, atty., Court House.

New Jersey.

Irvington—Conn. Dynamo & Motor Co., electrical appliances; $150,000; Gerald Kannay, Irvington; Harry J. Brewer, New York city; Donald B. Munsick.

Newark:

- Central Auto Top Co., 561 Central Ave., auto tops and frames; Herman Genis, 202 Monticello Ave., Jersey City.
- Conrow Bearing Corp., roller and other bearings; $500,000; Wm. A. Walling, E. L. Dolder, Geo. Conrow, 478 David Ave, Kearney, N. Y.
- Mechanical Gear Shift Co., Inc., gear shift appliances; $100,000.
- Old Hickory Tire Co.; $3,100,000; John D. Fischbeck, Francis Child, John Q. Frey.

New York.

Binghamton—Neu-Metal Products Corp., 223 Washington St., special metal goods for auto service; $15,000; pres., Fay E. Spawn; vice pres., Archibald Howard; sec. and treas., H. H. Hathaway.

Brooklyn—Eclat Engineering Corp., auto machinery and cold storage plants; $10,000; C. Stern, J. Wanlass, N. J. Maurer, 1021 Putnam Ave.

Buffalo—Tube Manifold Corp., manifolds of copper, steel, brass and aluminum for autos, tractors, motor boats and air planes; $100,000; pres., Louis W. Summer; vice pres., Albert F. Riedle; sec.-treas., Chas. D. Mathews.

Dunkirk—Dunkirk Axle Corp., to succeed Empire Axle Co.; pres., A. A. Keesler; vice pres. and gen. man., Jas A. Young; sec.-treas., Wm. H. Poad.

New York City:

- Automotive Specialty Corp., Manhattan, auto parts; $20,000; L. E. and A. L. and S. A. Fogel, 311 W. 59th St.
- Battery Appliance Corp. of Del.; $3,000,000; rep., A. F. Garbe, 120 Broadway.
- Clinton Motors Corp., auto parts, engines and equipment; $300,000; S. Newman, H. H. Waller, A. J. Furth, 319 New York Ave., Brooklyn.
- Ever Ready Auto Spring Wheel Co., Bronx; $20,000; A. Gerliet, J. Heller, L. Jacobs.
- Fay Auto Lock Corp., Manhattan; $50,000; H. Kottler, C. B. Greenberg, J. Kainen, 2230 8th Ave.
- Fowler Spark Plug Mfg. Corp, Manhattan; $8000; E. Graf, J. Brusselens, J. D. Fowler, 1815 Park Ave.
- General Tool Products & Engineering Corp., tools; $220,000; A. W. Britton, Saml. B. Howard, Robt. K. Thistle.
- Haflo Sales Corp., Manhattan; electrical apparatus; $25,000; M. Mosler, M. Stickler, W. H. Kay, 2133 Pacific St., Brooklyn.
- Hercules Auto Parts & Spring Mfg. Co., Manhattan; $6000; C. Zuckerman, M. Leibowitz, M. Rosenzweig, 357 S. 5th St., Brooklyn.
- McGuire Convertible Auto Body Co., Manhattan; $300,000; J. J. and B. and E. McGuire, Yonkers.
- Nor-Dan Electrical Supply Corp., Manhattan, storage batteries; $100,000; N. C. Degnon, L. C. Naughton, D. F. MacDonald, 161 E. 93rd St.
- Prydun Co., Manhattan, non-skidding chains; $10,000; G. Yule, R. L. Pryor, E. J. Dunn, 105 W. 40th St.
- Puritan Machine Co., Manhattan, auto parts; $5000; A. C. Dunk, O. R. Taylor, R. W. Henry, 442 61st St., Bay Ridge, Brooklyn.
- Rhodes Corp., motors; $500,000; Rose Nersenstone, Chas. and Adolph Bushbaum.
- Skootamota Co. of America, auto motors; $100,000; J. J. Glynn, F. J. Coyle, L. Halle, 120 Broadway.
- Renfro Smith Co., Manhattan motors; $15,000; S. M. Cohen, H. S. Smith, J. F. Renfro, 1834 Broadway.
- Wallace Engineering Corp. of N. Y., Manhattan, auto accessories; $10,000; C. R. and E. E. Allison, A. K. Dorman, 115 Broadway.
- Zorzi Corp., auto bodies, parts, etc.; $1,000,000; J. J. Kieran, M. Abrahams, R. W. Gilmore, 10 E. 48th St.

Northport—Ackswell Mfg. & Sales Co., auto valves; $10000; J. P. Shotwell, J. and H. D. Ackerly.

Schenectady—Electric City Spark Plug Co., spark plugs and other ignition equipment; $100,000; Mark H. and John W. Gleason, Jos. W. Pearson.

Syracuse:

- Federal Detachable Rim & Wheel Corp., metal auto rims, wheels, etc.; $2,000,000; pres., D. Robt. Croly; sec. and treas., Jas. H. Higgins; Lucius G. Lacy.
- Hy-Grade Metal Products Corp., metal stamping, etc.; $50,000; D. E. Kinkley, R. P. Thorne, C. J. Couse.

North Carolina.

Ayden—Automotive Parts & Mfg. Co; Co.; $10,000.

North Dakota.

Grand Forks—Carter Hardware Hardening Process Co.; $50,000; N. A. Carter, Frank Hale, N. D. Springen.

Ohio.

Akron—B. & W. Rubber Co., rubber products; $500,000; pres., H. A. Backdorf; vice pres., D. B. Campbell; treas., Eric Richards; sec. and asst. treas., Mary E. McGowan.

Cleveland:

- American Automotive Parts Co.; $150,000; F. F. Bessinger, W. T. Arnos, C. F. Sipe, W. M. Monroe, S. W. Wynan.
- Jayall Auto Specialty Mfg. Co.; $10,000; J. LaBarge, H. J. Sheets, A. E. Dawson, R. C. Rosenberger, C. A. Dickerson.

Columbus:

- Case-Heron Motor Pump Co., circulating pump for Ford cars; $25,000; Wm. E Case, inventor.
- L. & S. Mfg. Co., metal specialties and "Ellenness" spark plug, 2026 N. High St.; $30,000.

Dayton—Allsteel Tire & Rubber Co., tires, inner tubes and metallic air bags for vulcanizing; $250,000; pres., Andrew Huetter; Rich. Burkhardt, Geo. H. Kramer, A. J. Pocock, H. Knapp.

Oklahoma.

Oklahoma City—Mid-State Battery Mfg. Co., 815 W. Grand Ave., manufacturing and selling batteries at wholesale and retail; pres., M. J. O'Connor; vice pres., A. F. Rush; sec.-treas., Ray Tanse; asst. sec.-treas., Jessie Grove.

Tulsa—Cal. Auto Top Co.; $50,000; H. F. DeLongy, S. Goodman, E. J. Lundy.

Watonga—Hy-Line Battery Service, Rose Temple Filling Station, E. Main St.; E. M Arnold, El Reno.

Pennsylvania.

Philadelphia—Union Motors, make and repair; $5000; F. R. Hansell J. Vernon Pimm, E. M. MacFarland.

Pittsburgh—Tire Tractor Co.; $100,000; Wilber A. McCoy, Pittsburgh; W. I. N. Lofland, Frank Jackson, Dover, Del.

Rhode Island.

Providence—Air-Jack Corp. of America, auto jacks and other auto accessories; $300,000; Thos. Gavin, Louis Ober, Gladys Goldsmith.

Texas.

Houston:

- Ho-Tex Mfg. Co., 1400 Wash. Ave., auto tires.
- Port Houston Tire & Rubber Co. to succeed Universal Tire & Rubber Assn.; $1,000,000.
- S. Tex. Radiator Works; $3500; E. A. Perkins, C. W. and T. M. Gribble.

Washington.

Seattle—Olympic Tire & Rubber Co.; $1,750,000.

Spokane—Tubular Steel Auto Wheel Mfg. Co., auto accessories; $200,000.

West Virginia.

Huntington—Fordette Engine Co., gas and gasoline engines; $100,000; sec. and treas., H. L. Grimm.

Wisconsin.

Green Bay:

- Gold Seal Storage Battery Co.; accumulators, etc.; $300,000; F. J. Mankin, E. J. Bolza, T. J. Best.
- Master Self-Locking Differential Mfg. Co., automatic differential locking device for 2 and 4-wheel vehicles, passenger and commercial; $250,000.

Hartford—Storm Mfg. Co., winter curtains for Ford and other touring cars and roadsters; mgr., Clifford Montgomery.

Milwaukee:

- Bub Body Corp., auto bodies, specializing in sport and speedster types; $50,000; Elmer, Herbert and Arthur B. Zwebell, 482 Milwaukee St.
- Gillette Rubber Co., Eau Claire; pres., S. P. Woodard, New York city; vice pres. and gen. man., R. B. Gillette, Eau Claire.
- Lincoln Light Corp., make and deal in generating systems, fixtures, appurtenances, etc.; $250,000.
- P. & J. Motor Co., Cudahy, to make and sell gas engines, automotive parts and equipment and metal products; $250,000; Jas. S. Guy, Chas. B. Charles, atty.

GARAGES, REPAIR SHOPS AND SERVICE STATIONS.

Arkansas.

Pine Bluff—Ussery's Garage, succeeds Pine City Garage, 907 State St.; Patrick Ussery.

California.

Pasadena—Henkle & Star, garage, 161 W. Colorado St.; E. Henkle, N. S. Star.

Connecticut.

Hartford—Aaron G. Cohen, service station, 41 Wells St.

Waterbury—Davis & Nichols, Inc., to operate autos and storage warehouses; $25,000; H. C. Davis, S. W. Nichols, H. B. Dennison.

Delaware.

Wilmington—Templar Tire Co., rebuild autos; $50,000; M. L. Rogers, L. A. Irwin, W. G. Singer.

Illinois.

Bloomington:

- Beck Garage, Main and Olive Sts.
- Pinkerton Garage, garage and repair shop, Washington and Gridley Sts.

Chicago:

- Lock & Vanderberg, garage and repair shop, Monroe and Sangamon Sts.
- National Auto Laundries Co., Nalco system of auto cleaning stations, 6045-52 Broadway.
- Surg Auto Livery & Garage Corp., deal in and operate garages, autos, taxicabs and machine shop; $10,000; J. M. Gwin, A. A. Thompson, D. M. Brackney.

Danville:

- Beaman Garage, 244 W. Main St.
- Jos Stratman Auto Co., garage and repair shop, 108 South. St.

Edwardsville—Tuxhorn Motor Co., garage and repair shop, Main and High Sts.

Grand Ridge—Crawford Bros., garage and accessory shop, N. Main St.

Hinckley—Bertel Bros., garage and repair shop.

Hoopeston—Wm. McFerren & Co., garage and service station.

Nauvoo:

- Aschner Garage.

Schaefer Garage, garage and service station.

N. Henderson—Shaver & White, garage and repair shop.

Oakland City—McGahey Garage, garage and repair shop.

Oregon—Bemis Motor Co. garage and repair shop.

Paris—Goodman Motor Co., service station.

Rio—Scannell Garage, garage and repair shop.

Rockford—Collier Auto Co. sales room and service station, S. Main and Green Sts.

St. Charles—G. & H. Vulcanizing Co., garage and repair shop.

Virden—Virden Tire Jobbers, garage and tire shop; Nayernick Bros., owners.

Wood River—Modern Auto Repair Co., garage and repair shop; Ludwig Hirkage.

Indiana.

Crawfordsville—Davis & Straub Auto Service Co., garage and sales room, Market and Water Sts.

Delphi—Robely Bros., garage and service station.

Florence—Florence Garage, Wilson & Patterson, manager.

Jamestown—Smith & Smith, garage, Main St.

Jeffersonville—Gwin Motor Sales Co., 120 E. Maple St., garage and sales room.

Kokomo—Dennis White Auto Co., garage and sales room, Buckeye and Jackson Sts.

Marshall—Morris Garage.

Milroy—Hall Bros., garage and repair shop.

Mt. Vernon—Ofer Vulcanizing Co., vulcanizing plant and battery station, 126 S. Main St.

New Albany—Liberty Garage and Motor Co., garage and sales room, Pearl St.

Stroh—Perkins Bros., garage and repair shop.

Sullivan—Jenkins & Whitfield, garage.

Terre Haute—Sam's Tire Shop, 322 Ohio St., tire repairs and vulcanizing; Saml. Boyer.

Wabash—Wabash City Garage; $1000; directors, E. L. and Geo. Misner, J. D. Wiley, Jr.

Iowa.

Bradgate—Benoit & Stover, garage and service station.

Corning—Double Life Battery & Service Co., garage and repair shop; L. M. Aldrich, L. W. Doty.

Des Moines—Continental Motor Station, 1217 Grand Ave.; R. B. Bowman, man.

Farragut—Hilton Tire Co., garage and repair shop.

Iowa Falls—Van Bogart & Hedges, auto painting and renovating, Ellsworth Bldg., Wash. Ave.

New Sharon—Round Top Garage, Lon Shahan Bldg.; John Fortney, Chas. Trager.

Pomeroy—Peterson & Ekstrand, garage and repair shop.

Kansas.

Argentine—Argentine Motor Service Co.; $10,000.

McLouth—White & Clark, garage, general repair work and auto accessories.

Olathe—West Side Garage, Blucher Bldg., auto, radiator and pump repairing and storage; Earl Redding, Jess Harness.

Salina—Motor Service Co., 144 S. 5th St., auto service station, electric and carburetor work; Fred S. and Paul F. Haas.

Zarah—Midland Garage; W. B. Ellis, Benner Springs, man.

Kentucky.

Campbellsville—Southern Auto Co., repair shop and garage, No. 1st St.

Maine.

Biddeford—Cleaves & Sawyer, public garage and sales room.

Maryland.

Towson—Acme Motor Sales Co., 1712 Greenmount Ave., garage and service station.

Massachusetts.

Marlboro—Marlboro Garage, Main St., Colliery Sq., Ford service and sales headquarters.

Worcester—Main North Garage, Inc.; $15,000; directors, Pres., Jas. M. Currin; treas., Harry A. Katz; Estella C. Dawson.

Michigan.

Allegan—Bron Bros., garage and service station, Brady and State Sts.

Battle Creek—Engle & Staton, garage and service station.

Detroit—Telltale Spark Plug Co., machine shop and to sell spark plugs; $50.000; Isaac Harris, Isaac Ranson, O. H. Toliver.

Dowagiac—White Bros., garage and service station.

Grand Rapids—C. B. K. Electric Service Co., 215 Division St.

Monroe—Kay & McCoy, Detroit, battery service station, Fix Bldg., 107 E. Front St.

Three Rivers—Beattie, Kayes & Dahlman, garage and accessories.

Watervliet—Olson Automotive Co., garage and accessories.

Whitehall—Pile Garage; $10,000; H. E. and W. Arthur Carelton, E. J. King.

Minnesota.

Litchfield—Nelson Auto Co., garage and accessories.

St. Paul—General Auto Sales Garage, succeeding General Auto Sales, Inc., 404 N. Exchange St., service station; R. A. Briggs, Robt. J. Atkins, Edward P. Pitkin.

Spooner—Langerude Garage; Jos. L. Davis.

Two Harbors—Beckman Garage; Larry Flynn, lessee.

Missouri.

Bevier—Dail & Vestal Garage, garage and battery service station; Rev. J. C. Dail, Clarence Vestal.

Crane—Light's Garage; C. C. Light.

Cuba—Santer & Grissmere, auto repair shop, Lewis bldg.

Fayette—Fayette Tire Co., tire and vulcanizing plant, Willard battery station, 110 W. Harrison St.

Kansas City:

- Atlas Auto Livery Co.; $2000; W. L. Norton, 3125 Main St.
- H. W. M. Auto Repair Co.; $2000.
- Miller Auto Repair Co., 312-14 17th St.; $25,000; Jas. E. Taylor, atty., 609 Rialto bldg.

Lockwood—L. H. Funk, battery station, L. C. Beisner bldg.

Myrtle—Jude Cox, blacksmith shop and garage.

Perry—W. S. Correll, battery service station, C. H. Menke bldg.

Platte City—Williams & Williams, garage; D. O. C. and R. E. Williams.

St. Louis:

- Eagle Auto Service Assn.; $200.
- Liberty Auto Service Assn.; $5000.

Southwest City—John Keith, Independence, Kan., garage, Tyler Bldg.

Unionville—Auto Top & Body Shop, succeeding Davolt Repair Shop; O. L. Mabee.

Nebraska.

Wauneta—Miller & Turner, garage and repair shop.

New Jersey.

Newark:

- Bank St. Motor Service Garage; $100,000; Nathan and Wm. Newmark, Newark; Morris Turetzky, New York city.
- Washington Auto Painting & Body Co.; $125,000; Lee Seeman, Jos. Oregorec, Wm. L. Greenbaum.

Babylon—South Shore Garage, Suffolk county; $20,000; H. N. Green, H. T. Robbins, H. J. Pidgeon.

Binghamton:

- Binghamton Electric Garage; $30,000; E. D. Clark, A. R. Sherman, B. H. Chernin.
- Safety Garage Parking Co.; $250,000; H. J. Wolfe, H. C. Clarke, C. Wilber.

Brooklyn:

- Aborn Garage; $12,000; L. Tamerlis, S. H. Lichtenstein, A. L. Friedman, 69 E. 104th St.
- Auto Repairing & Engineering Co.; $5000; J. Cuppola, W. Brandt, D. A. Idoni, 19 Emerson place.
- B. & G. Garage; $5000; S. and W. Blank, C. Garcia, 314 Adams St.
- Boro Park Auto Repair Co.; $10,000; J. E. Stevenson, J. Morekewecz, W. E. Tittel, 7426 15th Ave.
- Eagar & Herman, garage; $5000; S. Eagar, S. and C. Herman.
- Four Garage; $24,000; A. Mangieri, V. Salli, A. Castelli, 2138 Ocean parkway.
- G. & A. Garage Corp.; $7000; C. Ambash, J. Miller, E. Friedman, 337 E. 95th St.
- Hermele Auto & Painting Co.; $10,000; B. Cohen, L. Kowack, S. Hermele.
- S. & R. Motor Service; $15,000; L. B. Kanter, F. E. Varriale, A. B. Reed, 1381 E. 27th St.
- Stagg Auto Service Co.; $10,000; D. Wolf, A. L. Nova, E. I. Rubenstein.

Buffalo—Delvan Garage; $75,000; M. and C. Weill, E. A. Kinner.

Harrison, Westchester County—Ford's Garage & Taxi Co.; $6000; F. F. Teno, J. A. Moreland, H. Sternberg.

New York City:

- Affiliated Garage Corp., Manhattan; $1,000,000; E. Hurschfield, J. L. Johnston, B. L. Friedland, 1472 Broadway.
- Campus Garage; $60,000; W. C. Bergen, J. J. O'Grady, M. Blau.
- Dodson Motor Co., Manhattan, auto and machine shop; $5000; J. W. and J. Farkas, G. F. Dodson, 1170 Tinton Ave., Bronx.
- Elk Funeral Car Corp., garage; $30,000; O. Kirshon, W. Lee, S. Lichtenstein, 8 W. 111th St.
- Jackson & Weber Ave. Corp., Queen's Garage, Queens; $30,000; J. J. and R. O'Hare, J. E. Connolly.
- Edward Kling, Bronx, auto repair; $5000; L. J. Lynch, C. and E. Kling, 369 Mosholu Parkway, N. Bronx.
- Nuncie Auto Body & Painting Co., Manhattan; $5000; I. Gordon, M. Pierce, F. Nuncie, 183 E. 95th St.
- J. Richter & Sons, Bronx, garage; $10,000; J. and M. L. and I. Richter, 371 E. 8th St.
- Salgas Garage, Manhattan; $50,000; A. Zeitlin, M. Salkin, S. Gast, Arverne, Long Island, N. Y.
- Samson Garage, Manhattan; $12,000; J. Grossman, M. Jacobwitz, B. Green, 217½ E. 7th St.
- S. & C. Auto Repairing Co., Manhattan; $5000; C. J. Coval, A. Zoppel, J. Stoper, 141 W. 117th St.
- Third and Morris Ave. Garage, Bronx; $10,000; I. Kastleman, M. Cohen, P. Arvan, 1415 Fulton Ave., Bronx.
- York Garage Corp., Bronx; $15,000; N. Bensky, M. and R. Heitler, 121 Sherman Ave.

Roslyn, Nassau Co.—Roslyn Estates Garage; $5000; C. M. Davison, A. and H. Schenck.

North Carolina.

Pollocksville—Pollocksville Garage Co.; $40,000; J. H. Bell.

Ohio.

Canton—Schlemmer & Graber, garage and accessories.

Cleveland—Eddy Garage Co.; $25,000; F. T. Gullitan, A. M. Franklin, C. B. Sweeney, J. J. Devney, H. R. Sup.

Dayton—Point Garage; $50,000; T. W. Jordon, C. M. Kieter.

Dover—Fort Garage Co., garage, 4th St. and Wooster Ave.

New Philadelphia—Easy Ray St. Auto Co., garage and repair shop, E. Ray St.; Fred Hertzig, T. E. Franklin.

Portsmouth—Howe & Frowine, garage and service station.

Windsor—Miller & Bopp, garage and repair shop.

Oklahoma.

McAlester—Larrison-Cain Motor Co., garage and repairs, Chickasaw Ave.; Myron Larrison, man.

Miami—E. V. D. Battery & Tire Co., battery and tire station, 18th St., N. E.; Edward V. Doering, man.

Oklahoma City—Triangle H. Cooperative Service Station Co.; $5000; J. M. Houston, T. C. Rice, I. W. Hensley.

Walters—Palace Garage, night and day service, auto accessories, gasoline and oils; L. R. McPherson.

Watonga—Hy-Line Battery Service, battery service station, Rose-Temple Filling Station, E. Main St.; E. M. Arnold, El Reon.

Pennsylvania.

Philadelphia:

- Leader Vulcanizing & Tire Co., garage and repair shop, 1313 Race St.
- West Garage; $101,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

Rhode Island.

Providence—Mackenzie & Langraf, auto repairing, 430 Broad St.

Tennessee.

Athens—Citizens' Motor Co., garage.

Columbia—Fry Bros., garage and repair shop.

Texas.

Eagle Lake—K-T Garage; Davis & Savage, owner.

Ft. Worth—Hamlett-Tucker Co., garage; $7500; Stanley Hamlett, John P. Tucker, T. R. James.

Houston:

- Houston Battery Service Co.; $10,000; Will G. Van Vleck, O. R. Tilley, Robt. L. Senfield.
- S. Tex. Radiator Works, Inc., 202 Preston Ave., radiator, fender, muffler and gasoline tank repairs; J. W. Lutrell, Dr. E. A. Perkins, C. W. and T. M. Gribble.

Orange—C. H. Holstead Co.; garage; $75,000; C. N. Holstead, Delta St. Germain, C. G. White.

San Antonio—Sien Vulcanizing Co.; $1500; L. E., Albert and Louis E. Sien.

West Virginia.

Huntington—General Garage Co.

Wheeling—Hopkins Motor Co., garage.

Wisconsin.

Alma—R. N. Smity & Son, garage and filling station.

Amery—Amery Auto Co., garage and service station.

Beaver Dam—Beaver Dam Storage Battery Co., storage station and Prest-O-Lite service station.

De Pere—Miller Auto Co., garage and repair shop.

Ellsworth—Larsen, Quinn & Co., garage and service station.

Fond du Lac—Yellowstone Sales & Service Co., garage and repair shop, Minnesota Ave. and Winnebago St.

Marshfield:

Franklin Ritt Co., garage and accessories, 6th St. and Central Ave.

Paulson Bros., garage, repair shop and filling station, 4th and Maple Sts..

Milwaukee:

F. W. R. Achen Co., 155 Oneida St., sales room and service station, Oneida and Jackson Sts.

W. H. Krueger Motor Car Co., 485 Jefferson St, garage, 499 Jefferson St.

Lisbon Ave. Motor Sales Co., sales room and garage, 2515-17 Lisbon Ave.; J. Jalaska, man.

Oconto Falls—Oconto Falls Motor Co., garage and sales room.

Plymouth—Kaiser & Emley, garage and service station.

Washburn:

Hogstrom Bros., garage and service station.

J. E. and Ralph Pernie, garage and implement business.

DEALERS IN ACCESSORIES, PARTS AND EQUIPMENT.

Connecticut.

Bridgeport—General Auto Supply Co.; $25,000; F. G. and L. C. Eisenman, Jos. Armstrong.

Norwalk—Eastern Auto Supply Co.; $50,000; F. M. Jordan, W. O. McLean, R. H. Grant.

Delaware.

Dover:

American Steam Truck Co., motors; $6,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Sokol Motor Co., motors and engines; $300,000; W. W. Reeves, P. D. Benson, A. E. Claffy.

Wilmington—Philadelphia Sales and Service Branch, Vim Motor Truck Co.; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Indiana.

New Albany—Ignition Service Co.; $10,000; T. H. and W. E. Falk, W. F. A. Thomas.

New Castle—Consumers' Filling Station; Jas. McVay, man.

Terre Haute—Davis & Lickliter, accessories, 416 Ohio St.

Iowa.

Belle Plaine—Economy Supply & Accessories Co.; E. G. Park, E. D. Buchwald.

Corning—Double Life Battery & Service Co., Vesta batteries and repairs, Opera House block; L. M. Aldrich, L. W. Doty.

Kansas.

Goodland—Goodland Cushion Service Co., auto cushion tubes; Jas. Jones, man.

Newton—Automotive Accessory Co., accessories at wholesale and retail; P. & L. Motor Co. Bldg.

Topeka—Western Tire Co., 518 Kansas Ave.; Abe Pozez, Wm. Levin.

Maine.

Portland:

Dyer-Mahar Co., motor vehicle tires, tire accessories, etc.; $10,000; pres., Earl B. Mahar; treas., Roland M. Dyer; clerk, Carroll S. Chaplin.

United Motor Accessories Stores, Inc., operating chain of accessory stores; pres., Lloyd W. Jordan; gen. man., Walter E. Harmon, W. E. & B. J. Harmon Co.; treas., Albert E. Spier, Westbrook Auto Supply Co., Westbrook; other directors, Geo. D. Murray, W. F. Joyce, Jas. Bailey Co., Portland; Geo. L. Dillaway, Boston, Mass.

Michigan.

Grand Haven—Mich. Sales Co., auto tires, Radeke Block, Wash. St.

Minnesota.

St. Cloud—East Side Hardware Co., succeeding Appert Hardware & Implement Co.; Ludger F., Danl. J. and Francis Fouquette.

St. Paul—Northern Battery Service Co., 231 W. 9th St., Westinghouse storage batteries and service; pres., S. B. Dean, sec. of Nichols, Dean & Gregg; vice pres., W. J. Dean, vice pres. of Nichols, Dean & Gregg; treas. and man., F. Price.

Missouri.

Dodge City—Carter Bros., Great Bend, tire and accessory business, W. O. Hubner Bldg., 207 2nd Ave.

St. Louis:

Bartling, Deering & Powers Tire Co.; $15,000; Bass & Bass, atty., Times Bldg.

Hartford Accessory Co., auto accessories, 2125 Locust St.; H E. Leverenz.

New Hampshire.

Manchester—Manchester Storage Battery Co., 511 Elm St.

New Jersey.

Elizabeth—W. G. Boschen Sales Co., gasoline recording machines; $50,000; Walter G. Boschen, Union; Abe J. David, Elizabeth; David J. Nolan, Mountain Lakes.

Newark—Economy Tire Exchange; $100,000; Hyman Cohen, Harry A. Harrison, Harry Settel.

New York.

Brooklyn:

Bush Terminal Auto Supply Co.; $60,000; A. and M. Krieger, H. Gussman.

Diamond Auto Parts Co.; $25,000; F. P. Walsh, S. H. Eisler, M. Hochman, 202 Green St.

Buffalo:

A. C. G. Sales Co., tires; $100,000; J. Isgro, P. Lisi, A. C. Geraci.

West Auto Accessory Corp.; $500,000; B. R. Hess, A. Zitterbart.

Jamaica—Jost Storage Battery Co.; $5000; J. and A. T. Jost, A. T. Jost, Jr., Bay Side, L. I.

Madrid, St. Lawrence Co.—F. H. Kelly & Co., agricultural machinery and warehousing; $50,000; E. G. Brush, L. E. and F. H. Kelly.

New York City:

Downing Tire Stores Corp., auto tires; $100,000; D. R. Downing.

Hygrade Taxi & Supply Co., Manhattan, garages; $8000; C. Sable, L. Buchner, M. Haut, 619 E. 5th St.

Perfect Service Auto Sales Corp., Manhattan; $5000; B. Harrow, L. B. Miller, Seligman, 111 15th St.

F. Schehr Co., Manhattan, auto fabrics; $10,000; I. Mednich, A. Weiss, F. Schehr, 220 Bay 22nd St., Brooklyn.

United Auto Stores of Del.; $25,000; rep., N. Cordish, 220 W. 42nd St.

Rochester—Rieke Sales & Service Co.; $10,000; E. G. See, F. Christman, F. Lurz.

Ohio.

Cleveland—C. W. Couch & Co., 614 National City Bldg., selling agent; C. W. Couch.

Columbus—J. A. Weston & Co., storage battery parts and accessory shop; John Weston, Eugene C. Cushing.

Urbana—J. Perry Hance Tire Co., S. Main St.

Youngstown—Union Auto Supply Co.; $25,000; S. A. and A. Herman, A. and M. Krispinsky, M. J. and S. Chizmar.

Oklahoma.

Oklahoma City—Delaware Supply Co., 1114 N. Broadway, Gillette tires and tubes, Dural tubes, Marlan gasoline and oils; directors: Vice pres., G E. Massey; sec.-treas., C. T. Abell; H. C. Leitnaker; man., C. W. Ferguson.

Tulsa—Ray Gasoline Co.; $25,000; Ray S. Fellows, Stanley D. Campbell, W. L. Doyle.

Pennsylvania.

Philadelphia—Geo. L. Carville Co., auto accessories, 13th and Race Sts.

Texas.

Ft. Worth—Guarantee Tire & Vulcanizer Co.; W. H. Beck, R. S. Smith, Max Eversberg.

Wisconsin.

Stevens Point—Electric Sales Co., general electric merchandising, service and contracting business.

MISCELLANEOUS.

Washington, Del.—Motor Finance Corp.; $200,000; Milton W. Robertson, Whitehaven, Md.; Herbert W. Soper, Jose C. Brooks, Washington.

Wilmington, Del.—Farmers' Transportation Co.; $500,000; Justin P. Hopkins, Philadelphia, Pa.; Shattor E. Haupt, Geo. E. Stewart, Wilmington.

Chicago, Ill.—Anheuser-Busch Sales Corp., succeeding A. B. C. Refrigeration Co., transfer refrigerating system for motor trucks.

Rockford, Ill.—Mark K. Smith Bus Line Co., to operate fleet of autos for passengers and freight between Aurora and Batavia, and to operate other bus lines; Mark K. and G. G. Smith, J. N. Kames, Wm. and Harry Pickens.

S. Pekin, Ill.—S. Pekin Bus & Transportation Co., general passenger and freight hauling business by autos; W. J. and J. E Hofferd, E. J. Sonderman.

Indianapolis, Ind.—Indiana Automotive Trade Assn.; directors, M. T. Johnson, J. T. J. Graves, A. T. Griffith, W. E. Robinson, Fred Bethard.

Boston, Mass.—Auto Repossession Co., reclamation of motor vehicles; $50,000; Ernest B. Rowe, Jas. E. O'Connell, Catherine T. Maloney.

Minneapolis, Minn.; Auto Intelligence Assn of America, Inc.; $400,000; L. L. Parish, G. A. Johnson, W. F. Smith.

Clayton, Mo.; Auto Finance Co.; $3000.

Atlantic City, N. J.—Automobiles Securities Corp., auto insurance; Chas. W. Gale, Bernard T. Miller, Jos. A. Corio.

Lawrence, L. I., N. Y.—Suburban Auto Finance Corp.; $100,000; L. Lewy, W. F. Chave, J. C. Schmuck.

New York, N. Y.:

Doris Taxi Co.; $12,000; A. Einhorn, M. Sherman, M. Dorfman.

Eastern Motor Lines, Manhattan, trucking; $10,000; D. C. and M. Walsh, A. I. Levenson, 1718 Wash Ave., Bronx.

5th Ave. Taxicab Co., Manhattan; $5000; S. and A. Hunau, S. Levine, 116 E. 108th St.

Mackle Motors Corp., Manhattan, general mercantile business; $20,000; W. F. and G. M. Taylor, T. H. Mackle, 34 E. 32nd St.

Riverside Taxi Cab Co., Manhattan; $10,000; J. O. Price, W. Fogarty, W. J. Eberle, 106 W. 101 St.

S. B. K. Taxi Co., Manhattan; $10,000; F. D. Sulier, T. Kaughran, 522 W. 151st St.

Superior Green & White Taxicab Assn., Manhattan; $25,000; H. Vogel, M. Saperstein, I. Levy, 1686 Clay Ave., Bronx.

Warner Taxi Co.; $5000; L. J. and D. Buchner, A. Lipton.

Portchester, N. Y.—Portchester & White Plains Bus Line; $9200; D. Rich, J. Pizzavello, C. Wein.

Philadelphia, Pa.—Federal Financial Guaranty Corp., 1411 Walnut St., financing manufacturers, distributors and dealers in automotive lines; pres., Jas. Callans.

Nashville, Tenn.—Wash. Co. Auto Club; Hugh L. White, H. R. Parrott, W. B. Miller, Allen Harris, O. D. Hutchins, John M. Barton.

Houston, Tex.; Driverless Auto Co.; $10,000; F. S. Scott and L. A. Glover.

INCREASES IN CAPITAL.

Bridgeport, Conn.—Liberty Mfg. Co., $250,000 to $3,000,000.

Dover, Del.; Vulcan Auto Parts Co., $2000 to $20,000.

Evansville, Ind.—Hercules Buggy Co., $1,500,000 to $3,750,000.

Indianapolis, Ind.—Oakes Co., $450,000 to $700,000.

La Porte, Ind.—Pony Tractor Co., $100,000 to $500,000.

Portland, Ind.—Bimel Spoke & Auto Wheel Co., $150,000 to $250,000.

Harlan, Ky.; Harlan County Auto Co., $25,000 to $50,000.

Lawrenceburg, Ky.—J. V. Arsdale Co., vehicles and implements, $8000 to $12;000.

Louisville, Ky.—O. K. Motors Co., $25,000 to $75,000.

Detroit, Mich.:

American Lubricator Co., $150,000 to $117,500.

Detroit Steel Products Co., $1,250,000 to $5,250,000.

Greenville, Mich.—Jacquet Motor Corp., $100,000 to $250,000.

Jackson, Mich.:

American Twist Drill Co., $200,000 to $400,000.

General Machine & Tool Co., $100,000 to $250,000.

Jonesville, Mich.:

Gear Grinding Machine Co., $300,000 to $400,000.

Universal Body Co., $25,000 to $101,500.

Kalamazoo, Mich.—Dearborn Garage Equipment Co., $100,000 to $200,000.

Lansing, Mich.; Reo Motor Car Co., $10,000,000 to $15,000,000.

Minneapolis, Minn.—Stinson Tractor Co., to $250,000.

St. Paul, Minn.—Anderson Co., maker of wagons, $300,000 to $500,000.

Kansas City, Mo.—Hathaway Motors Co., $50,000 to $100,000.

St. Louis, Mo.—Kardell Tractor & Truck Co., $1,000,000 to $3,000,000.

Brooklyn, N. Y.—Reliable Service Auto Co., $3000 to $25,000.

Buffalo, N. Y.—Ash Motor Corp., $15,000 to $40,000.

Jamestown, N. Y.:

Eagle Garage Co. of Jamestown, $25,000 to $100,000.

3rd & Lafayette Sts., garage, $10,000 to $40,000.

Mineola, N. Y.—Walters Rubber Co., $20,000 to $100,000.

New York, N. Y.:

Arthur Garage, Manhattan, $10,000 to $50,000.

Electric Transport Co., Manhattan, $100,000 to $750,000.

Franklin Motor Car Co., Manhattan, $100,000 to $250,000.

Hudson Motor Car Co of N. Y., Manhattan, $300,000 to $1,000,000.

Marmon Auto Co. of N. Y., $325,000 to $975,000.

155th St. Garage Co., Manhattan, $1000 to $100,000.

Sterling Motor Co. of N. Y., $100,000 to $150,000.

Niagara Falls, N. Y.—U. S. Light & Heat Corp., increased $1,500,000.

Rochester, N. Y.—A. M. Zimrich Motor Co., $560,000 to $1,560,000.

Cincinnati, O.—Hauser-Stander Tank Co., $30,500 to $100,000.

Cleveland, O.:
Bryant Auto Co., $25,000 to $200,000.
Motor Equipment Co., $10,000 to $30,000.

Dayton, O.—Research Engineering Co., make air cooled car, to $200,000; pres., O. H. Spencer; vice presidents, Jay A. Weller, Kenneth E. Hoy; sec., Thos. E. Garster; treas., Elmer M. Silers.

Youngstown, O.—Motor Finance Co., $200,000 to $400,000.

Lancaster, Pa.—Rowe Motor Mfg. Co., make worm driven motor trucks, $500,000 to $2,000,000.

Chattanooga, Tenn.—Marshall Auto Co., to $75,000.

Beaumont, Tex.—Standard Motor Co., $40,000 to $120,000.

Ft. Worth, Tex.—Geo. W. Armstrong & Co., Inc., $650,000 to $1,000,000.

Houston, Tex.—Gulf Coast Tire & Repair Co., $20,000 to $50,000.

Wichita Falls, Tex.—Southern Tire & Vulcanizing Co., $10,000 to $40,000.

Antigo, Wis.—Antigo Tractor Co., $500,000 to $1,000,000.

Laona, Wis.—Biever Motor Co., sales and service business, $15,000 to $40,000.

Milwaukee:
Briggs & Stratton Co., $1,700,000 to $1,950,000.
Great Lakes Malleable Co., $150,000 to $250,000; sec., Ray F. Ethier.
Kempsmith Mfg. Co., milling machines and other metal working tools, $600,000 to $1,000,000.
Meigs-Powell Co., machine and manual tools, gauges, micrometers, etc.; $50,000 to $150,000.
Sivyer Steel Casting Co., $400,000 to $800,000.

Oshkosh, Wis.—Thom Auto Co., garage and dealer, $25,000 to $100,000.

Saginaw, Mich.—Saginaw Overland Sales Co., $50,000 to $150,000; name changed to Mich. Motor Sales Co.

CHANGES IN NAMES.

Booneville, Ark.—City Auto Co. to Universal Motor Co.; moved to Broadway and Cooke Sts.

Pine Bluff, Ark.:
Arcade Motor Co. to Childs Motor Co., 219 E. 6th Ave.; R. C. Childs, Little Rock, man.
Pine City Garage, 907 State St., to Ussery's Garage; Patrick Ussery, owner

Wilmington, Del.—Cole-Wilmington Motor Car Co. to Wilson-Springer Motor Car Co.

Atlanta, Ill.—J. E. Tyler Garage to Tyler & Hayter; J. F. Tyler and J. N. Hayter, owners.

Barry, Ill.—Ware Chevrolet Agency to K. & W. Motor Sales Co.; A. A. Kleinschmidt, owner.

Chicago, Ill.—Triple Action Spring Co., 280 S. Mich. Ave., to Temme Spring Corp.; capital increased to $2,000,000; pres. and man. director, C. C. Temme; treas., H. Paulman of H. Paulman & Co.; sec., H. A. Newby.

Pontiac, Ill.—Bradley & Kimball Garage to Bradley & Nolan Co.; Harry D. Nolan, owner.

Shelbyville, Ill.—Wallace & Curry to Curry & Wallace; C. A. Curry and T. C. Wallace, Jr., owners.

Columbia, Ind.—Chas. G. Speece Filling Station & Garage, Franklin St., near 4th., to Joslin Electric Service Co.; E. A. Joslin, owner.

Columbus, Ind.—Columbus Tire Co. to Columbus Vulcanizing Co.; Paul Miles and Clarence Vetter, owners.

New Palestine, Ind.—Martindale & Young Garage to Curry Garage; Ernest Curry, owner.

Alvord, Ia.—Motor Service Garage to Shaffer & Serck; Edward Serck, owner.

Burlington, Ia.—209 Tire Service Co. and Reliable Co. consolidated as Reliable Auto & Rubber Co., 111-113 N. 5th St.

Ottawa, Kan.—Dennis Auto Co. and Dort Auto Agency consolidated as Berlin-Haight Motor Co., 119 E. 2nd St.; C. A. Berlin and Jas. W. Haight, owners.

Detroit, Mich.—Breed-Mutschler-Speicher Co., dealer in auto accessories, to Breed-Speicher Co.

Grand Rapids, Mich.—Mich. Hearse & Motor Co. to Mich. Body & Motor Co.; capital increased to $150,000.

Kalamazoo, Mich.—Tobey Bros.' Ford Agency to Jenkinson & Paine; Robt. D. Jenkinson and H. C. Paine, owners.

Lansing, Mich.—Lansing Overland Sales Co. to Mich. Motor Sales Co.; capital increased from $50,000 to $150,000.

Bolnton, Minn.—Harold W. Nash to O. B. Nash & Son.

Clairmont, Minn.—John Salmon to Salmon Bros., implement and hardware business.

Florence, Minn.—Florence Auto Co. Tegel Bros.

Berger, Mo.—Bade Bros., implement business, to Bade & Ruetter.

Carthage, Mo.—Carroll Garage to Heisten Bros. Garage; R. M. and H. A. Heisten, owners.

Jackson, Mo.—Auto Loan & Securities Co. to Southwest Finance Corp.

Kansas City, Mo.:
Kagey Motor Co. and Prairie Motors Co., consolidated as Consolidated Motors Co., car distributor; sales rooms and executive offices, McGee Trafficway and 24th St.; service station at Main and 35th Sts.; capitalization, $100,000.
Paige Sales Co. to Bird-Sykes-Bunker Co., Paige distributor; Arthur S. Bunker, man.
Pioneer Motors Co. absorbed by Hathaway Motors Co., distributor of Velie and Jackson cars; capital increased from $50,000 to $100,000; pres., C. E. Hathaway.

Sedalia, Mo.—Mahan Motors Co. Garage, 5th and Osage Sts., Dodge Bros. cars, to Sedalia Auto Sales Co.; W. N. Bennett, owner.

Springfield, Mo.—B. Tillman, 423 W. Walnut St. to Tillman's Auto Electric Service Co., 414 St. Louis St.

Brooklyn, N. Y.—Pitts Motor Car Repair & Sales Corp. to Pitts Motors.

Buffalo, N. Y.—Lafayette-Buffalo to Kane Motors.

New York, N. Y.:
Brown & White Taxi Co., Manhattan, to Taxicab Mfg. Corp.
Good Luck Tire & Rubber Co. of Ariz. to Climax Compression Tube Co.
Queen Tire Co. to Perfect Piston Ring Co.
Jas. C. Stoops, coach body builder, to Stoops Auto Co., Inc.

Oneida, N. Y.—Keller Merrell Motor Co. to Keller Motor Co.

Cleveland, O.:
Automotive Products Co. to Auto Accessory & Engineering Co.
Manufacturers' Sales Co. to Bradford Sales Co., 340 Leader-News Bldg.; pres., C. C. Bradford.

Oklahoma City, Okla.—Atkins Bledsoe Motor Co. to Bledsoe Motor Co., Stephens and Dorris cars; R. E. Bledsoe, owner.

Philadelphia, Pa.—Bigelow Willey Motor Co. to Geo. A. Willey Motor Co.

Providence, R. I.—Aetna Bottle & Stopper Co., Buick agency, to Providence Buick Co., Inc.

Columbia, S. C.—Victory Motor Co., Greenfield, S. C., to Mayfield Automotive Co., removed to Columbia.

Covington, Tenn.—Polk & Graer, auto business, to Polk & Taylor Garage; T. H. Taylor, owner.

Houston, Tex.—Standard Garage, 2404 Main St., to Carlton, Smith & Grant.

Fond du Lac, Wis.—Engles-Romaine Co., autos and implements, to Raymer-Romaine Co.; capital increased from $20,000 to $50,000.

Milwaukee, Wis.—Detroit Electric Car Co. to Detroit & Millburn Car Co.

Racine, Wis.—Hexamen Motor Co., devices for internal combustion engines, to Ames Carburetor Co.; sec. and gen. man., Fred C. Haumerson.

RECORD OF BUILDING OPERATIONS FOR JANUARY

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Alabama.

Birmingham—Wofford Oil Co.; 1-story brick and steel filling station; $2000.

Mobile—Adams Motor Co.; 3-story reinforced concrete auto building, 114x168; pressed brick front hollow tile curtain walls, plate glass, concrete and tile floors.

Arkansas.

Little Rock:
O. H. Hochalis, 4410 W. 10th St.; 1-story frame garage.
Warner Bros., 412 W. 34th St.; 1-story frame garage.

Connecticut.

Hartford:
A. Goldstein, 593 Windsor Ave.; 1-story brick garage, 100x110; $30,000.
Paul and Anna Ruffins, 203 Front St.; 1-story brick and concrete public garage, 38x66; $10,000.

Delaware.

Wilmington—F. B. Norman Co., 717 Shipley St.; alterations and addition, 60x84, to sales and service station, Orange St.; $20,000.

District of Columbia.

Washington—Chesapeak & Potomac Telephone Co., 725 13th St., N. W.; 2-story brick and concrete garage, 167x135.

Florida.

De Land—Cook & Rowland; 1 and 2-story garage, 80x160.

Ft. Pierce—Riverside Garage addition.

Pensacola—Son Buick Co., 19 W. Garden St.; 1-story auto building; ladies' rest room; repair and service department.

St. Petersburg:
J. B. Burnett; 1-story garage; $5000.
St. Petersburg Garage; 1-story brick addition, 40x50; plate glass windows, tile floors, rest room for women; $4000.

Georgia

Atlanta—Diamond Holfast Rubber Co.; tire factory.

Illinois.

Chicago:
U. S. Auto Supply Co., 3845 S. Wabash ave.; addition, 75x150, to garage, 3847 S. Wabash Ave.; $25,000.
Vincent Micovich 2929 Wentworth Ave.; 1-story brick and stone trim public garage, 75x120, at 2931-33 Wentworth Ave.; $25,000.
Republic Flour Mills Co., 2238 Diversey boulevard; 1-story brick and stone garage, 50x75, at 2240 Diversey boulevard; $15,000.
A. W. Cole, 5413 Greenwood Ave.; 1-story brick garage, 20x20, at Garfield Blvd. & Madison St.; $2000.
Hudson Motor Car Co., 1615 Michigan Ave.; 2-story brick and terra cotta service station, 200x180, at Michigan Ave. and 22nd St.
J. W. Alden; W. 65th place; 1-story frame garage.
Auburn Coal Material Co., 7443 S. Racine Ave.; 1-story brick garage, at 7441 S. Racine Ave.
George Barnes, 2745 Erie Ave.; 1-story frame garage.
Louis Benjamin, 1618 S Clifton Ave.; 1-story cement garage.
V. Bittner, 5612 S. Winchester Ave.; 1-story frame garage.
Paul Bombitzke, 5929 Spaulding Ave.; 1-story frame garage.
B. Du Boosky, 1316 S. Laendale Ave.; 1-story brick garage.
Joseph Bowers, 810 Diversey parkway; 1-story brick garage.
George Ceszar, 11941 Union Ave.; 1-story frame garage.
Emanuel Cohn, 2045 Waveland Ave.; 1-story frame garage.
L. Cohen, 2746 Potomac Ave.; 1-story frame garage.
L. Compton, 1831 N. California Ave.; 1-story frame garage.
P. J. Dalton, 5728 S. May St.; 1-story frame garage.
W. H. Daly, 5756 S. Sawyer Ave.; 1-story frame garage.
C. Dasso, 5957 Mackinaw Ave.; 1-story frame garage.
George M. Durim, 2519 Kimball Ave.; 1-story frame garage.
F. G. Effinger, 3738 N. Ashland Ave.; 1-story stucco garage.
C. Emmler, 5622 Bernice Ave.; 1-story frame garage.
D. J. Fleming, 4036 Wilcox Ave.; 1-story frame garage.

W. R. Fairchild, 4514 Dover St.; 1-story brick garage.
Ida Fleischer, 2828 Madison road; 1-story frame garage.
A. T. Forsee, 1120 Wellington St.; 1-story frame garage.
Martin Frain, 9022 Loomis St.; 1-story frame garage.
A. E. Gast, 4846 W. Hamlin Ave.; 1-story frame garage.
W. Gustafson, 7201 Champlain Ave.; 1-story brick garage.
Fritz Goranson, 3904 N. Troy St.; 1-story brick garage.
August Grenke, 2637 California Ave.; 1-story brick garage.
E. E. Hanson, 6219 Blackstone Ave.; 1-story brick garage.
S. A. Harter, 5217 Magnolia Ave.; 1-story frame garage.
John Hattara, 4732 Lowell Ave.; 1-story frame garage.
Otto Heckman, 3734 Bosworth Ave.; 1-story frame garage.
V. A. Hellstrom, 25 N. Dearborn St.; 1-story brick public garage, 100x172; $55,000.
M. G. Helvey, 3934 N. Sawyer Ave.; 1-story frame garage.
Illinois Paper & Trading Co., 737 W. Taylor St.; 1-story public garage; $45,000.
Martin Jefferys, 4747 Kenmore Ave.; 1-story brick garage.
George Kaufman, 2660 Warren Ave.: 1-story brick garage.
William F. Klemp, 3549 Lexington St.: 1-story frame garage.
A. Kussman, 3052 S. Springfield Ave.; 1-story frame garage.
L. Kustusch, 2642 S. Ashland Ave.; 1-story brick garage.
Runth C. Lake, 3622 Verdin Ave.; 1-story frame garage.
John Law, 2026 Pensacola Ave.; 1-story frame garage.
Miss M. Layman, 1238 Argyle St.; 1-story brick garage.
Albert Levy, 1239 Winnemac Ave.; 1-story frame garage.
Harry Lidene, 1259 Marrianna St.; 1-story steel garage.
A. Lindgren, 5043 Nelson St.; 1-story frame garage.
R. E. Lippert, 5530 Wayne Ave.; 1-story frame garage.
Thomas Lister, 2536 Smalley Ct.; 1-story frame garage.
A. L. Long, 7301 Paxton Ave.; 1-story brick garage.
Anna Low, 1908 N. Albany Ave.; 1-story frame garage.
H. Madsen, 957 N. Laramie Ave.; 1-story brick garage.
Charles E. McIntyre, 1836 N. Springfield Ave.; 1-story frame garage.
A. C. McKenzie, 3222 Wald Ave.; 1-story brick garage.
E. S. McGuire, 3443 W. Adams St.; 1-story frame garage.
E. G. Meyer, 6316 Glenwood Ave.; 1-story frame garage.
E. Nelson, 3500 Elston Ave.; 1-story brick garage.
A. M. Nielson, 4846 N. Claremont Ave.; 1-story garage.
Jacob Nolemhouse, 4111 Wilcox St.; 1-story frame garage.
John O'Connell, 6234 Rockwell St.; 1-story brick garage.
Eric J. Ogren, 4726 Kelso Ave.; 1-story frame garage.
F. Olsen, 2651 Coyne St.; 1-story frame garage.
C. M. Owens, 1532 Montana St.; 1-story brick garage.
J. Paul, 1431 Warner Ave.; 1-story brick garage.
Chas. G. Pearson, 4311 Wrightwood Ave.; 1-story frame garage.
W. T. Reichard, 5441 W. Quincy St.; 1-story brick garage.
A. S. Rinher, 4618 N. Kimball Ave.; 1-story frame garage.
Eli Sargent, 4233 Fergus St.; 1-story frame garage.
M. Seneca, 2125 Millard Ave.; 1-story frame garage.
H. F. Sheridan, 7302 Champlain Ave; 1-story brick garage.
J. Silverman, 3255 Washington Blvd.; 1-story frame garage.
William W. Smyth, 1955 E. 75th St.; 1-story frame garage.
A. Space, 6821 Elizabeth St.; 1-story frame garage.
Charles Stenka, 3321 Palmer Sq.; 1-story brick garage.
J. D. Storms, 4439 Berkeley Ave.; 1-story frame garage.
Joseph Strink, 4710 N. Lawndale Ave.; 1-story frame garage.
A. F. Sundstrom, 7218 Prairie Ave.; 1-story frame garage.
O. M. Tensi, 1032 Freeman Ave.; 1-story brick garage.
M. R. Travis, 6455 S. Troy St.; 1-story brick garage.
H. Turner, 2428 N. Newland Ave.; 1-story frame garage.
W. F. Vehlon, 942 Kedvale Ave.; 1-story frame garage.
Joseph Veverke, 2605 W. 47th St.; 1-story frame garage.
August Volnar, 4512 Lincoln Ave.; 1-story metal garage.
Geo. Wagner, 1842 N. Karlow Ave.; 1-story brick garage.
Joseph Wagner 2724 S. Central Park Ave.; 1-story frame garage.
A. Wallas, 2237 S. Oakley Ave.; 1-story frame garage.
Frank Walenga, 13301 Carrondilet Ave.; 1-story frame garage.
A. P. Weber, 6823 Parnell Ave.; 1-story brick garage.
F. Webster, 6441 Cornell Ave.; 1-story frame garage.
H. Wenr, 3627 N. Oakley Ave.; 1-story frame garage.
Charles O. Weese, 5659 Magnolia Ave.; 1-story garage.
A. L. Woodbridge, 1515 Altgeld St.; 1-story brick garage.
J. Yauch, 4741 N. Artesian Ave.; 1-story frame garage.

Decatur:
Dr. H. P. Bachman, 405 Central Ave.; 1-story frame garage.
M. D. Conwell, 1813 E. North St.; 1-story frame garage.
Mrs. Joseph Davis, 226 Spring St.; 1-story frame garage.
R. E. Gritton, 538 E. William St.; 1-story concrete garage.
J. A. Kohler, 1757 N. Ilinois St.; 1-story frame garage.
A. D. Hughes, 629 W. Decatur St.; 1-story frame garage.
A. L. Reynolds, 32 S. New St.; 1-story frame garage.
Mrs. Sadie Sunderlick, 1029 S. Main St.; 1-story frame garage.
Charles Lenster, 927 Ridge Court; 1-story frame garage.

Evanston:
C. H. Stein, 2045 Ridge Ave.; 1-story frame garage.
A. Swenson, 1946 Maple Ave.; 1-story brick garage.

East St. Louis—W. D. Abraham; 1-story brick and stucco garage, 100x40; $25,000.

Greenville—Central Garage Co.; side addition, 70x77, to garage; $20,000.

Springfield:
James Greenan, 711 S. Douglas Ave.; 1-story frame garage.
D. M. Lawrence, 2008 Clifton Ave.; 1-story frame garage.

Indiana.

Greensburg—Fred Greive, Batesville, Ind.; 1-story garage and repair shop at Monfort and Main Sts.

Iowa.

Sioux City:
Hanford Produce Co., 7th and Court Sts., 1-story brick and concrete garage, 50x50, at First and Court Sts.; $7000.

Washington—R. S. Schulty; rebuild Washington-Overland garage and repair shop.

Kansas.

Topeka—Herbert Johnson, 1401 Kansas Ave.; 1-story brick garage.

Kentucky.

Bowling Green—Robert Crump & Son; rebuild garage.

Covington:
John D. Heineman, 1541 Banklick St.; 1-story concrete garage.
Clarence Landers, 123 E. 40th St.; 1-story steel garage.
August Matracia, 424 Main St.; 1-story brick garage.
H. A. Neumeister, 706 Phila. St.; 1-story metal garage.
L. Prather, 431 Crescent Ave.; 1-story metal garage.
John D. Spears, 311 E. 30th St.; 1-story frame garage.

Louisville:
Ten Broeck Tire Co., 840 S. 26th St.; addition to plant.
Zach Wilhoit; 1-story brick garage, 100x116; $30,000.

Newport—Leon Lippert, 658 Nelson place; 1-story metal garage.

Owensboro:
Elmer Carden, 100 Orchard St.; 1-story garage.
R. E. Rogers, 1-story brick sales and service station, 44x65; $6000.

Maryland.

Baltimore:
City Realty Co., 2 E. Lexington St.; 1-story hollow tile garage.
Hornd Ice Cream Co., 446 Asquith St.; 2-story brick garage; $11,000.
Rice Garage; 1-story garage, 85x125.
Daniel Shipley, 1104 W. 36th St.; 2 1-story garages; $7000.
Standard Oil Co, Pier 2, Pratt St.; 1-story brick service station, 46x20; $10,000.
S. Randolph Vincenti, 312 Light St.; 2-story brick and stone garage at 3-7 N. Paca St.; $60,000.

Massachusetts.

Boston—Simons & Weiner, 1485 Dorchester Ave.; 1-story brick garage, 150x180.

Brookline—Barnard Davis, 183 Walnut St.; 1-story brick and concrete public garage, 70x218; $65,000.

Cohasset—South Shore Garage; 1-story addition, 76x28.

East Boston—Henry Chisholm, 8 Beacon St.; 2-story brick and reinforced concrete public garage; $55,000.

Fall River:
Adam Strong, 178 Hawthorne St.; 1-story frame garage.
Dr. J. Westall, 951 S. Main St.; 1-story brick garage.

New Bedford—William T. Caswell, 233 Summer St.; 1-story cement block public garage, 48x51.

Worcester—A. F. Mathieu, care Jas. Rice, 306 Main St.; 2-story reinforced concrete public garage, 150x180.

Michigan.

Birch Run—W. R. Hadsall; 1-story brick concrete, hollow tile and stucco garage, 86x147x114; $40,000.

Detroit:
Clarence A. Day, 72 Buhl Bldg.; 1-story frame garage, 30x30; $15,000.
Stearns Detroit Auto Co., alterations and addition, 74x200, to garage at 1084 E. Jefferson Ave.; $60,000.

Lansing—Harry Beadle, Okemos Garage; addition for sales room and storage station.

Perry—I. P. Cook; garage and filling station.

Minnesota.

Duluth:
Thomas Flynn, 2519 W. 2nd St.; 1-story frame bldg.
Olaf Hanson 5615 W. 8th St.; 1-story frame garage.
R. C. Leupke, 821 E. 8th St.; 1-story frame garage.
Mrs. M. Melvin, 2314 E. Water St.; 1-story frame garage.
J. H. Poirer, 413 E. Superior St.; 1-story frame garage.
H. B. Raymond, 3116 Restoimel St.; 1-story frame garage.
M. G. Swanson, 1208 N. Central Ave.; 1-story frame garage.
W. G. Webber, 325 N. 48th Ave.; 1-story frame garage.
C. S. Weik, 204 E. 4th St.; 1-story frame garage.

Minneapolis:
Andrew Almind, 3024 S. 43rd St.; 1-story frame garage.
Emma Berger, 3133 S. 29th St.; 1-story frame garage.
Leonard Chalberg, 3009 E. 29th St.; 1-story frame garage.
J. N. Chambers, 3147 Clinton Ave.; 1-story frame garage.
George T. Chase, 5121 Abbott Ave.; 1-story frame garage.
Crosby Investment Co., 4208 Nowadha Blvd.; 1-story frame garage.
E. M. Demick, 4827 Emerson Ave.; 1-story frame garage.
George A. Didrickson, 3101 E. 23rd St.; 1-story frame garage.
O. F. Dovie, 2715 Fremont Ave.; 1-story frame garage.
A. A. Eckley, 3024 Irving Ave.; 1-story frame garage.
L. E. Frey, 1520 Come Ave.; 1-story frame garage.
B. A. Grafft, 1045 S. 24th St.; 1-story frame garage.
Oscar Gufstafson, 3211 Humboldt Ave.; 1-story plaster veneer garage.
Mrs. P. C. Hart, 3633 Blaisdell Ave.; 1-story frame garage.
Frank Hessel, 4350 Grand Ave.; 1-story frame garage.
C. A. Hoffman, 5035 Aldrich Ave.; 1-story plaster veneer garage.
A. R. Johnson, 4033 Columbus Ave.; 1-story frame garage.
Fred E. Kenyon, 3037 Holmes Ave.; 1-story frame garage.
P. A. Langvand, 3621 24th Ave.; 1-story frame garage.
Christian Lawritzen, 3012 Minnehaha Ave.; 1-story frame garage.
Frank Lindskoog, 3425 S. 18th Ave.; 1-story frame garage.
Gilbert Lunde, 2824 S. 34th Ave.; 1-story frame garage.
P. J. Marwin, 2115 N. 22nd St.; 1-story frame garage.
P. J. Mileck, 1323 Buchanan St.; 1-story frame garage.
H. E. Oraborn, 3530 Fremont Ave.; 1-story frame garage.
O. A. Pehrson, 2239 N. Upton Ave.; 1-story frame garage.

H. P. Peterson, 2824 S. 37th Ave.; 1-story frame garage.
W. T. Rawleigh Co., 1010 N. 3rd St.; 1-story frame garage.
William Simms, 1056 S. 14th Ave.; 1-story plaster veneer garage.
C. J. Simonson, 3412 S. 32nd St.; 1-story frame garage.
John R. Skilbech, 3254 Oliver Ave.; 1-story plaster veneer garage.
L. P. Thompson, 3120 S. 1st Ave.; 1-story frame garage.
C. M. Verrell, 1512 S. 7th St.; 1-story frame garage.
E. E. Walker, 3338 Humboldt Ave.; 1-story plaster veneer garage.
Carl J. Westlund, 4318 Fremont Ave.; 1-story frame garage.

Kansas City:
Adelphi Garage, 33rd St. and Gilham Road; 1-story fireproof service station, 100x140; $30,000.
G. M. Baltis, 3801 Wabash St.; 1-story garage, 50x132.
Ever Ready Garage, 1817 W. 39th St.; rebuild garage.
E. Harvey, 238 Lathrop Bldg.; 1-story brick and stone trim garage, 100x140.
White Co., E. 79th St. and St. Clair Ave., Cleveland, O.; 3-story brick and reinforced concrete service station, 120x144.

St. Louis:
Kingsburg Garage Co., 943 Century Bldg.; 1-story brick semi-fireproof garage, 113x145.
Mendernall Motor Co., 2315 Locust St.; 1-story top addition to garage; $30,000.
W. F. Schaefer, 3616 S. Jefferson Ave.; 2-story brick garage, 28x52; $20,000.

New Jersey.

Asbury Park—Andrew Lustbaum, 47 S. Broadway, Long Branch; 1-story brick, hollow tile and stucoc garage and show room, 50x117, S. E. Cor. 3rd Ave. and Main St.; $20,000.
Hackensack—Van Dizen Garage Co., Passaic St. and R. R. Ave.; 1-story brick side addition to garage; $10,000.
Hoboken—Chas. F. Diefenback, 84 Washington St.; 1-story brick public garage, 25x100; $10,000.
Jersey City—J. H. R. Shannon, 5 Bermins Court; 1-story brick garage, 40x100, at 2-6 Bermins Court; $7500.
Newark:
Kobba Wrecking Co., 28 Peshine Ave.; 1-story brick public garage, 100x100, rear 15th Ave. and Hunterdon St.; $25,000.
Lasher & Lathrop, 29 Lafayette St., New York; 1-story garage at 5 0E. Peddie St.
McAllister Carten Corp., 1003 Broad St.; 1-story brick garage and service station at 1001 Broad St.; $90,000.

New York.

Albany—Albany Garage Co., Lodge and Beaver Sts.; addition to garage.
Binghamton—Auto Storing Co., Chamber of Commerce Bldg.; 2-story reinforced concrete garage; $175,000.
Brooklyn:
A. D. & S. Realty Co., 1165 E. Parkway; 1-story public garage, 100x100, at 13th St. and 3rd Ave.; $35,000.
Samuel Agel, 126 Reid Ave.; 1-story brick garage, 72x100; $25,000.
B. A. Realty Co., Inc., 7812 18th Ave.; 1-story brick public garage and repair shop 40x100; $10,000.
Bay Ridge Land & Improvement Co., 189 Montague St.; 1-story brick garage, 110x118, N. W. Cor. 4th Ave. and 62nd St.; $30,000.
Bay 23rd St. Construction Co., Inc., 131 Bay 7th St.; 1-story brick garage, 27x100; $15,000.
Bell Realty Co., Inc., 93 Columbia St.; 1-story brick garage, 137x142; $50,000
Bismarck Realty Co., 869 Broadway, New York; 1-story brick garage, 100x100, at 219th St. and 11th Ave.; $40,000.
Jacob and Abraham Bruslawsky, 1200 Eastern Parkway; 1-story brick garage, 50x107; $15,000.
Meyer Caplan, 296 Marcy Ave.; 1-story brick garage, 75x100; $70,000.
Barnay Clayman, 37 Van Buren St.; 1-story brick garage, 100x150; $40,000.
R. Dunbar, 557 15th St., 1 and 2-story brick garage, 75x125; $35,000.
David Eisenberg, 2002 Douglas St.; 1-story brick garage, 80x100; southwest cor. De Kalb Ave. and Skillman St.; $25,000.
Estate William Elmer, 630 Bushwick Ave.; 1-story brick garage; $30.000.
Garage Property Corp., 44 Court St.; 1-story brick garage, 90x100; $30,000.
Grant Improvement Co., Inc., 1-story brick garage, 75x100, at 876-80 De Kalb Ave.; $25,000.
George Hochschwender, 99 Clarkson St.; 1-story brick show room and service station, 53x125, southwest corner Parkside and Bedford Aves.; $50,000.
Murray Klein, 37 Graham Ave.; 1-story brick public garage, 100x200; $200,000.
Rose Koepnee, 338 Van Sicler Ave.; 1-story brick garage, 100x100, N. E. Cor. Stone Ave. and McDougal St.; $25,000.
Aaron NeKrutman, 714 Gates Ave.; 1-story brick garage, 50x100; $15,000.
William Ulmer Brewery Co., 31 Belvidere St., 1-story brick garage, 100x195; $75,000.
Victory Operating Co., 305 Broadway, New York; 1-story brick garage, 117x140; $45,000.
Weil Kieber & Dodman, 1522 Flatbush Ave.; 1-story brick public garage and repair shop, 40x100; $10,000.
S. A. Wertheim, care Clarence Sebert, 207 W. 76th St., New York; 1-story brick and terra cotta garage, 100x175; $75,000.

Buffalo:
Erie Service Co., 349 Maston St.; 1-story brick garage, 68x175, at 235 Elk St.; $40,000.
Joseph Notare, 511 Niagara St.; 1-story brick public garage and sales room, 40x132, at 341 Niagara St.; $25,000.

Jamaica, L. I.—Anna Hoering, care Frank J. Schebeik, 4168 Park Ave., New York; 1-story brick and concrete public garage and show room, 155x100; $30,000.

Long Island City—Rolls-Royce; addition, 80x100, to sales and service station, Harris Ave.; $50,000.

New York:
American Express Co., Broadway; 5-story garage, at 235-237 W. 16th St.; $100,000. Lessee, 16th St. Garage Corp.
Arrow Head Garage, 5221-27 Broadway; alterations to garage.
John J. Conway, 557 W. 169th St.; extension, 52x91, to garage at 1435 Plimpton Ave.; $20,000.
J. T. Cuggy, 478 E. 138th St.; 1-story brick garage, 50x100; $10,000.
Dorsma Garage Corp., 1016 St. Nicholas Ave.; alterations to 1-story brick garage; $20,000.
Dunnigan & Crumley, 394 E. 150th St.; 1-story brick garage, 50x100x160; $45;000.
Edel Realty Co., 1901 Walton Ave.; 1-story brick garage, 50x246; $75,000.
Fern-Cliffe Garage, Inc., 35 W. 39th St.; 1-story brick public garage, 123x122; $75,000.
Wright-Gillies, 544 W. 50th St.; alterations to 2-story brick garage, 160th St.; $15,000.
Joseph Guarino, 28 Hamilton St.; 2-story brick public garage, 78x100, at 28-32 Hamilton St.; $75,000.
Hester Realty Co., 31 Nassau St.; 1-story garage, 125x98, at 547 W. 34th St.; $30,000. Lessee, Garage, Inc., 551 W. 34th St.
Estate F. Johnson, 30 E. 42nd St., 1-story brick commercial garage; $30,000.
William F. Kenny Co., 841 Broadway; 1-story brick garage, 150x100; $40,000.
Leberton Corp., 115 Broadway; addition to 2-story brick garage, 236-38 E. 37th St.
Oscar J. Mayor, 2085 5th Ave.; 1-story brick garage, 75x150; $35,000.
City of N. Y.: 1-story brick garage at 239 South St., 80-92 Pike slip, 463 Water St.; $40,000.
Paladino Motor Trucking Co., 2254 First Ave.; 1-story brick garage, 75x100, at 437-43 E. 120th St.; $50,000.
Laura R. Phelan, 2045 Ryer Ave.; 1-story brick garage; $70,000.
Rothbart Garage Corp., 175 E. 96th St.; 1-story garage, 125x121x175, at 108 June St. and 100-8 Horatio St.
H. B. Scharmann & Son, 371 Pulaski St.; 1-story brick garage, 100x275; $75,000.
Shaskin Realty Co., 220 Broadway; 1-story brick garage, 75x225; $50,000.
John E Sheehy, 256 Broadway; 1-story brick and terra cotta garage, 100x100; $35,000.
Spring St. Garage Co., 201 W. 104th St.; 1-story brick public garage 100x229, N. E. Cor. Fordham Road and Hughes Ave.; $45,000.

Poughkeepsie—Walter Motor Truck Co., 243 W. 61st St., New York; 1-story brick factory bldg., 100x300; $100.000.
Rochester—Richard Kemp, 3440 Lake Ave.; 2-story brick and stone public garage and show room, 100x118.
Solvay—J. R. Matthews; 2-story brick and hollow tile public garage, 50x80, at 2100 Milton St.; $20,000
Summerville—Charles Salmon; 1-story cement block garage and storage station, 36x36; $7000.
Syracuse—T. N. C. Motor Sales Corp., 111 W. Taylor St.; 1-story brick garage sales room and service station at Genesee and Forman Sts.
Yonkers—Lynch & Larkin; 1-story brick and tile public garage, 50x125, at 195 Riverside Ave.; $40,000.

North Carolina.

Shelby—Charles L. Eskridge; remodel garage; replace with pressed brick front with stone trimmings, tile floors with marble wainscoting; offices, store room and rest room.

Ohio.

Bethel—Hannah Bros.; 1-story brick garage and sales room, 80x150; $15,000.
Canton:
W. A. Giesner, 242 Chicago Ave.; 1-story frame garage.
A. J. Frankstein, 1036 Garfield Ave.; 1-story frame garage.
R. W. Hoffer, 1241 Logan Ave.; 1-story frame garage.
Thomas Lombardi, 1251 Harrison Ave., 1-story frame garage.
Sarah Mottice, 1958 S. 4th St.; 1-story frame garage.
Jacob Pine, 937 Dartmouth St.; 1-story frame garage.
Wilson Richards, 732 N. Young St.; 1-story frame garage.
B. J. Waterson, 1116 Harrison Ave.; 1-story frame garage.
Cincinnati:
C. F. Baumecker, 9 E. 9th St.; 1-story frame garage.
Lawrence Bayles, 4323 Plainville Road; 1-story frame garage.
Bourne-Fuller Co., 3001 Springer St.; 1-story frame garage.
E. M. Bowles, 637 Delhi Ave.; 1-story brick garage.
M. Brumerman, 506 Danbridge Ave.; 1-story frame garage.
Cincinnati Auto Club & Garage Co.; 4-story brick and concrete garage, 182x120, S. W. Cor. 4th and Syramore Sts.; $1,500,000.
A. M. Crane, 6035 Montgomery Road; 1-story frame garage.
John Deckler, 1560 Perin St.; 1-story frame garage.
A. H. Dickerson, 5741 Bramble Ave.; 1-story frame garage.
A. R. Diehl, 431 Hickory St.; 1-story brick garage.
John Finnerty, 3512 W. 8th St.t; 1-story frame garage.
Carl H. Goetz, 1128 Atwood Ave.; 1-story frame garage.
H. A. Goodwin, 251 Wenner St.; 1-story frame garage.
H. Holscher, 4551 W. 8th St.; 1-story brick garage.
A. S. Hunt, 2101 Beechmont Ave.; 1-story frame garage
James M. Johnson, 3052 Kerper Ave.; 1-story brick garage.
Thomas Kelleber, 129 W. 68th St.; 1-story frame garage.
Edward Kluba, 784 Wells St.; 1-story brick garage.
Newton Lacy, 736 Burns Ave.; 1-story brick garage.
Henry Lucas, 6705 Madison Road; 1-story frame garage.
Edward McFee, 3089 Madison Road; 1-story frame garage.
W. H. Maurer, 3508 Beechmont Ave.; 1-story frame garage.
Charles Millbaugh, 42 University Ave.; 1-story frame garage.
O. A. C. Nielson, 3982 Massachusetts Ave.; 1-story frame garage.
North Side Roofing Co., 1685 Blue Rock St.; 1-story brick garage.
Santa Maria Institute, 540 W. 8th St.; 1-story frame garage.
Scott Calmeise, 3616 Roll Ave.; 1-story frame garage.
Edward Sickman, 3345 McHenry Road; 1-story frame garage.
Fred Silber, 2930 Spring Grove Ave.; 1-story frame garage.
H. J. Steinnecker, 21 Glencoe Pl.; 1-story frame garage.
Aaron Straus, 668 Rockdale Ave.; 1-story frame garage.
Miles Tood, 4920 Stewart Pl.; 1-story frame garage.
Williamson Foundry Co., 4558 Marburg Ave.; 1-story brick garage.
F. J. Walper, 1935 Mears Ave.; 1-story frame garage.
Dayton—Victor E. Horter, 12 Meigs St.; 1-story public garage, 55x65, at 14 Meigs St.; $15,000.
E. Cleveland—Samuel Newman, 10710 Drexel Ave.; 1-story garage, 80x108, at 1362-68 Hayden Ave.; $27,000
Hamilton—Fred Brown; 1-story brick garage and service station, 30x40, at Hooven and Pleasant Sts.; $12,000.
Napoleon—C. E. Donnelly; 1-story cement block garage, 69x181.
E. J. Bengert, 2320 Quatman Ave.; 1-story frame garage.
Peter De Kloe, 245 Globe Ave.; 1-story brick garage.

N. B. Hadley, 4107 Grove Ave.; 1-story frame garage.

H. C. Hammer, 2746 Harris Ave.; 1-story frame garage.

Jacob Mueller, 4019 Huston Ave.; 1-story brick garage.

Springfield—T. A. Vesper, 364 E. Casilly St.; 1-story frame garage.

Worthington—L. W. Wright and B. Keys; rebuild commercial garage.

Youngstown:

Lena Chazeneff, 78 Falls Ave.; 1-story frame garage.

William Dingledm, 161 W. Chalmers Ave.; 1-story frame garage.

John Harris, 634 W. Woodland Ave.; 1-story frame garage.

Saul Levine, 521 Garfield St.; 1-story frame garage.

William M. Morgan, 625 Oxford Ave.; 1-story frame garage.

Karl Rider, 17 N. Evanston St.; 1-story frame garage.

Harvey Swanson, 929 W. Marion Ave., 1-story frame garage.

Oklahoma.

Oklahoma City:

A. Gordon, 1723 W. 11th St.; 1-story frame garage.

T. C. Hull, care G. A. Nichols, S. W. National Bank Bldg., 1-story brick and stone trim garage at 7th and Phillips Sts.; $25,000.

Pennsylvania.

Chester—Dr. A. W. S. Loewen, Tamaqua, Pa.; 2-story brick garage, 40x60; $20,000.

Collegeville—Perkiomen Bridge Motor Co.; 1-story brick and stone garage and show room, 125x70; $20,000.

Lancaster—C. D. Nauman, 247 N. Mulberry St.; 1-story frame garage.

Lewiston—Shed Hawke; 2-story brick and stone public garage and show room, 95x145; $100,000

Meyersdale—Union Motor Co.; Confluence, Pa.; 1-story brick garage, 48x150.

Philadelphia—Sweeter Auto Co., converting old Odd Fellows' Temple, southeast Cor. Broad and Cherry Sts., into garage, office and sales room.

Pittsburgh—Miller Saw Trimmer Co., Point Bldg.; 1-story corrugated iron garage, 20x35, at 1022 South Ave.; $4000.

Reading—Harry A. Heckman, 1604 Mineral Spring Road; 1-story community garage, 144x20, 12 stalls, at 16th and Hall Sts.

Rehrersburg—Paul Webber, two-story stone public garage 53x53; $20,000.

Tyrone—J. H. Hall, 1201 Washington St., Huntington, Pa.; 2-story brick and concrete public garage, 60x100; $50,000.

South Carolina.

Anderson—Petroleum Oil Co., S. Main and River Sts.; rebuild filling station.

Columbus—Coltrane Tire & Rubber Co., Greene and Harden Sts.; rebuild plant.

Tennessee.

Knoxville—Mono Service Ice Cream Co., 400 Chamberlain St.; 2-story brick garage, 62x82.

Morristown—People's Service Station, Memphis, Tenn.; 1-story brick filling station, 20x38.

Texas.

Amarillo—Wichita Automobile Co.; rebuild auto building.

Dallas—Lambertti Motor Co., Main and Washington Sts.; rebuild garage.

Grand Prairie—Grand Prairie Garage; rebuild garage.

Houston—Sherwood Automobile Market; rebuild garage.

Vernon—White Garage; rebuild.

Wichita Falls—H. C. Ferruman; 2-story brick filling station, 44x20.

Virginia.

Norfolk—Lowenberg- Goodman Corporation, Columbus Bldg.; 1-story garage.

Richmond—C. G. Mercer and R. C. Sutton, 218 N. 9th St.; 1-story garage,40x50x150; $40,000.

West Virginia.

Charleston—R. J. Zimmerman, 408 Reffner Ave.; 2-story brick and limestone garage, 29x22.

Fairmont—Central Automobile Corp.; 2-story concrete service station; first floor service station and show room, second floor, auto shop and paint room, 63x120.

Huntington:

Fourth Ave. Garage, 11th St. and Fourth Ave.; 2-story garage, 90x180.

F. F. Starcher, Day and Night Bank Bldg.; 1-story garage, 45x160.

Wheeling—12th St. Garage Co.; 5-story brick commercial garage, 82x125, at 12th and Main Sts.; $150,000.

Wisconsin.

Appleton—August Brandt Co., 976 College Ave.; 1 or 2-story garage and accessory shop, 80x166, at College and Superior Sts.; $60,000.

Kaukauna—John and Jos. Hennes; 1-story concrete block garage and sales room, 50x100, at 3rd and Main Sts.; $15,000.

Madison—Joseph F. Janicek, 405 State St.; 1-story brick and reinforced concrete garage, 21x428; $8000.

Manitowac—Decke Motor Car Co., 1101 Franklin St.; 1-story brick and hollow tile sales room, 60x120; $15,000.

Milwaukee—International Harvester Co. of America, 606 S. Michigan Ave.; 1-story brick and concrete garage and service station; $45,000.

Portage—Loomis Weinke Motor Sales Co., 214 Wisconsin St.; 1-story addition, 90x120, to garage; $15,000.

Sheboygan—South Side Garage Co., S. 12th St. and Indiana Ave.; 2-story reinforced concrete garage; $55,000.

CONTRACTS AWARDED.

Alabama.

Mobile—Muths Construction Co.; 3-story brick and concrete auto building, 114x168, hollow tile curtain front, plate glass, concrete and tile floors; for Adams Motor Co.; $150,000.

Connecticut.

Windsor—Edward Swanson; 1-story public garage, 100x150, for A. W. Lovell & Co.

Delaware.

Wilmington—Smyth Construction Co., 826 Orange St.; 1-story garage, 27x56, at 840 French St., for A. B. Schneppe, 840 Front St.; $10,000.

Illinois.

Chicago:

James Doody, 818 W. 34th St.; 1-story public garage, 751x25, at 3129 S. Halsted St.

Garrioch & Clouston, 4049 Colorado Ave.; side addition to public garage at 1137 S. California Ave., for Thomas Cassidy, 3159 W. North Ave.; $6000.

Anton Groen, 2113 N. Kenneth Ave.; 1-story public garage, 49x125; $15,000.

George H. J. Haas, 130 N. Wells St.; 1-story sales room and service station, 240x50, for Harold Hansen, 820 Lawrence St.; $45,000.

Holton Seely Co., 140 Dearborn St.; 1 and 2-story garage, 72x100, at 3022 S. Wabash Ave.; $60,000. Lessee, Lincoln Motor Sales Co., 3518 S. Michigan Ave.

John Jacoby, 1537 Addison St.; 2-story garage, 126x125, at 1514-26 Devon Ave.; $30,000.

George Lowlie, 3101 Lawrence Ave.; 1-story garage, 55x125, at 3104 Lawrence Ave.; $34,000.

Vincent Michovich, 2929 Wentworth Ave.; 1-story public garage, 75x120, at 2931-35 S. Wentworth Ave.; $25,000

A. Nash, 4127 Prairie Ave.; 1-story frame garage.

Joseph Nayder, 7921 S. Marshfield Ave.; 1-story cement garage.

Johnson Nelson, 7653 Crandon Ave.; 1-story brick garage.

P. Nelson, 720 N. Springfield Ave.; 1-story frame garage.

John Ness, 2439 Ballou St.; 1-story frame garage.

William Neuen, 3652 Wabansia Ave.; 1-story frame garage.

Herman Neutzel, 3034 N. Hamilton St.; 1-story frame garage.

M. Novak, 1429 S. Tripp Ave.; 1-story brick garage.

L. Oboler, 1221 E. 54th St.; 1-story frame garage.

John Olsen, 3744 N. Ashland Ave.; 1-story frame garage.

W. A. Oxley, 2452 N. Kimball Ave.; 1-story frame garage.

A. Patterson, 3234 W. 66th Place; 1-story frame garage.

G. E. Pearson, 1930 N. Keystone Ave.; 1-story frame garage.

A. Peterson, 423 N. Lawndale Ave.; 1-story frame garage.

C. Peterson, 6350 S. California Ave.; 1-story frame garage.

O. J. Phillips, 7900 Union Ave.; 1-story frame garage.

Ralph Pope, 716 S. Hermitage Ave.; 1-story frame garage.

O. W. Post, 38 N. Lockwood Ave.; 1-story frame garage.

J. P. Quillenan, 7943 Jackson Blvd.; 1-story frame garage.

William Rauen, 233 W. North Ave.; 1-story brick garage.

J. P. Reed, 5413 Lakewood Ave.; 1-story frame garage.

L. W. Post, 4345 W. End Ave.; 1-story frame garage.

Samuel Rubin, 3328 W. Madison St.; 1-story frame garage.

Fred Sagert, 7724 S. Peoria St.; 1-story frame garage.

Geo. A. Sander, 917 S. Oakley Blvd.; 1-story frame garage.

L. D. Sandstrom, 5225 Kimback Ave.; 1-story frame garage.

B. Sangman, 2504 Blaine Place; 1-story frame garage.

O. Sarte, 4511 N. Harding Ave.; 1-story frame garage.

Scheuer Bros., 5743 N. Clark St.; 1-story brick garage.

C. H. Schneider, 5023 W. Superior St., 1-story frame garage.

M. Schnoaler, 5005 Dakin St.; 1-story frame garage.

S. Schreie, 2028 W. 110th St.; 1-story stucco garage.

G. Schroeder, 6142 Fulton St.; 1-story frame garage.

H. Schroeder 4832 Grand Blvd.; 1-story brick garage.

John J. Schuell 1134 N. Avers Ave.; 1-story frame garage.

A. D. Schuell 1134 N. Avers Ave.; 1-story frame garage.

A. D. Schuller, 4838 N. Albany Ave.; 1-story brick garage.

Mrs. J. Schultz, 45 E. 101st St.; 1-story frame garage.

M. Schultz, 535 N. Monticello Ave.; 1-story frame garage.

T. J. Schwartz, 7348 Pingree St.; 1-story frame garage.

M. Schoenberg, 4730 Washington Blvd.; 1-story brick garage.

C. Seidel, 1104 N. Harding Ave.; 1-story frame garage.

H. H. Seug, 1767 Arthur Ave.; 1-story frame garage.

William Shernoff, 5811 Parnell Ave.; 1-story brick garage.

L. C. Sievert, 2341 N. Nordica Ave.; 1-story frame garage.

J. Sirgel, 1329 Millard Ave.; 1-story brick garage.

A. J. Sitz, 4450 Monticello Ave.; 1-story frame garage.

L. A. Stephan, 1307 W. 79th St.; 1-story brick garage.

C. Stoll, 7516 Howard Ave.; 1-story frame garage.

A. J. Sutter 711 Kilbourn Ave.; 1-story frame garage.

Charles Svec, 5249 S. Honore St.; 1-story garage, 50x75, at 2230-36 Diversey Ave.; $15000. Also 1-story garage, 50x75, at 2240 Diversey Blvd., for Republic Flow Meters Co., 2238 Diversey Blvd.; $15,000.

E. C. Thompson, 708 E. 89th St.; 1-story frame garage.

Walger Thompson, 1345 N. Keeler Ave.; 1-story public garage, 72x125; $30,000.

C. Thorsen, 4415 Montana St.; 1-story brick garage

J. M. Todd, 7351 Dante Ave.; 1-story frame garage.

P. J. Toppen, 6542 S. Claremont Ave.; 1-story frame garage.

W. L. Ultsch, 3657 N. Lawndale Ave.; 1-story frame garage.

L. M Unchine, 9824 Ave. H.; 1-story cement garage.

S. Valentine, 655 Wrightwood Ave.; 1-story brick garage.

H. Vanderpool, 2706 W. Adams St.; 1-story frame garage.

G. Vanderschont, 8307 S. Morgan St.; 1-story concrete gargae.

Frank Van Meter, 618 E. 91st St; 1-story frame garage.

W. Villwoch, 1824 Nelson St.; 1-story frame garage.

Charles Walters, 638 E. 88th Place; 1-story frame garage.

J. G. Warns, 7204 Ridgeland Ave.; 1-story brick garage.

C. M. Weiss, 4631 Calumet Ave.; 1-story frame garage.

C. J. Westphal, 3133 N. Leavitt St.; 1-story brick garage.

H. B. White, 6106 University Ave.; 1-story frame garage.

John J. Zolp, 5514 S. Troy St.; 1-story frame garage.

A. Zwicki, 5619 N. Parkside Ave.; 1-story frame garage.

Iowa.

Washington—McKeone & Schrader; 1-story garage, 52x100, for Schulty Motor Car Co.; $35,000.

Maine.

Biddeford—John A. Johnson, 26 Maple St., Saco Me.; 1-story public garage and sales room, 112x58, for Cleaves & Sawyer, Saco, Me.; $20,000.

Maryland.

Baltimore:

A. Singer, 1810 N. Smallwood St; 1-story public garage, 50x100, for Doin Motor Co., 35 N. Bentalo St.; $10,000.

C. K. Wells, Jr., 2919 Guilford Ave.; 1-story brick garage for Charles Herrlinger, 1406 Harford Ave.; $4000; also 1-story garage comprising 120 stalls, 10x18 each, for John J. Copeland, 29th and Remington Ave.

Germantown—Lloyd Brothers, 17 Franklin St., Annapolis, Md., 1 and 2-story garage, 65x66x48x75x65x55, for Andrew Krause, 400 West St.

Massachusetts.

Boston—George Marsh, care Jack & Gilman, 34 School St.; 2-story public garage, 40x150.

Brooks-Skinner Co., Quincy State Garage, S. Boston, 355x60, 25 ft. high.

Cambridge:

S. C. Perry Co., 699 Main St.; 5-story garage and repair shop, 135x20, at 5th and Munroe Sts., for Standard Oil Co., 26 Broadway, New York; $250,000.

Walsh Bros., 150 Hampshire St.; 1-story garage, 50x50x52, for Cambridge Electric Co.; $27,000.

Gardner—Nelson E. Frissell, 114 Woodland Ave.; 1-story public garage, 60x90; $20,000.

New Bedford—N. J. Fournier, 575 S. Second St.; 1-story public garage, 85x100, for John Chicoine, 28 Larch St.; $15,000.

South Braintree—Dennis F. Crowley, 1443 Hancock St.; 1-story garage, 70x83, for Tide Water Sales Corp.; $20,000.

Springfield—Joseph Freedman and Julius Glazier; 1-story public garage, 160x20, at 1104-20 North St.; $12,000.

Worcester—L. Rocheford & Son, 44 Front St.; 1-story sales room and service station, 120x46, at 75 Portland St., for Joseph Kennedy, 3 Wentworth St.

Michigan.

Detroit—Harry Greenblatt, 100 Leicester Ct.; 1-story garage, 43x100, at 177 Erskine St., for Perry Ferguson; $10,000.

Grand Rapids—Ideal Foundry Co.; addition to plant to permit installation of 12 brass furnaces.

Lansing:

H. G. Christman Co.; 1-story garage and show room, 50x65, at 222-24 S. Capital Ave. for L. A. Whitlock, 422 W. Lapeer St.; $10,000.

Haynes & Chrismore; 1-story commercial garage for Louis Kramer Iron & Metal Co., 816 E. Kalamazoo St.; $4000.

Saginaw—A. H. Ryckman; 1-story garage, 39x109; $10,000.

Sheboygan—Sheboygan Metal Products Co.; remodel warehouse; will install machinery and equipment for making spark plug testers, etc.

Mississippi.

Jackson—W. T. Tate Automobile Co., Pearl and Parrish Sts.; auto building, 80x160; $100,000.

Missouri.

Blue Springs—McGuire Bros.; garage.

Joplin:

T. E. Hickman, Kansas City; show room and service station, 410 W. 4th St., for Hickman Motors Co.

Hudson-Hughes Motor Co.; remodel building, 614-20 Wall St.

Latham—F. L. Hill; garage.

Nebraska.

Kearney—Manhattan Oil Co.; warehouse and garage in rear of service station, Lincoln Way and Ave. A.

New Jersey.

Newark:

Otto Koenig, 151 Wilson Ave.; 1-story commercial garage, 100x100, at Wilson Ave. and Garrison St.; $30,000.

Negaro & Soriano, 343 7th Ave.; 1-story brick public garage, 50x75, at 19-23 Nicholson St.; $10,000.

J. J. O'Leary Co., 500 Bloomfield Ave., Passiac, N. J.; 1-story commercial garage, 33x95, for Tide Water Oil Co., 1 Broadway, New York; $15,000.

Trenton—W. J. Morris, 700 Rutherford Ave.; 1-story public garage, 59x60, at 806-10 Stuyvesant Ave.; $8000.

New York.

Brooklyn—Andeson & Sweeny, 826 Coney Island Parkway; 1-story garage and repair shop, 20x52, for Sarah Morrison, 99 Clarkson St.; $10,000.

Buffalo:

C. F. Duchscherer, 565 Military Road; 1-story public garage, 33x99, at 2067 Niagara St.; $4000.

Frank Haussel, Ellicott Square Bldg.; 1-story battery service station, 62x160, at Main and Michigan Ave., for William J. Emerson, 720 Main St.; $25,000.

Jamestown—Jamestown Construction Co., 60 River St.; 2-story sales room and service station, 40x100, at 4th and Washington Sts., for Overland-Jamestown Co., Inc., 107 W. 4th St.

New York:

Joseph Dollan Contracting Co., 25 W. 140th St.; 2-story garage; $45,000.

Exide Battery Depots, Inc., 101 West End Ave.; 2-story garage and service station at Spring and Clark Sts.; $117,000.

T. Langmer, 700 Trinity Ave.; 1-story garage, 150x95, for Crotons Realty Co., 170 Broadway; $45,000.

Williams Menley; 1-story garage, 25x99, at 52 W. 140th St., for Frank Hogan, 45 E. 135th St.; $10,000.

S. Squillduci, 90 Troy Ave. Brooklyn; 1-story garage, 75x100, at 317-21 E. 38th St., for Hub Realty Co., 229 E. 38 St.; $30,000.

Syracuse—Fred Grassman, 706 W. Onondaga Ave.; 1-story garage, 91x217x24, at 617 Genesee St., for W. D. Andrews, 215 E. Washington St.; $50,000.

Ohio.

Canton—E. H. Walker, Clark Bldg.; 2-story garage, 50x100, for Sanitary Milk Co., 801-5 Cherry St.; $30,000.

Cincinnati:

William Affelhoy, 1412 John St.; 1-story brick garage,

Fred Albrecht, 1755 Taft Road; 1-story frame garage.

W. Berdinbender, 3341 Bishop Place; 1-story brick garage.

W. J. Burringer, 2911 Werk Road; 1-story frame garage.

Alfred C. Cassatt, 1627 E. McMillan St.; 1-story brick garage.

Eugene Chenault, 3533 Irving St.; 1-story frame garage.

Mrs. Anna Daniel, 1329 Morton Ave.; 1-story frame garage.

F. H. Dersez, 187 Widgewood Ave.; 1-story frame garage.

H. R. Drackett, 3611 Zumstein Ave.; 1-story frame garage.

Harry C. Duecker, 4209 Spring Grove Ave.; 1-story frame garage.

Thomas Elliott, 351 Wood Ave.; 1-story frame garage.

Evanston Christian Church, 1753 Brewster Ave.; 1-story frame garage.

Terro Concrete Construction Co., Richmond and Harriet Sts.; 1-story garage and show room, 40x50, rear 1500 Blue Rock Ave., for American Can Co., 120 Broadway, New York; $11,000.

Geo. Gray, 8364 Curzon Ave.; 1-story frame garage.

Geo. Grimmelsman, 4234 29th St.; 1-story frame garage.

Fred Gross, 3807 Prentice St.; 1-story frame garage.

F. C. Gunkle, 3262 Jefferson Ave.; 1-story brick garage.

Charles Hanstetter, 4418 Whitsel Ave.; 1-story frame garage.

Edward C. Helfferich, 1538 Ledger St.; 1-story frame garage.

Henry Hoefle, 3423 Telford Ave.; 1-story frame garage.

John Hung, 1043 Freeman Ave.; 1-story frame garage.

H. J. Hutchins, 48 Albany Ave.; 1-story frame garage.

Thomas E. Hyde, 1942 Fairfax Ave.; 1-story frame garage.

Stanley Jacobs, 1966 Fairfax Ave.; 1-story frame garage.

James P. Klasner, 3418 Brotherston Road; 1-story frame garage.

S. E. Lewis, 2210 James Ave.; 1-story frame garage.

Joseph Limback, Sr.; 1-story frame garage.

Harry Lindsay, 1926 Mears Ave.; 1-story frame garage.

D. B. Lockhart, 3749 Hutton St.; 1-story frame garage.

Ida W. Metzger, 354 Thrall St.; 1-story brick garage.

A. C. Michel, 10 W. 6th St.; 1-story frame garage.

Charles Mueller, 623 June St.; 1-story frame garage.

Charles Muller, 2209 Victor St.; 1-story frame garage

H. B. Pfeffer, 3250 Woodburn Ave.; 1-story brick garage.

J. G. Pickett, 1525 Lincoln Ave.; 1-story frame garage.

A. Pohlman, 1509 California Ave.; 1-story frame garage.

C. G. Prescott, 749 Elberson Ave.; 1-story brick garage.

Theodore L. Rainey, 3046 Fairfield Ave.; 1-story brick garage.

M. F. Roebling, 4th and Main Sts.; 1-story brick garage.

Arthur S. Roth, 3440 Harlem Place, 1-story frame garage.

Geo. F. Rothe, 6229 Aspen Ave.; 1-story frame garage.

W. A. Schamzle, 2407 Kenton St.; 1-story frame garage.

May Schultz, 658 Lincoln Ave.; 1-story frame garage.

J. H. and Fannie Schwartz, 4694 Rapid Run Road; 1-story frame garage.

Geo. L. Smith, 1619 Otte Ave.; 1-story frame garage.

George Supper, 324 Lilenanthal St.; 1-story frame garage.

E. Cleveland—Thomas Herrobir, Easton Road and Shaker Blvd.; 1-story garage, at 15915 Euclid Ave.; Allendale Garage Co., 15915 Euclid Ave.

Lorain—John Kuczewski; 1-story brick garage, 50x116, at 1769-71 Broadway, for W. Hough, care Broadway Market House No. 1; $10,000.

Toledo—Hiram Miller, 408 Machine St.; 1-story brick garage, 50x50, rear 617-21 State St., for Samuel Davis, Elmand and Utica Sts.

West Park—Henry Davis, 3400 W. 122nd St., Cleveland, O.; 1-story garage and repair shop, 50x115, at Loraine and 122nd Sts.; $18,000.

Oklahoma.

Sapulpa—F. E. Shaffer; 1-story brick and concrete garage, for H. Bartlerr; $5000.

Pennsylvania.

Harrisburg—John J. Hare, 1136 Jonestown Road; 1-story garage, 24x64, for David E. Hocker, 1935 N. 6th St.

Philadelphia:

Gorner Butler; 1-story garage, 16x54; $1200.

M. J. Connelly; 1-story garage, 17.6x64, at 6219 Chelwynde Ave. $1500.

A. W. Corney; 1-story garage, 20x20, at 5752 Frankford Ave.; $700.

Philip D'Audaria; 1-story garage, 23x23, at 208 E. Sharpnack St.; $1000.

James Dykes; 1-story garage, 17x20, at 1437 E. Oxford St., for David Bitzer; $800.

William H. E. Eddelman & Sons; 1-story garage, 22x17, at 6937 Ridge Ave., for Green Valley Country Club; $3000.

P. J. Esmond; 1-story garage 14x24, at 3430 Amber St.; $1500.

William A. Faries; 2-story garage, 18x20, at 2449 artha St.; for A. Sanicola; $600.

J. D. Fisher; 1-story garage, 17x16, S. E. Cor. 57th & Arch Sts., for William F. Jones; $1000.

Frank & Kaiser; 2-story garage, 52x120, at 707-11 Tasker St.; $30,000.

Walter Freas; 1-story garage, 18x20, at 9532 Bustleton Ave.; $500.

M. J. Graham, 1-story garage, 16x36; $900.

Thomas J. Hamilton; 1-story garage, 16x24, at 614 N. 40th St.; $700.

Jacoby & Son Co.; 1-story garage, 20x8, at 3100 W. Penn St.; $350.

S. Jarniks, 1-story garage, 17x46, rear 2020 Arch St., for George W. Hynes; $1200.

D. H. Jenkins; 1-story garage 51x68, at 1826-30 E. Cambria St.; $6000.

Charles D. Land; 1-story garage, 16x57.6, with wing, 16x25.6 $2500.

Ralph Lomax; 1-story garage, 18x81, S. W. Cor. 17th and Luzerne Sts. $3500.

M. Moister Co; 1-story garage, 8x17, at 226 W. Mt. Pleasant Ave.; $210. Also 1-story metal garage, 16x20, for M. Delucca; $700.

D. Moutella; 1-story garage, 73.9x73, at 623-29 Christian St.; $9000.

H. Platzgret; 1-story garage, 14x56, at 5035 Tacony St.; $2500.

Ralph Robbins; 1-story garage, 16x80, at 4730 N. 12th St.; $3000.

P. Savar; 1-story garage, 86.6x128, S. E. Cor. American and Noble Sts.; $30,000.

A. Sokolowski; 1-story garage, 48x140, at 3161-65 Almond St.; $6000.

Steward & Stevens Iron Works; 1-story garage, 20x20, at 562 E Levering Ave., for W. A. Lindsay; $500.

Isadore Vatalo; 1-story garage in rear 1024 South St. for Frank Campo; $2100.

Fred Walker; 1-story garage, 21x24, at 629 Church Lane, for F. J. Stokes.

H. Z. Will; 1-story garage, 20x106, rear 5542-46 Ridge Ave.; $3000.

Pittsburgh—Rose Fisher, 821 Penn Ave.; 1-story garage, 68x31, rear 901 Penn Ave., for Williams Ib Co, 901 Penn Ave.

Texas.

El Campo—Magnolia Oil Co.; oil and gasoline filling station, Jackson St.

Miami—Cooperative Oil Co.; filling station and storage tank; man., C. P. Pursley.

Seymour—F. L. Knight; remodel garage.

Weatherford—R. E. Knox; show room and service repair shop, York Ave. and Bridge Sts., for Oscar Jones, dealer in Dodge Bros. cars.

Virginia.

Alexandria—H. Herfurth, Jr., St. Asoph and Madison Sts.; 1-story garage, 52x118.

West Virginia.

Clarksburg—I. F. Lauran; 2-story garage, 60x75, for F. G. Bland; $25,000.

Logan—J. W. Fisher; 1-story brick garage, 40x86.

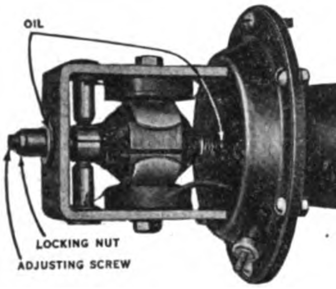
Wisconsin.

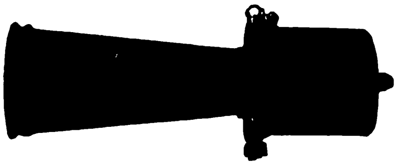
Milwaukee—Otto Klingbell, 680 Delaware Ave; 1-story garage, 45x102, for P. J. Fisher, 241 Rusk Ave.; $12,000.

Shawano—F. J. Schoenrock & Sons, New London, Wis.; 1-story garage and sales room, 70x150, for Shawano Motor Car Co.; $15,000.

ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The North East Horn, an electric motor driven component, designed with special reference to reliability of operation and effectiveness of warning power, is now offered to the retail trade, having been available for some time to car manufacturers exclusively. Claim is made that the horn is designed and constructed in keeping with the best manufacturing principles and will stand up under the most exacting tests. The motor, small and compact, is very powerful, and the construction of the armature prevents stopping on dead center. In other words, there is no danger that the horn will "go dead" at critical times.



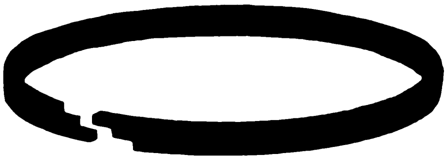


The real distinguishing feature of the horn, however, is said to be its tone. Commanding, yet courteous, it gets attention without giving offense, and in spite of its volume and carrying power is very pleasing.

It is understood that jobbers and dealers throughout the country have taken over the sale of the article with every evidence of a large future business.

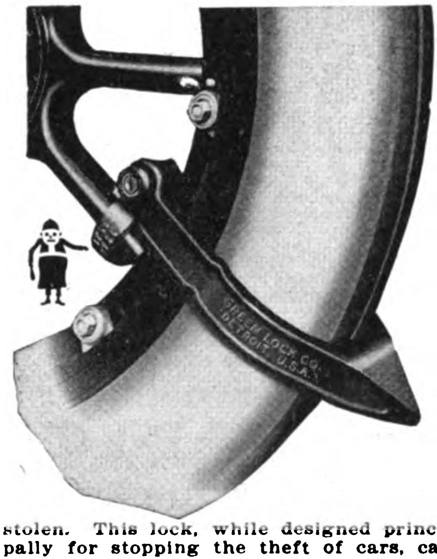
Manufactured by the North East Electric Co., Rochester, N. Y. Retail price, complete with bracket, push button and wire, $16.

The Cloud Piston Ring for Ford Cars, as shown in the accompanying illustration, has a double-step cut joint which causes it to fit perfectly and prevents any leakage. The outside of the ring has a specially developed surface, consisting of a series of exceedingly small ridges, the action of which on the smooth cylinder walls causes the ring to become seated more readily than some other types according to the manufacturers. Claim is made that the ring has many high class features not usually found on popular priced rings.



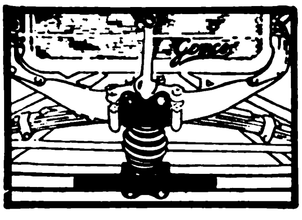
Manufactured by Cloud Accessories Corporation, 1408 South Wabash Avenue, Chicago, Ill. Price, 75 cents.

The Stop Thief Car Lock, as the cut shows, has an improved "spoke grip," which makes it impossible for the thief to change its position and drive off with the car. It is highly spoken of by those who have used it, and the "non-pickable lock," with which it is supplied, makes it practically thief proof. It is made of the best steel and is painted a bright green and can be applied in a moment without tools of any sort. The manufacturer has a standing offer of $100 reward for any car so equipped that is stolen. This lock, while designed principally for stopping the theft of cars, can also be used to hold the spare tire and, in addition, makes a very effective "sprag" or cleat for getting a stalled car out of mud or snow.


GREEN LOCK CO.
DETROIT U.S.A.

Manufactured by the Green Lock Co., Detroit, Mich. Priced from $7.50 to $12.50.

The Gemco Tri-Chek consists of a strong spiral spring which attaches to the front of a Ford car between the radiator and the center of the front axle. Claim is made that this device, formerly known as the Clark Equalizer Spring, effectually keeps the entire frame of the car from rocking. The Tri-Chek is said to be especially suited for heavy Ford trucks and delivery cars where the weight of a heavy load is often unequally distributed.



Manufactured by Gemco Manufacturing Co., Milwaukee, Wis. Retail price, $5.30.

The Broughton Steel Blow-Out Boots are used on tires to strengthen weak spots or blow-outs, and by the use of several at a time they are claimed to prevent the car from skidding.

Steel blow-out boots are designed only for clincher tires and fasten under the clincher edge of the rim. They are made entirely of metal, presenting a smooth surface to the road, while provision is made in the side members for adjusting the boot to different sized tires. Placed close together they form a protection for a blow-out, enabling the motorist to drive the car, even when a bad blow-out has occurred.

BROUGHTON'S
BLOWOUT
BOOTS
BIND
BAD
BREAKS
&
BRUISES

Manufactured by George H. Broughton Co., 256 Michigan Avenue, Buffalo, N. Y. Prices on request.

Flexible Carbon Scraper. This is a set of three tools for the garage or service station repairer, each composed of six oil-tempered, spring-steel wires firmly secured in a handle, and shaped and sharpened so as to easily reach all parts of the combustion chamber, the manufacturer states. It removes the carbon accumulation without dismantling the engine. The large number of scraping fingers not only adds to the flexibility of the tool, but also permits them to conform to the surface and to clean a path its entire width.

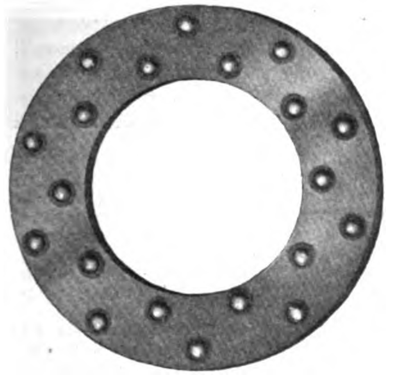
Manufactured by the Flexible Carbon Scraper Co., 1421 West Washington Street, Los Angeles, Cal. Prices on request.

The C-H Charging Rheostat, shown in the illustration, is said to stand up exceptionally well, even under severe conditions, and is easily installed and operated.

The name plate bears the directions for charging. The rheostat is connected in one of the lines from the 32-volt generating set and in series with the battery to be charged. A dial plate underneath the operating handle is marked to indicate the proper setting for charging certain numbers of cells. The handle is moved until the arrow is at the proper point on the dial plate, after which the battery circuit is closed and the charge begins. An ammeter to measure the charging current is not necessary, as the current will be of the proper value (approximately five amperes) when the handle is in the right position as indicated on the dial. The dial may be provided with marks for batteries consisting of three, six, nine and 12 cells.

Manufactured by the Cutter-Hammer Manufacturing Co., Milwaukee, Wis.

The Staggard One-Piece Ball Bearing Thrust Washer is designed to eliminate Ford and Chevrolet rear end troubles, stop noise and grinding, and generally make for more efficient power transmission. The most vital part of small car mechanism, the rear axle, is frequently run on thrust washers of plain babbitt. Babbitt when run with steel bearings will frequently cause gears to wear quickly, it is claimed, and the invention is said to correct this trouble in great measure. It is stated that the washer is made with 13/64 inch best Hoover steel balls set in 3/32 inch solid cast white brass or bronze plate, and is the exact size to replace the regular babbitt washer without change.



Manufactured by the Pittsburgh Casting and Heater Co., Pittsburgh, Pa. Price, bronze, $2; white brass, $1.50.

The Nacto Cleaning Products include such well known articles as Nacto spot remover and cleaner, Nacto carbon remover and Nacto tar remover. Each article is especially compounded for the purpose for which it is named and is stated to be excellent for that purpose.

The Perfect cleaner and spot remover is claimed to easily remove oil, grease, tar, paint, varnish, chewing gum, candle grease, etc., from cloth and fabrics without damage or injury to them.

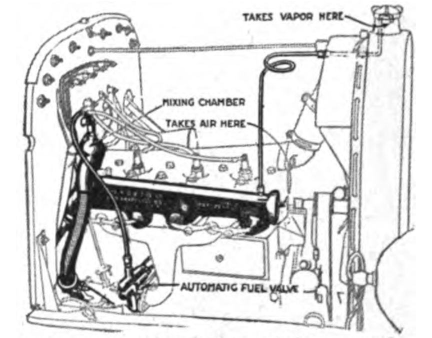
Nacto carbon remover is stated to remove all carbon from the combustion chambers of the internal combustion engine, and is guaranteed not to injure the metal, or to impair the lubricating oil, as it will not mix with or dilute engine oil.

GO CLEAN THRU THE WORLD WITH NACTO CLEANERS
TRADE MARK

Nacto tar remover is a positive solvent for tar and oil and is guaranteed to remove all tar or road oil from the finished surfaces of the automobile without injury to the paint or varnish.

Manufactured by the Nacto Cleaner Corporation, Madison Avenue, corner 136th Street, New York City. Prices and literature on request.

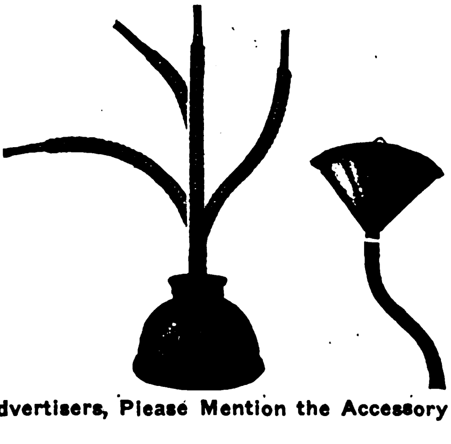
The Ideal Vaporator for Ford Cars and Trucks is offered to the public with a written guarantee that its use will save 50 per cent. of the fuel used. The claim is made that the use of the device will give more than 30 miles to the gallon, made possible by a unique principle which introduces preheated moisture and air with a small amount of gasoline into the combustion chamber in such a manner as to produce a highly combustible fuel.

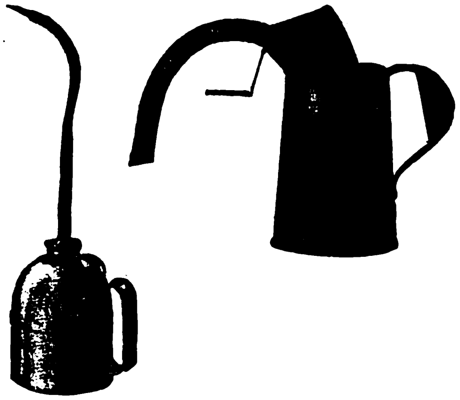


Exclusive agencies are being established and a great amount of missionary work is being carried on in various territories.

Manufactured by the H-O-B Manufacturing Co., Indianapolis, Ind. Price, $25.

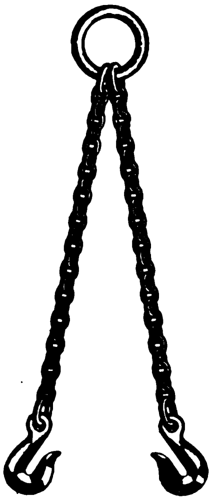
The Flex-Spout Oilers, Tunnels and Filling Cans are of special interest to the service station and garage trade, as they fill a long felt want. Flexible spouts are attached to the various devices offered by this manufacturer which makes them unusually convenient for applying oil to the crankcase, oiling hard-to-reach places about the car and the many small openings where oil is used exclusively. The various devices to which flexible spouts are attached are made of steel heavily coppered, while the spouts themselves are made of the same material and are guaranteed not to break, loosen or leak even if stepped on, and when flexed the manufacturer states will stay flexed until straightened again.





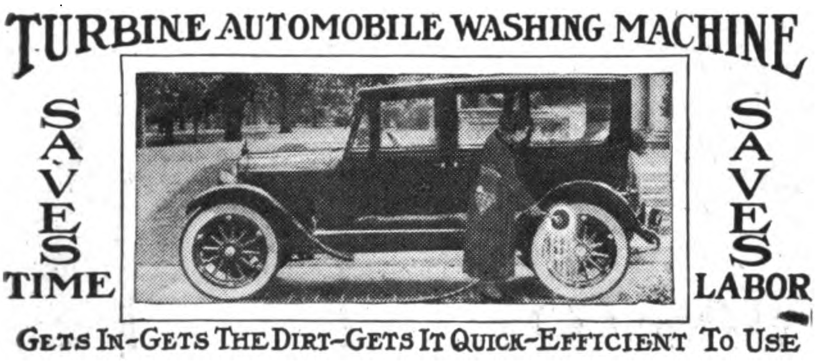
Manufactured by J. M. Dickson, 30 Church Street, New York. Prices and literature on request.

The Acco Automobile Sling Chain is designed for service in the garage and repair shop for the lifting of motors and transmissions from the chassis, raising the front or rear end when replacing springs or removing axles and many other odd jobs of heavy lifting where absolute safety is the first essential. These sling chains, used in connection with a block and tackle, or a portable crane, make a complete hoisting outfit that will save many hours of labor and prevent accidents, as they do not easily wear out or get cut as does the ordinary rope equipment. They may also be used for general utility work such as emergency towing or binding chains, etc.



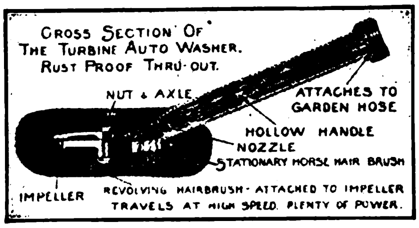
They are made in two sizes: One 5/16 inch tested for a safe working load of 1300 pounds; length of each branch, 9 2/3 feet over all; weight, 21 pounds; designed for the largest and heaviest motors. And the other ¼ inch, tested for a safe working load of 750 pounds, for medium sized motors, such as the Ford, Dodge, Maxwell, Reo, etc.; length of each branch is 5½ feet over all and the weight, 8¼ pounds. The material is proof tested welded coil chain with a ring on one end and a grab hook on each free end. The finish is self-colored. Each outfit is packed in a strong canvas bag.

Manufactured by the American Chain Co., Inc., Bridgeport, Conn. List price, ¼ inch size, $3 each; 5/16 inch size, $6.50 each.

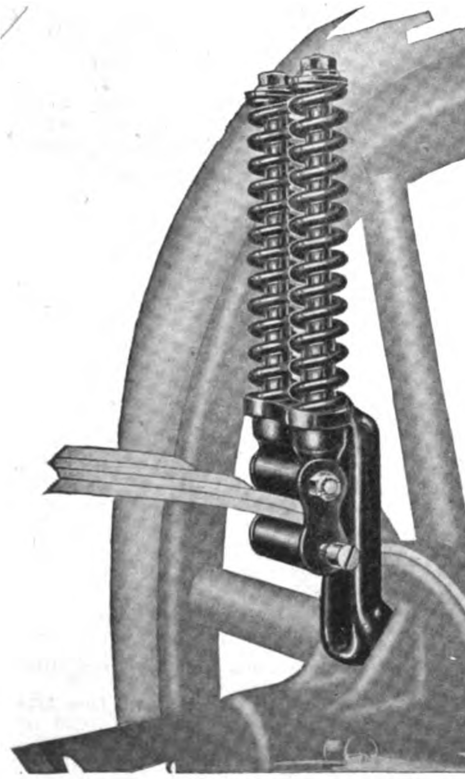

TURBINE AUTOMOBILE WASHING MACHINE
SAVES TIME
SAVES LABOR
GETS IN-GETS THE DIRT-GETS IT QUICK-EFFICIENT TO USE

The Turbine Auto Washer is said to make the washing of automobiles an easy matter. It combines a soft brush and a hose in one unit, and claim is made that a quick wash with the turbine and a rub with the chamois is all that is needed to insure a clean car. The manufacturer claims to be meeting an unusual demand for the washer with the advent of cold weather, and ambitious sales plans seem to point to a universal distribution throughout the country.

Manufactured by Turbine Auto Washer Co., Three Rivers, Mich. Retail price, $5.


CROSS SECTION OF THE TURBINE AUTO WASHER. RUST PROOF THRU-OUT.
NUT & AXLE
ATTACHES TO GARDEN HOSE
HOLLOW HANDLE
NOZZLE
STATIONARY HORSE HAIR BRUSH
IMPELLER
REVOLVING HAIRBRUSH-ATTACHED TO IMPELLER TRAVELS AT HIGH SPEED. PLENTY OF POWER.

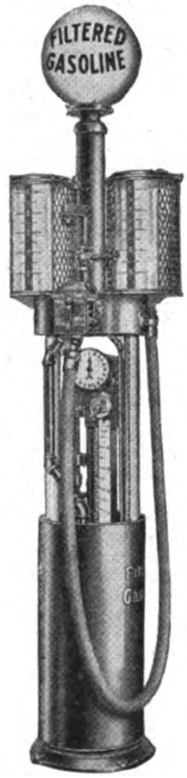
The Luxury Shock Absorbers for Ford Cars consists of two coiled springs parallel with each other, supported in a vertical position by means of a special perch which is fastened to the brake drum disc. Special shackles are supplied which join the end of the spring to the absorber, which allow the coiled springs to carry the weight of the car body and its load independent of the axle. It is stated that the Luxury shock absorber greatly improves the riding qualities of a Ford passenger car and prevents the nuts from loosening on the various parts of the chassis.



All parts of the Luxury shock absorber are made of the best of materials obtainable, and it can be easily fitted on to the car by the motorist in a few minutes time without drilling additional holes.

Manufactured by the Specialty Device Co., Cincinnati, O. Prices and literature on request.

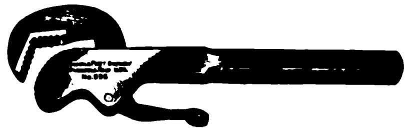
The Wayne Super-Visible Gasoline Pump, which has recently been placed on the market, is said to possess many distinctly new features of design and operation. The gasoline is contained in two glass receptacles correctly marked, and the customer and dealer are assured of exact measure by the operation of the Wayne Five-Way valve, which effectively prevents the return of any gasoline to the underground tank. The pump employs no motor, thus eliminating all danger of fire, and general economy of operation is gained by an exclusive device which automatically fills one container as the other empties. Greater efficiency is obtained by an exclusive filtering device which delivers the fuel free from air and sediment, and the danger of loss of gasoline by spilling is minimized by the shut-off valve, which may be operated instantly.



The model shown is 28¾ inches top diameter, 20½ inches base diameter and nine feet seven inches in height. It is constructed of brass, sheet steel, heavy cast iron and black iron, and the valves are brass, carefully machined and ground to fit. The pump delivers five gallons with 15 strokes, and has a capacity of 20 gallons a minute.

Manufactured by the Wayne Oil Tank Co., Fort Wayne, Ind. Printed matter containing more specific details may be had by addressing the manufacturer.

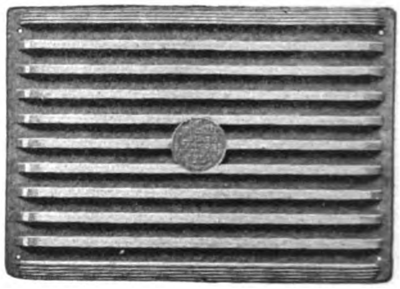
The Chauffeurs' Universal Wrench is self-adjusting for any size square or hexagon nut up to ⅝ inches and will hold round pipe up to ½ inch. The jaws are opened by pressing the trigger, and automatically closed by means of a spring. It will firmly grip any size piece within its capacity, according to claim made by the manufacturer, and the entire tool is strongly made from steel with hardened jaws. The handle is especially shaped to give a good grip. The length over all is seven inches and the net weight is eight ounces.



Manufactured by Goodell-Pratt Co., Greenfield, Mass. Price, $2.50.

The Stanwood Safety Step Plates are manufactured exclusively for the automobile trade and embody several features that recommend them to discriminating buyers. The base of the plate is metal, while the corrugated rubber surface is vulcanized to the metal base, making a step plate which the manufacturer claims cannot buckle or warp.

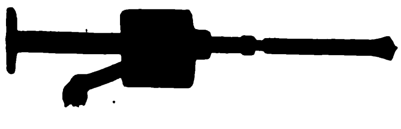
Rubber, exposed to the weather, warps and stretches, and especially so when subjected to such treatment that a step plate ordinarily receives. Tests have proved that rubber used in the form of matting for a step plate buckles between the fasteners that hold it to the running board, soon rendering it useless.



The metal rubber cover is an exclusive feature of Stanwood Safety Step plates and is fully protected by patents.

Manufactured by the Stanwood Equipment Co., 308 North Michigan boulevard, Chicago, Ill. Prices and literature on request.

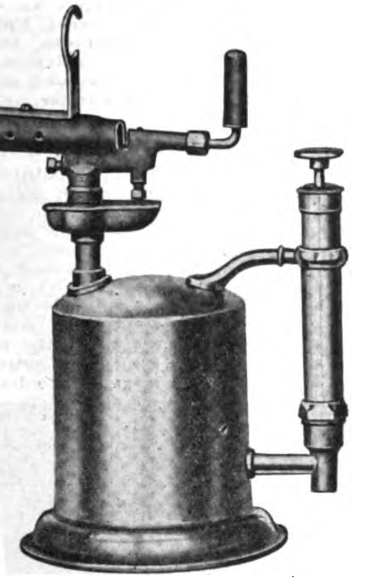
The Autoquip Valve Grinder is a device by which a simple gear and rack mechanical movement performs a ⅝ reciprocating motion, operated by the continuous turning of a crank, and claim is made that anyone can successfully use it. It has no parts to get out of order, is substantially made and is guaranteed to last a life time. The manufacturer announces that many of these grinders have been sold to individual owners as well as to garage men.



Manufactured by Autoquip Manufacturing Co., Inc., Rochester, N. Y. Price, $5.

Vesuvius Blow Torches are made in pint and quart sizes and consist of two lines. The one has a heavy seamless brass tank, and the other a seamless steel tank, which is tinned after fabrication, protecting the steel in a very effective way from coming in contact with the fuel.

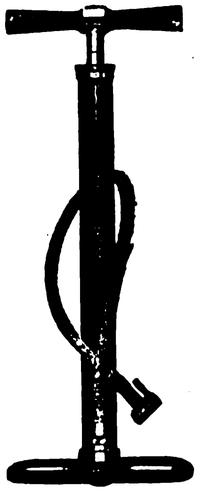
A stamped drip cup of ample size and a powerful pump with never failing check valve are features that are claimed to have created the great popularity of the Vesuvius blow torches. The burner head is all brass except the hook, which is made of stamped steel and can be adjusted to take different sizes of soldering or branding irons.



The torch is filled through the bottom, which is shaped like a funnel, making filling easy. Each torch is tested under a far higher pressure than it would be put to under ordinary use, so that any leaks should develop before it reaches the user.

Manufactured by the American Stove Co., St. Louis, Mo. Sold to the trade through the various divisions. Prices and literature on request.

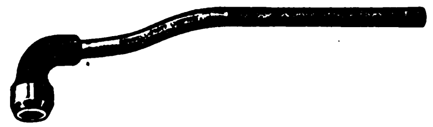
The Anthony Tire Pump has been placed on the market to meet the demand for a first class, single-acting, single-cylinder pump. With this type of pump it is claimed that the tire can be filled with less effort than with other pumps and that the plunger is so arranged that it cannot strike the bottom of the pump cylinder, while the thrust is taken care of by a heavy brass cap. It is stated that the valve cannot stick or leak, thus all of the compressed air is permanently imprisoned, none returning with the upstroke of the piston to waste time and energy in recompression.



The materials used are of a high grade, such as a hard wood handle, cold rolled steel rod, solid brass fittings, best selected leather, seamless steel barrel, malleable iron base, five-ply rubber tubing and a lever-locking, slip-on tire connection.

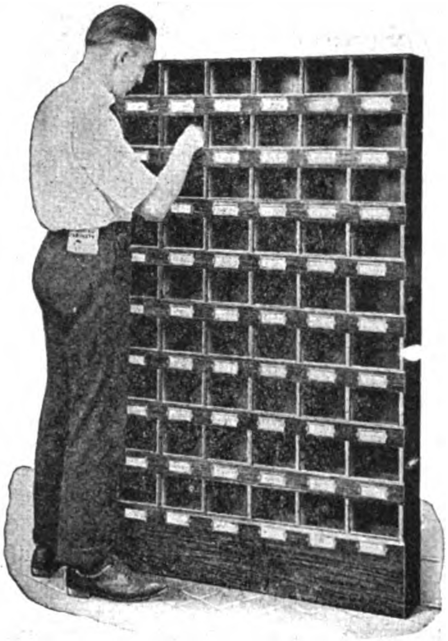
Manufactured by the Anthony Co., Long Island City, N. Y. Prices and literature on request.

Offset Socket Wrench—This wrench can be used in many places where an ordinary wrench will not reach. It is said to be especially useful as equipment in a Ford car. The handle, of polished steel, is knurled to give a good grip. The socket is very strong and is broached to exact ⅝-inch hexagon size. The length over all is 10½ inches and the weight is 11 ounces.



Manufactured by Goodell-Pratt Co., Greenfield, Mass. Price, 90 cents.

A One-Half Size Stock and Accessory Bin has just been put on the market which has many labor saving features. It is well made of oak and steel, and can be used sectionally, new units being supplied on demand. The compartments are six inches wide, six inches high and eight inches deep, with a specially designed hand entrance, and should prove to be a convenience to small garages and accessory dealers.

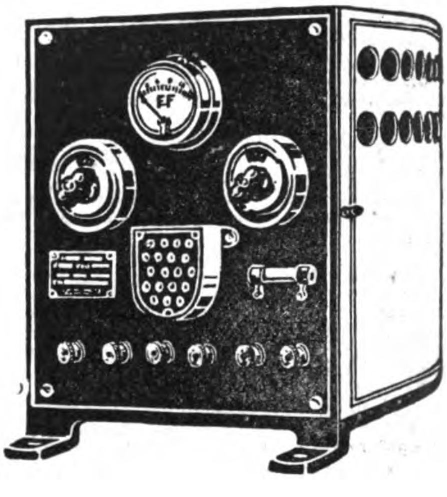


Manufactured by Hobart Brothers Co., Troy, N. Y.

The Balcrank Stabilizer for Small Cars, recently marketed, has met with instant approval according to the manufacturer, and it is expected that the current year will see a great number of the devices in use. Mechanically, the stabilizer is said to be almost ideal, being developed along principles long considered to be correct by engineers, and owners in the Ford, Chevrolet and Overland class report that it is giving complete satisfaction. It has an oil-tempered master spring, adjustable to any tension, which is attached by four set screws to the forward axle of the car where it exerts an even, constant pressure on the front wheels, tending to keep them in a straight line. In commenting on its general efficiency the claim is made that one owner drove his car several miles after the radius rod had broken, the stabilizer being sufficient to hold the wheels true despite the absence of the missing part.

Manufactured by the Cincinnati Ball Crank Co., Cincinnati, O. Retail price, $6.75.

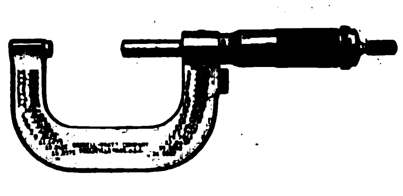
The F. F. Rotary Rectifier operates upon the principle of the older forms of heavy charging apparatus with what is claimed to be a combination of all good features, with the elimination of inherent defects. The alternating current is passed through a revolving switch mounted on ball bearings, which serves to reverse the direction of the negative alternations so that they flow in the same direction as the positive alternations, thus producing a full wave, pulsating, charging current, made possible by reason of the fact that all current is delivered to the battery.



It is claimed that the voltage and current regulator are adjustable to any number of batteries and that the current may be set at any desired value and raised or lowered gradually, regardless of the number of batteries being charged.

Manufactured by the France Manufacturing Co, Berea Road and West 104th Street, Cleveland, O.

Two-Inch Micrometer Caliper with Ratchet Stop—This micrometer is graduated to read by 1/1000 inch from one to two inches, either diameters or lengths. Decimal equivalents are etched on the frame, which is drop forged from a solid steel bar. An eccentric locking device is provided, which holds the screw in any desired position. There is also a ratchet mechanism on the thimble in a position where it can be easily reached by the fingers of the operator. The end of the thimble is provided with a speeder by means of which the screw can be rapidly run back and forth.



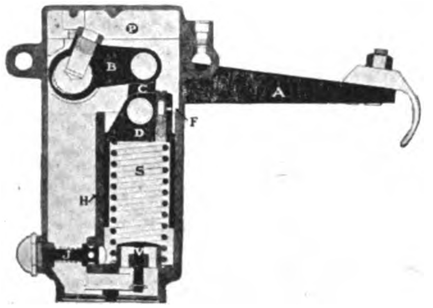
Manufactured by Goodell-Pratt Co., Greenfield, Mass. Price, $12; leather case, $1.80.

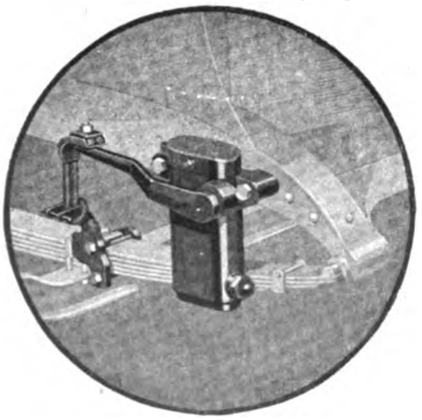
Motorkool Oil, designed to eliminate carbon, and for which strong claims are made as to its efficiency, is guaranteed by the manufacturer to be free from acid, ether, naptholine, camphor or other injurious substances. Claim is made that it effectively lubricates that part of the cylinder walls above the piston rings, thus doing away to a great extent with friction and consequent cylinder scoring. It is economical, being introduced into the gasoline at the proportion of one ounce to each five gallons of oil, each can containing 32 fluid ounces, enough to treat 160 gallons.

MOTORKOOL OIL
PRESERVES, PROTECTS AND LUBRICATES THE CYLINDER
MOTORKOOL OIL COMPANY

Manufactured by the Motorkool Oil Co., 20 East Jackson Boulevard, Chicago, Ill. Price, $2.50 a can.

Lovejoy Shock Absorbers are easily attached to any make of car and, it is stated, will greatly improve the riding qualities. It consists of a container which holds the liquid, usually oil, that will stand freezing temperatures, and a slidable piston, skirted at the sides and sliding inside of a cylinder. The piston is actuated by a heavy coiled spring which is enclosed by the piston skirts. A mushroom type valve is fitted at the bottom which admits oil to the piston cylinder, while a bypass for the oil under compression is provided at the top of piston at one side. A short arm connects the piston to a cross shaft which extends out at one side of the container and to this cross arm is fitted the longer arm, which in turn is connected by means of a strap to the clip fastened to the spring of the car. The container is bolted to the side frame of the car and is held rigid.



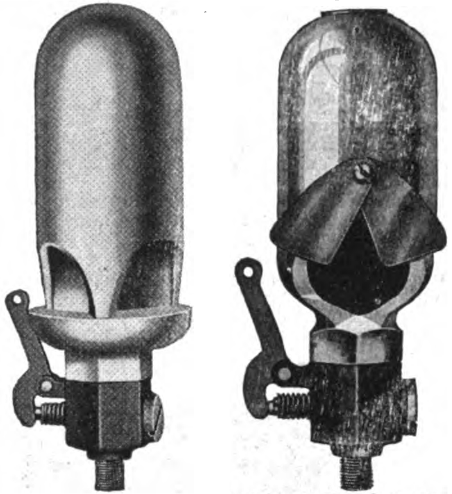


The action of the absorber is stated to be apparently automatic and the manufacturer claims that riding comfort is assured at all times, regardless of the speed of the car or the condition of the road and that adjustments are never required.

The maker guarantees satisfaction to the user or the purchase price will be refunded.

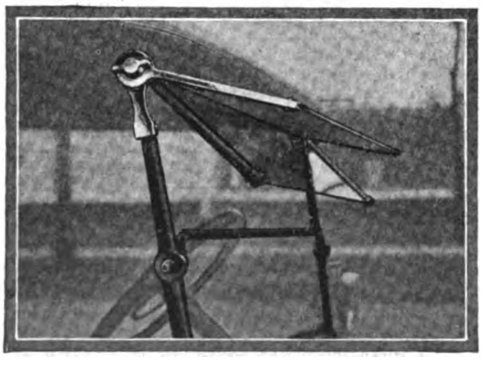
Manufactured by the Packard Engineering Co., 1824 Euclid Avenue, Cleveland, O. Price, four absorbers to the set, $115, with an additional charge for attaching. Jobber and dealer propositions are solicited.

B. & B. Compression Whistles are manufactured for use on either passenger cars or trucks and are operated from the compression in one of the engine cylinders. Usually compression whistles are attached to L type engines by simply unscrewing one of the relief cocks and screwing the whistle in its place. A cord is run to the steering wheel by which the driver is able to blow the whistle. B. & B. whistles are made in two types, one a tri-tone and the second a single tone. These whistles are constructed of the best of material throughout and are fitted with check valves which prevent the compression gases from weakening the compression of the cylinder to which the whistle is attached.



Manufactured by the B. & B. Manufacturing Co., 2823-25 Arsenal Street, St. Louis, Mo. Prices on request.

The Detroit Auto Visor Shield is stated to be constructed of the finest imitation leather obtainable and is provided with a flap that fits snugly between the top and the windshield. The fittings are of steel finished in black enamel. The shield is light in weight, yet is of substantial construction and cannot rattle or work loose, the manufacturer states.



The Auto Visor Shield, it is claimed, can be attached to the car in about three minutes time without the use of special tools, bolts or nuts. On Buick, Hudson, Cadillac and all cars having windshield adjustment at top of uprights, all that is necessary to be done is simply to loosen the wing nuts, slip on the visor and replace the nuts. On the Nash and a few other cars with the shield adjustment set low on the uprights the visor is stepped up by means of a special extension which will be furnished when specified. For Dodge, Ford and other closed cars a special design is furnished complete with fittings.

The Detroit Auto Visor is adjustable from the driver's seat; a partial turn of the wing nuts loosens the visor enough to allow it to be swung up or down to the desired position.

Manufactured by the Detroit Auto Visor Co., 302-306 Woodbridge Street, East Detroit, Mich. Price, complete, for any model or size, $12. When ordering, state make, model and year of car and give exact width of windshield outside at upper adjustment screw.

Buckeye Cleanser is a soap that is claimed to clean and polish painted surfaces, removing all traces of grease as well as the dust and dirt, leaving the surface in a highly finished condition, similar to the finish when new.

It is stated that clear water simply removes the dust and dirt, but will not remove grease spots, leaving the finish dull and lusterless. Ordinary soap will remove the grease but leaves the surface with a dull, smoky, dingy appearance.

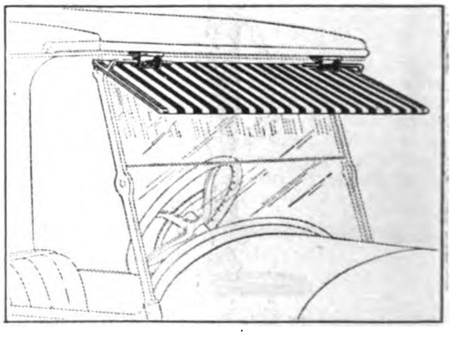
Buckeye Cleanser is stated to have the quality of acting as a solvent for grease and grime, carrying it off in a rich, creamy suds and, at the same time, imparting a glow to the finish, restoring the original luster and keeping the car looking like new.

THE DAVIES-YOUNG SOAP CO.
"BUCKEYE" CLEANSER
DAYTON OHIO
DAVIES-YOUNG SOAP CO.
BUCKEYE CLEANSER
DAYTON, OHIO
THE DAVIES-YOUNG SOAP CO.
BUCKEYE CLEANSER
DAYTON, OHIO

Buckeye Cleanser is claimed to be a pure vegetable oil soap, which lathers freely in cold, hard water, rinses readily and removes dirt, grease and grime quickly. Checking of the painted surface, it is stated, is obviated when this soap is used and the life of the surface is prolonged.

Manufactured by the Davies-Young Soap Co., Dayton, O. Sold only through the jobbing trade.

The Auto Mayer Visor has been designed for passenger cars and is attached to the top of the windshield or the under side of the bow, acting as a protection from the sun, rain or snow. It is made in only one size and is adjustable to fit any car. Two small set screws make it quickly set and held at any angle.

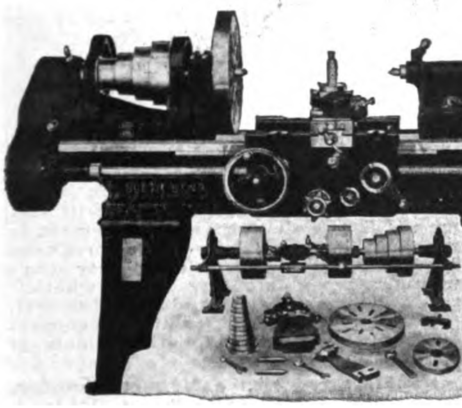


The visor consists of a steel frame, reinforced and braced at the center, making it rigid so that it will not sag or buckle, while the covers are of heavy, double-thickness awning duck.

Manufactured by the Essenkay Products Co., Essenkay building, Superior at Franklin Street, Chicago, Ill. Price, $5.

No. 40 16-inch South Bend Screw Cutting Lathe is stated to be especially designed for machine shops and service stations where a heavy, reliable lathe is required that is capable of taking powerful cuts with high-speed steel, at the same time being able to handle the general run of all-around work.

The South Bend Screw Cutting Lathe No. 40 is completely equipped, as shown in cut, with large and small face plates, compound rest, two steel centers, center rest, follower rest, change gears, adjustable stop for screw cutting, a set of feed gears, gear guards, semi-machined chuck back, necessary wrenches and double friction countershaft. Other special features of the lathe are a very rigid bed, cross ribbed by heavy box braces cast in at short intervals; head stock equipped with improved reverse; spindle stock equipped with four steps for two-inch belt; tail stock is offset to allow compound rest to swivel parallel to the bed and is provided with a set-over for turning taper; tail stock center is self-ejecting. The carriage is strong, with a wide, deep bridge and is fitted with T slots for clamping work for milling and boring.



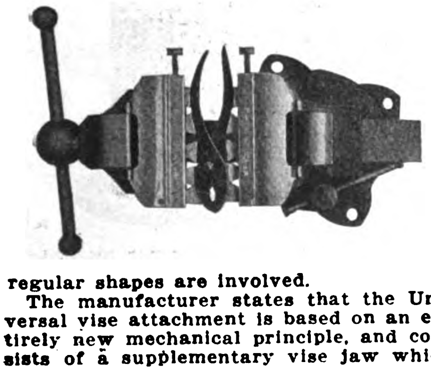
The lathe is indexed to cut standard threads from four to 40, right or left, including 11½-inch pipe thread. The compound rest is graduated in degrees, while the cross feed screw has a graduated micrometer collar reading in one thousandths of an inch.

Extras may be purchased for the No. 40 lathe, which enable it to perform milling and key-way cutting operations, etc.

Manufactured by the South Bend Lathe Works, 425 East Madison Street, South Bend, Ind. Prices and catalogue on request.

The Universal Vise Attachment appeals to repairers in service stations and repair shops from the fact that irregularly shaped articles can be clamped between the jaws of any vise equipped with it, the manufacturer stating that the articles will be held as firmly as if a special type of vise were used.

The device is constructed of cold rolled, tempered tool steel, electrically welded, and, it is claimed, will reduce the working time of any vise operation where irregular shapes are involved.



The manufacturer states that the Universal vise attachment is based on an entirely new mechanical principle, and consists of a supplementary vise jaw which adapts itself to any shape or form of material whether oblong, cylindrical, hexagonal, conical or polygonal.

By its use an ordinary square jawed vise is quickly changed into a tool of a thousand purposes, through the independent action of each tooth or gripper of the Universal jaw in clasping the form or shape upon which work is to be done.

This device, it is stated, has been already tried out and is in successful use in many of the automobile passenger car factories, and is indorsed by many of the large automotive manufacturing plants throughout the country.

Manufactured by the Universal Equaliser Co., Cincinnati, O. Price, four-inch set, $8; five-inch set, $9. Sent on trial if desired.

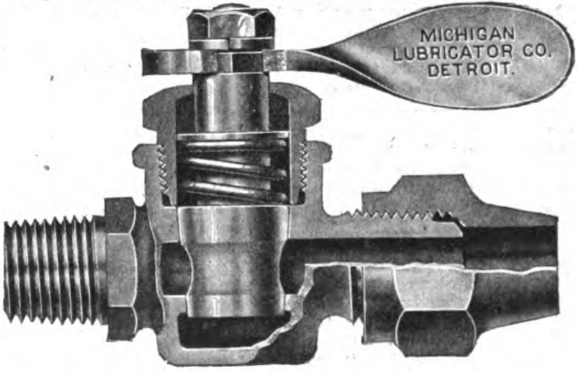
Hercules Spark Plugs are manufactured for passenger car, truck and tractor engines and in a variety of styles for each purpose, while a special long shank, ½-inch Ford plug is also made.

Hercules spark plugs have been on the market for many years and need no introduction, as they are well known to the trade, being sold only through jobbers and dealers. The necessity of a gasket between the shoulder of the porcelain and the lock nut is eliminated and a gland fits over the porcelain beneath the upper lock nut, its lower flange riding on top of the tapered shoulder of the plug. Chances of loosening the lock nut are therefore eliminated, it is stated, and the plug will continue to hold compression for a much longer period.

Two stationary points are provided at opposite sides of the shell, while the center electrode passes through the porcelain insulator fitting equidistant between the two fixed electrodes. The electrodes and center stem are turned from a special high-resistance, non-fusable alloy, of free conductivity, and it is stated that they will not pit or distort under heat and are non-corrosive.

Manufactured by the Eclipse Manufacturing Co., Indianapolis, Ind. Prices on request.

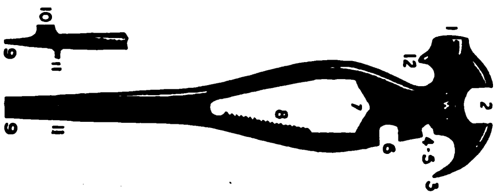
The Michigan Kant-Leak Gasoline Cocks, it is stated, are absolutely proof against leaks by reason of their improved design. There is no opening at the bottom of the cock, and, consequently, there can be no leak at this point, while the stem is packed, preventing any leaks around the top. The packing is woven asbestos, graphited and having a metal insert. The tapered plug is turned on precision machines to a glass finish, insuring a perfect seat. The plug is inserted through the top of the cock while a coiled spring is placed over the stem and plug and on top of this is placed the packing and the packing nut. Thus the spring presses down on the plug, holding it to its seat, and at the same time presses against the packing, compressing it against the stem.



Kant-Leak gasoline cocks are very neat and compact in design and are strongly built. The large stamped handle affords a very convenient grasp and is stated not to be affected by vibration.

Manufactured by the Michigan Lubricator Co., Detroit, Mich. Prices and literature on request.

The Williams "Vulcan" Auto Tool is a combination tool which gives convenience, service and durability. It is drop forged from carefully selected steel, milled and ground to correct sizes of opening, tempered, polished and blued.



The tool is packed in a neat canvas bag and soon becomes an unusually adaptable hip pocket companion for the motorist. According to the numbers given on the cut, No. 1 is a hammer, 2 tire lug wrench, 3 cotter pin puller, 4 gas tank wrench, 5 wire insulation scraper, 6 air tank wrench, 7 spark plug wrench, 8 alligator wrench, 9, 10 and 11 cotter pin spreader and three screw drivers, 12 bottle opener.

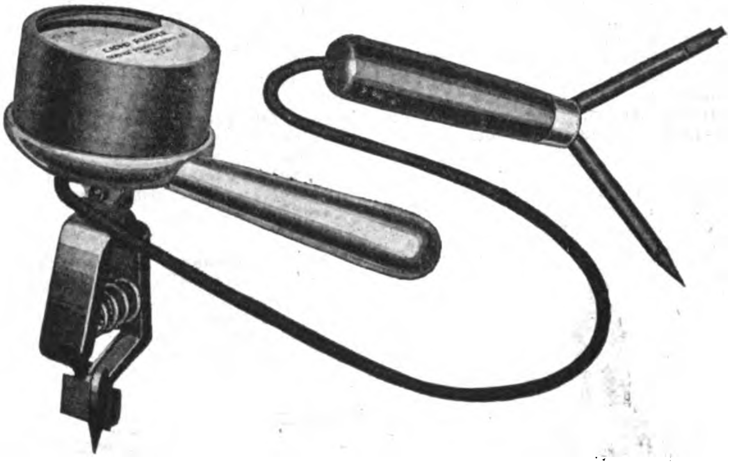
Manufactured by the J. H. Williams & Co., Brooklyn, N. Y. Prices, black, hammer surfaces polished, 60 cents each; blued or nickel plated, each, $1.

The North Star Glare Shield is fitted across the headlight glass from top to bottom and is claimed to dim the rays from the parobolic reflector from which the glare originates, and allows the driving rays to pass to the sides of the shield on to the road ahead, while the rays passing through the prismatic glass are deflected to the sides of the road and amplify the side light.

It is stated that the North Star glare deflector is approved in the following states having headlight laws: California, Pennsylvania, New York and Wisconsin, and bears the indorsement of the Electrical Testing Laboratories of New York.

Manufactured by the S. & M. Manufacturing Co., 2332 Michigan Avenue, Chicago, Ill. Prices and literature on request.

The Hyrate Cadmo Reader is a high-grade voltmeter with a combination handle and base, designed for many uses in connection with work on storage batteries, among the principal of which may be mentioned the following: Voltage test of cells on charge or discharge; cadmium test to accurately determine the state of charge of either or both groups of positive and negative plates; polarity test to insure the proper assembly and direction of the charging current.



It is stated that a cadmium test of a storage battery is the only method of determining which group of plates fails to give its capacity output or to become charged, and that it will locate defects, such as lack of porosity in the active material, which is not always in evidence when inspecting the plates.

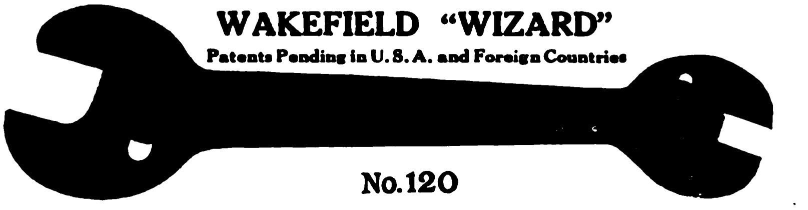
It is claimed that the Hyrate Cadmo Reader is convenient to handle; the meter has two reading scales, one for cadmium and one for voltage, and that it is also particularly marked for its superior adaptability. A feature of its construction is that the stationary spike, the supporting clip, as well as the flexible conductors, cadmium and conductor contact points, are integral with the instrument itself, but can be easily renewed when necessary.

No change in the "set up" or readjustment of the fixed parts is necessary when changing from cadmium to voltage tests or vice versa. When making the cadmium test the supporting clip is attached to the positive post and the cadmium stick is placed in the electrolyte. When testing for voltage, the point of the stationary spike is placed upon the positive post and the flexible lead point upon the negative post.

One striking advantage stated to be afforded by the Hyrate Cadmo Reader is its means of self-support while tests are being made, leaving the right hand free for recording readings or other use. The apparatus is guaranteed for accuracy, adaptability and high-grade construction.

Manufactured by the Service Station Supply Co., 30-32 East Larned Street, Detroit, Mich. Prices and literature sent on request.

The Wakefield Wizard Wrench, with adjustable open end, is stated to take the place of five ordinary double-end wrenches. It requires no knurl adjustment and there is no chance for back lash. The adjustment can be made almost instantaneously, to get any one of 10 different sizes, by simply lifting the jaw, sliding to the desired size and dropping into mesh. It is stated to be rugged, perfectly balanced and practical for use in any of its register sizes. Every opening is absolutely positive. It is hardened, polished and mottle finished. Its length is 7¾ inches, thickness ⅜ of an inch, width 2⅛ inches and its angle is 22½ degrees.

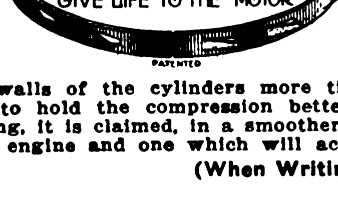

WAKEFIELD "WIZARD"
Patents Pending in U. S. A. and Foreign Countries
No.120

The range of adjustment afforded by the Wakefield Wizard Adjustable Open-End Wrench is as follows: ¼, 5/16, ⅜, 7/16, ½, 9/16, 19/32, 11/16, 25/32 and ⅞ of an inch; 10 United States standard sizes, five S. A. E. standard sizes, six United States standard cap screw sizes and four set screw sizes.

Wizard wrenches are packed singly in a cardboard carton, or lots of 144, 250, 288 or 500 in wooden boxes. Every wrench is thoroughly greased before packing to prevent rust.

Manufactured by Clarence E. Wakefield, Worcester, Mass. List price, $1.75 each.

Nu-Life Piston Ring Expanders are designed for use in either old or new gasoline engines, and are easily placed behind the piston rings, causing them to fit the walls of the cylinders more tightly and to hold the compression better resulting, it is claimed, in a smoother running engine and one which will accelerate more rapidly when the throttle is opened, thus giving greater power.

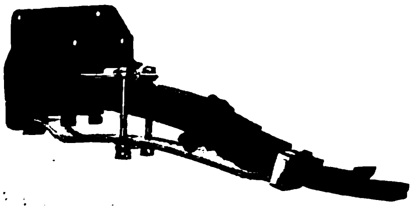


The expanders are provided with resilient shoulders which push the piston rings outward into the correct position, making perfect contact with the walls of the cylinders. It is stated that by using Nu-Life Piston Ring Expanders oil and gasoline are saved and carbon deposits are reduced, while piston slaps do not have a chance to develop.

Full directions for installing accompany each set and any motorist experienced in mechanical work will have no difficulty in placing the expanders in position.

Manufactured by the American Auto Products Co., 1319 L Street, Northwest, Washington, D. C. Prices on request.

The Stewart Shock Absorber for Chevrolet 490 Cars is stated to be the only device of the kind on the market that is manufactured specially for this car and employs features found only in a few other absorbers. By removing one or two short leaves from each spring the spring is made more resilient and it does not transmit as severe a shock as the stiff spring would, the manufacturers claim. The lower shock preventer plate acts as a counter-acting spring, which checks the rebound and over action of the springs. When the wheels hit a bump these springs give more freely, having a tendency to flatten. The rebound action, after the wheels leave the ground, is counteracted by the lower shock preventer leaf, which is pulled up at a tension as shown. These shock preventers, it is claimed, will last for the life of the car and replacement is guaranteed on all reasonable breakage due to inferior materials or poor tempering. When ordering state whether the attachment is desired for the 1917, 1918, 1919 or 1920 car, as the preventers differ in construction for the models of different years.



Manufactured by the Stewart Manufacturing Co., 1536 Franklin Street, Oakland, Cal. Price, per set of four, front and rear, $22.50.

No. 32 Gasoline Torch is one quart in size and is especially adapted for the service station and repair shop. It gives an efficient flame whether used in doors or out, in hard wind or extreme cold. A strong blast heat is generated by a powerful burner, resulting in an effective blue flame, which will, the manufacturer states, heat a copper soldering iron to soldering heat in a very few minutes time.

The torch uses a very small amount of fuel and is stated to be unusually well built throughout of the best of materials obtainable. A hook and support are attached to the top of the burner by which the repairer is able to heat soldering coppers, while a powerful air pump is fitted at the side, which compresses air, causing a very intense flame.

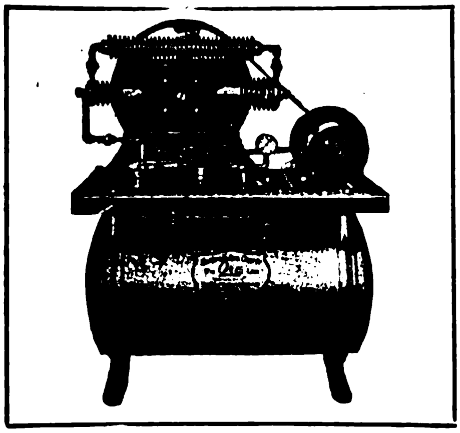
C & L
No. 32
DETROIT

Manufactured by Clayton & Lambert Manufacturing Co., 1370-80 Beaubien Street, Detroit, Mich. Prices and literature on request.

Complete and Modern Line of Air Compressors

A COMPLETE and modern line of air compressors to supply the now well known "filtered air" to motorists has just been designed and brought out by the Auto Compressor Co. of Wilmington, O.

For more than 10 years this company has made and marketed the Model O compressor, which is known to the trade from Maine to California. The new line presents a complete list of sizes, capacities and pressures in single and two-stage types to take care of every need of the trade.

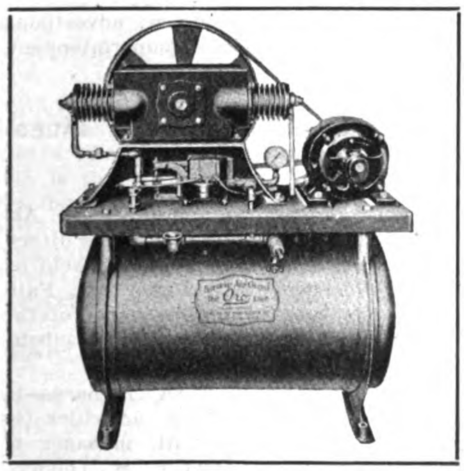


Model A-25.

The new models range all the way from a small, portable, direct connected outfit for the private garage to a big. two-stage compressor supplying air at 300 pounds pressure for a large garage housing pneumatic tired trucks. Most of the models are offered only as complete outfits with motor, compressor. piping. tanks and gauges, although Model O may be had, as heretofore, as a separate compressor.

All tanks are designed to carry a special filtering fluid, which removes oil. dust and dirt from the air and delivers it to the tires in a pure state so as not to cause any deterioration in the rubber of the inner tubes.

These compressors are made in the single-stage type where practical machines are desired in either large or small capacity that will be low in first cost and have all the dependability of the best material and good workmanship. The two-stage outfits are designed to compress air with the utmost economy in consumption of power and with every possible convenience for 24-hour operation without attendance.



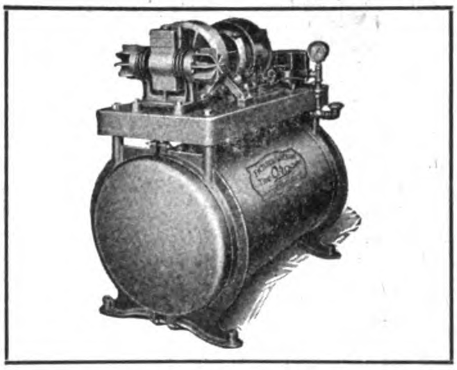
Model A-27.

The Model O still leads the line. It is a single-cylinder, single-acting, single-stage compressor with one three-inch bore, four-inch stroke cylinder, which compresses 6½ feet of air to 300 pounds pressure at 400 revolutions per minute. It requires a 1½ horsepower motor.

Model A 25 is another two-stage machine complete with tank, gauge, motor and fittings, and is intended to supply air at from 120 to 150 pounds pressure, giving 24-hour service without any attention. The cylinders are 2½ inches bore with 2½ inches stroke on the low pressure cylinder. The same type and size of compressor is furnished to supply air for large truck tires up to 300 pounds.

Model B 35 is similar to A 25 in every respect except as to size, being intended for the modern large garage housing hundreds of cars and requiring a large volume of air.

Model A 27 is a compressor of the same size for the same purposes as A 25. giving 24-hour automatic service for moderate requirements, but it is a single-stage instead of double-stage type. It has two cylinders of similar size, each working up to full pressure. B-37 is a single stage. outfit, similar in other respects to B-35.



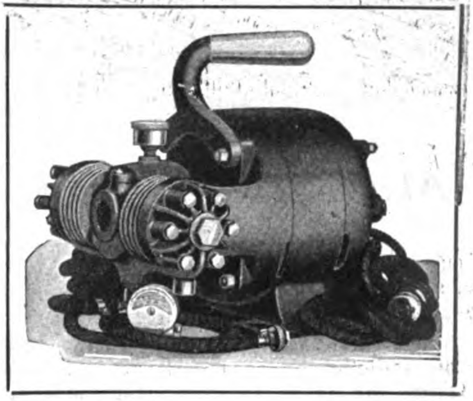
Model F-14.

For truck garages serving pneumatic tire equipped trucks, there is a compresser similar to B-35, but equipped with a larger motor to supply air up to 250 pounds pressure.

Model 10 is a little compressor for private garages. It weighs only 35 pounds. The plug can be screwed into any light socket and in a minute the ordinary tire is fully inflated. This compressor has opposed cylinders, 1⅝-inch bore by ¾-inch stroke, and a capacity of 2.6 cubic feet of free air a minute. It works up to 100 pounds pressure.

A new type of compressor, Model F-14, chiefly remarkable for its compactness and the small space into which it compresses a fully equipped automatic 24-hour service outfit. It has double opposed cylinders 1⅝ inches bore by one-inch stroke and provides 150 pounds pressure at 1140 revolutions a minute. Model F is the same type of compressor set up in a portable form.

In addition to this line of compressors the Auto Compressor Co. announces a new line of tools, which includes a spark plug and cylinder head cap screw wrench for Fords, an adjustable open-end wrench made in a number of sizes, and a set of slip joint pliers which are also made in a variety of sizes. A chain valve spring lifter for all makes of cars is also included in the line.

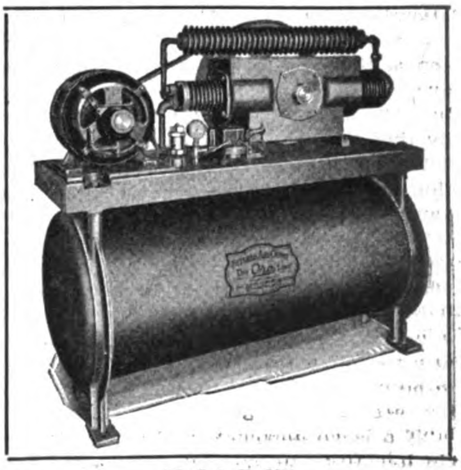


Model 10.

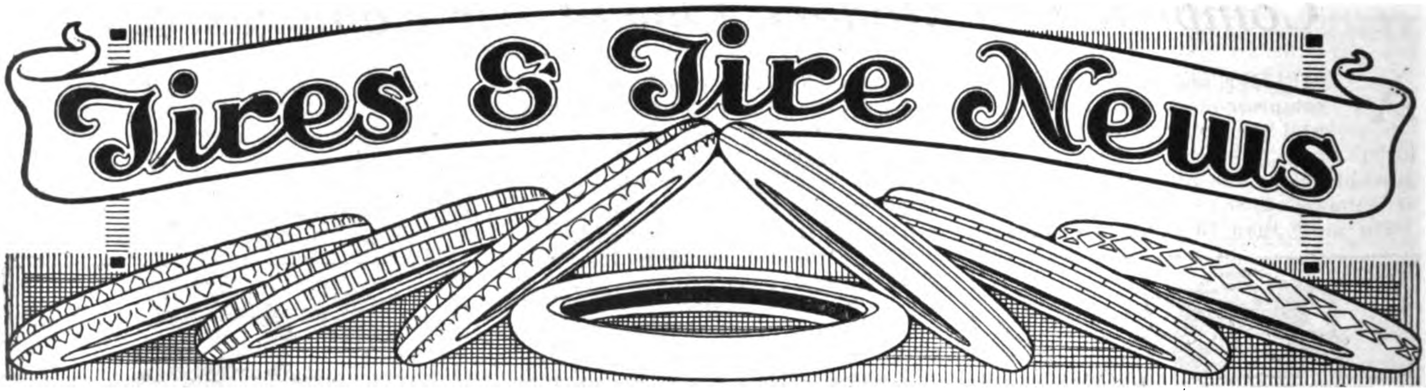
PENNSYLANIA AND ATLANTIC SEABOARD HARDWARE SHOW.

The 20th annual exhibition of the Pennsylvania & Atlantic Seaboard association will be held at the Commercial Museum, Philadelphia, Feb. 8-11. This association comprises approximately 1400 hardware dealers in the states of Pennsylvania, New Jersey, Delaware and Maryland. It has always maintained that the hardware store is one of the most consistent channels for the distribution of automobile accessories and advises its members to handle this line of goods. The motto is stated to be "Buy of the Exhibitors."

The secretary of the association, Sharon E. Jones, 1314 Fulton building, Pittsburgh, Pa., will gladly supply a diagram of floor spaces and other show information.



Model B-351.



Tires & Tire News

Akron Tire Officials Are Optimistic

Officials of the Akron rubber companies are optimistic regarding the outlook for 1921. They point out that the rubber industry was one of the first of the large industries to sense the retrenchment movement and curtail production accordingly, and hence will be one of the first to be favorably affected when normal conditions return.

"During the past few months since tire manufacturers curtailed production," says the B. F. Goodrich Rubber Co., "consumption of tires has greatly exceeded production. Great inroads have been made into the surplus of 10,000,000 tires which was said to exist Sept. 1.

"According to 1920 automobile registration figures, there are now 9,295,252 motor vehicles in use. Figuring conservatively, each car uses 3½ tires a year. In other words, about 32,000,000 tires are needed annually, or about 2,710,000 each month, exclusive of those needed to equip new cars.

"Production since last September has been at the rate of not more than 8,000,000 tires a year, or about 660,000 each month. Consequently, 2,000,000 more tires are being consumed each month than are being manufactured—the production rate being just about one-fourth the rate of consumption. The surplus stocks which existed last fall are rapidly dwindling as a result. How long it will be before they disappear entirely can easily be computed.

"Recent reductions in tire prices have stimulated buying. Experienced motorists recognize that this is the right season of the year to buy tires. Those who are waiting for warm weather may not be able to purchase standard makes, as by that time the full effect of the 2,000,000-a-month difference between production and consumption will be come apparent.

"The surplus of last fall cannot be counted upon to ward off a shortage when the full buying movement starts. It has been greatly depleted already and it must be remembered that there must be a normal surplus of over 5,000,000 tires to permit the functioning of the distribution system.

"If a large percentage of motorists begin buying simultaneously, there will not be enough tires to go around. Whatever surplus of tires may exist prior to that time will be exhausted, dealers' stocks will be depleted and many motorists will have to wait until production again catches up with consumption.

"The possibility of a spring tire shortage is greatly increased by the open winter. Countless motorists are driving their cars this winter who formerly placed them in storage. If the weather continues mild it can be safely estimated that several million more tires will be required in the spring than if the weather had been severe."

Lynn Harvey, Head of New Export Department of India Tire Co.

Harvey Heads India's Export Dept.

The export business of the India Tire & Rubber Co. of Akron is stated to have reached such proportions as to necessitate the establishment of an export department, and it is in charge of Lynn Harvey of Akron. Mr. Harvey brings to his new duties the experience of a good many years spent in the export business. He was formerly assistant export manager for the Miller Rubber Co. of Akron, with which organization he was connected for three years. For six years previous to that he was with the H. K. Porter Co., Pittsburgh's well known locomotive manufacturers.

Mr. Harvey returned about two months ago from a year's trip abroad in the interests of the Miller Co. He covered Australia, Tasmania, New Zealand and Hawaii, and reports business very good.

PRODUCTION STARTED IN NEW BLEKRE PLANT.

The Blekre Tire & Rubber Co. recently organized with a capital of $4,500,000, has started production in its new plant at St. Paul, Minn. The company will manufacture high grade cord and fabric tires and tubes. The plant has a capacity of 2000 tires a day and will employ 250 operatives.

The officers of the company are: President, E. O. Blekre; vice president and treasurer, S. E. Blekre; secretary, G. W. Wells; vice president and general sales manager, S. A. Rheihstrom; advertising manager, G. O. Ludcke; superintendent, W. E. Greer.

L. G. Fairbanks, Director of Sales for Firestone Tire & Rubber Co.

FAIRBANKS IS FIRESTONE SALES DIRECTOR.

The Firestone Tire & Rubber Co., Akron, O., has made L. G. Fairbanks director of sales, a position heretofore held by Vice President Partridge. Mr. Fairbanks has been general manager of the Firestone Steel Products Co., a subsidiary of the tire company.

He has appointed G. A. Richards in charge of all Firestone activities in Michigan; George Burkitt, manager of the Detroit branch, and P. M. Thomas, office manager of the Detroit branch.

New Officers of Tire Companies

Ohio State Rubber Tire Co., Port Clintin, O.—President, A. Schroeder, Cleveland; vice president, J. F. Langenau, Cleveland; secretary, Harman Hankammer, Port Clinton; directors, W. S. Lee of Bellevue, E. P. Reichert and S. E. Ferner of Port Clinton, in addition to Messrs. Schroeder and Langenau.

Northeastern Rubber Co., New York—President and treasurer, Richard G. Bryant, Racine, Wis.; director and vice president, Ludwig T. Kuehl. Racine, succeeding George G. Bryant. Milwaukee; director and secretary, Charles E. Davis.

McGraw Tire & Rubber Co., Cleveland, O.—President, John Morgan (re-elected); secretary and treasurer, William S. Marlatt; directors, John Morgan, L. M. Kyes, Chas. W. Wheeler, Wm. S. Marlatt, W. S. Quinlan, Maynard H. Murch, Mac S. Bethel, Geo. E. Randles.

NEW DIRECTOR OF SALES FOR FISK.

The Fisk Rubber Co., Chicopee Falls, Mass., has promoted its sales manager, Fred H. Ayers, to be director of sales in charge of the sales, advertising and publicity departments. His successor as sales manager will be William Weild, formerly assistant in this position. Leon N. Southmayd and Charles H. Gage have been made assistant sales managers. Karl S. Chamberlin, formerly assistant manger of export sales, has been made manager of this department.

STEPHENS CO. OPENS AT LITTLE ROCK.

The A. J. Stephens Rubber Co., Inc., Kansas City, Mo., has opened a branch at Fourth and Center streets, Little Rock, Ark., under the management of E. K. Matthews.

A wholesale and retail distributing branch is also to be opened at 609 Francis street, St. Joseph, Mo., in charge of F. C. Kraus, formerly supervisor of sales of the Keystone Tire & Rubber Co. of New York city.

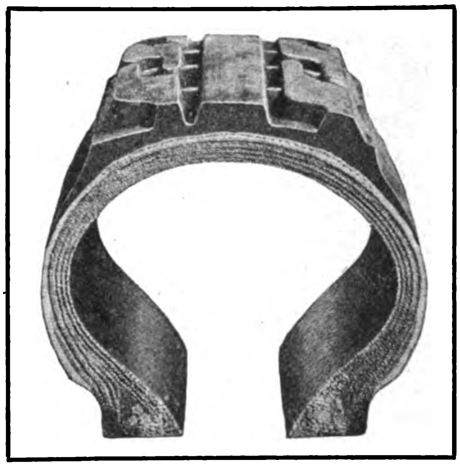
The Topeka, Kan., branch is located at 916 Kansas avenue.

REPUBLIC RUBBER RESUMES.

It is announced by President E. F. Jones that all of the tire and tube departments of the Republic Rubber Corporation in the factories at Youngstown. O., resumed operations on Jan. 10 and will work on three eight-hour shifts. The mechanical goods department resumed Jan. 17. The plant had been closed since Dec. 23 for inventory and repairs.

MARTIN TO MAKE TRUCK TIRES.

The Martin Tire Corporation of New York city, which has been specializing on passenger car tires, is planning to increase its line by the addition of larger sizes for trucks.



Cross Section of New Syra-Cord Truck Tire.

SYRA-CORD TIRES FOR TRUCKS.

Syra-Cord pneumatic truck tires in the larger sizes are now being made in the plant of the Syracuse Rubber Co., Syracuse, N. Y. The cross section of the 36 by six-inch size, illustrated above, shows the construction. The tread is made wide and heavy at the edges, both to furnish greater wear and give the truck greater traction in starting and when under way. It is claimed that a tread of this type takes hold of the road more easily than a more rounded one.

NEW FACTORY FOR LATEX CO.

The Latex Tire & Rubber Co., Fond du Lac, Wis., is to build a two-story factory addition, 60 by 80 feet, in that city, to cost about $45,000 equipped. The company's present plant was finished less than nine months ago and has been crowded beyond capacity since June.

BERGOUGNAN UNITS COMPLETED.

The Bergougnan Rubber Corporation has finished work on its factory units at Trenton, N. J., and is now in a position to enter on a full production schedule of pneumatic tires for passenger cars, trucks and motorcycles, as well as tubes.

VICTOR'S PRODUCTION SCHEDULE.

The plant of the Victor Rubber Co., Springfield, O., is reported as having gone on to a production schedule of 300 tires a day on Jan. 17, and that 140 men are at work, with increases later.

Unique Granville Floating Tire

Bernard Granville, a widely known consulting engineer, has invented what is characterized as a trouble proof pneumatic tire, under the trade name of the Granville Floating Tire, which is designed on the unique principle of a rubber treaded steel band protecting the shoe or casing, containing the inner tube. Its construction is claimed to be such as to render it proof against puncture, blow outs, rim cuts, sand blisters and stone bruises. Other advantages are stated to be that there can be no separation of fabric, because the area of flexing of the casing is much greater than in the ordinary pneumatic tire, thus obviating any abrupt bending of the fabric; there is no heating because the heat generated by road friction is radiated through the edges of the steel band, which are exposed to the air as the tire revolves and act as a fan, keeping the casing and tube always cool and that its floating principle keeps the travel of the axle in the same plane regardless of inequalities of road surface, because the movement of the shoe is from the inside outward instead of from outside inwards.

The Granville floating tire is the result of six years of experimentation and has been tested for several years, it is stated, by the most trying tests on the road. It is constructed with beads of standard size and shape and is made in all sizes adopted by the United States standardization board.

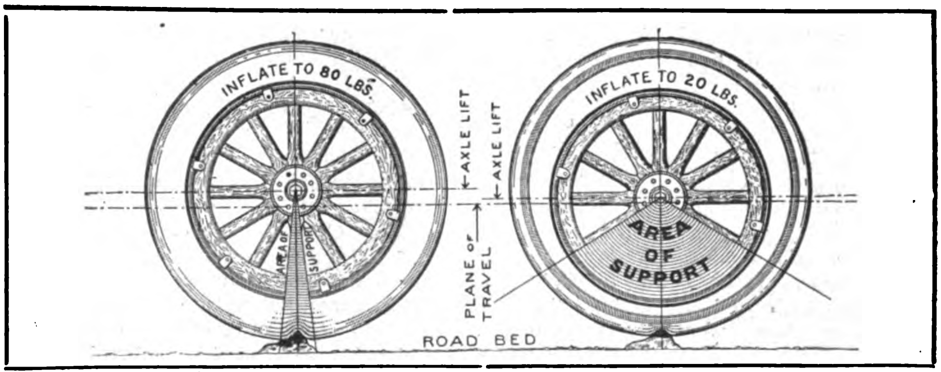
It is being offered by the Granville Tire Co., 1926 Broadway, New York city, recently incorporated with an authorized capital of $15,000,000.b

NORWALK'S NEW YORK DISTRIBUTOR.

Wilbur Hobbs, who is well known in the Metropolitan automotive district, is to open a branch at 332 West 58th street, New York city, for the Norwalk Tire & Rubber Co., Norwalk, Conn.

MASTER RUBBER CO. RESUMES OPERATIONS.

The Master Rubber Co., Dayton, O., has resumed operations with a full force after a lay-off of six weeks.



Sketches Showing Comparison Between Granville Floating Tire and Ordinary Type.

Optimistic Outlook for Tire Dealer

John Hausam, secretary and treasurer of the Lambert Tire & Rubber Co., Akron, O., who recently returned from a 2500-mile trip embracing points from Kansas City east to New York city, from his observations at such representative places as St Louis, Kansas City, St. Joseph, Chicago, New York and Washington, D. C., reports that there is a solid ground for the spirit of optimism throughout the country.

"There is a splendid opportunity ahead for the legitimate tire and honest dealer," said Mr. Hausam, "and nearer than some of us have perhaps been thinking.

"For the dealer who has kept his name and the reputation of his product unsullied the way for good business is pretty well cleared, because the cheap, and in many cases inferior, tires which have been dumped in the market in the past few months have been largely disposed of. The consumer who bought them is now disillusioned and, as a result, the dealer who sold them discovers himself flat on his back.

"It is a little hard to feel sorry for such dealers, because they are simply lying in beds of their own making. They chose to pick up some easy money while they could and now their opportunity has passed.

"All of this renders the future of the honest, conservative dealer a bright one. If he has built well and without the semblance of misrepresentation, the name of his tire remains standard in the consumer's mind and is synonymous still with quality and reliability. The success of his business is assured; in fact, it has become all the more certain by reason of the temporary prosperity of the 'boomers' and the 'fly-by-nights.'"

DUNN HEADS AMERICAN RUBBER ASSOCIATION.

At the annual meeting of the directors of the Rubber Association of America, held in New York city, Jan. 14, Harry T. Dunn, president of the Fisk Rubber Co., was chosen president, suceeding Homer E. Thayer of the United States Rubber Co., who had served two terms.

The other officers chosen were: First vice president, F. A. Seiberling, president of the Goodyear Tire & Rubber Co.; second vice president, Horace DeLisser, chairman of the board of the Ajax Rubber Co.; secretary and general manager, A. L. Viles; treasurer, William C. Cox.

Prior to the meeting of the directors the organization elected five directors who were: Messrs. Seiberling, Dunn, DeLisser, William O'Neill, vice president of the Central Tire & Rubber Co., and F. R. Henderson, president of F. R. Henderson Rubber Co., dealer in crude.

MILLER ANNOUNCES DECREASE.

The Charles E. Miller Rubber Works, Anderson, Ind., has announced a general readjustment of tire prices downward, which includes an especial reduction in cord tires, and one of 15 per cent. applying to Catalogue No. 28, comprising tire molds, cores, vulcanizers, complete equipment for tire and rubber repair shops, rubber repair stocks, vulcanizing and rubber workers' supplies, etc.

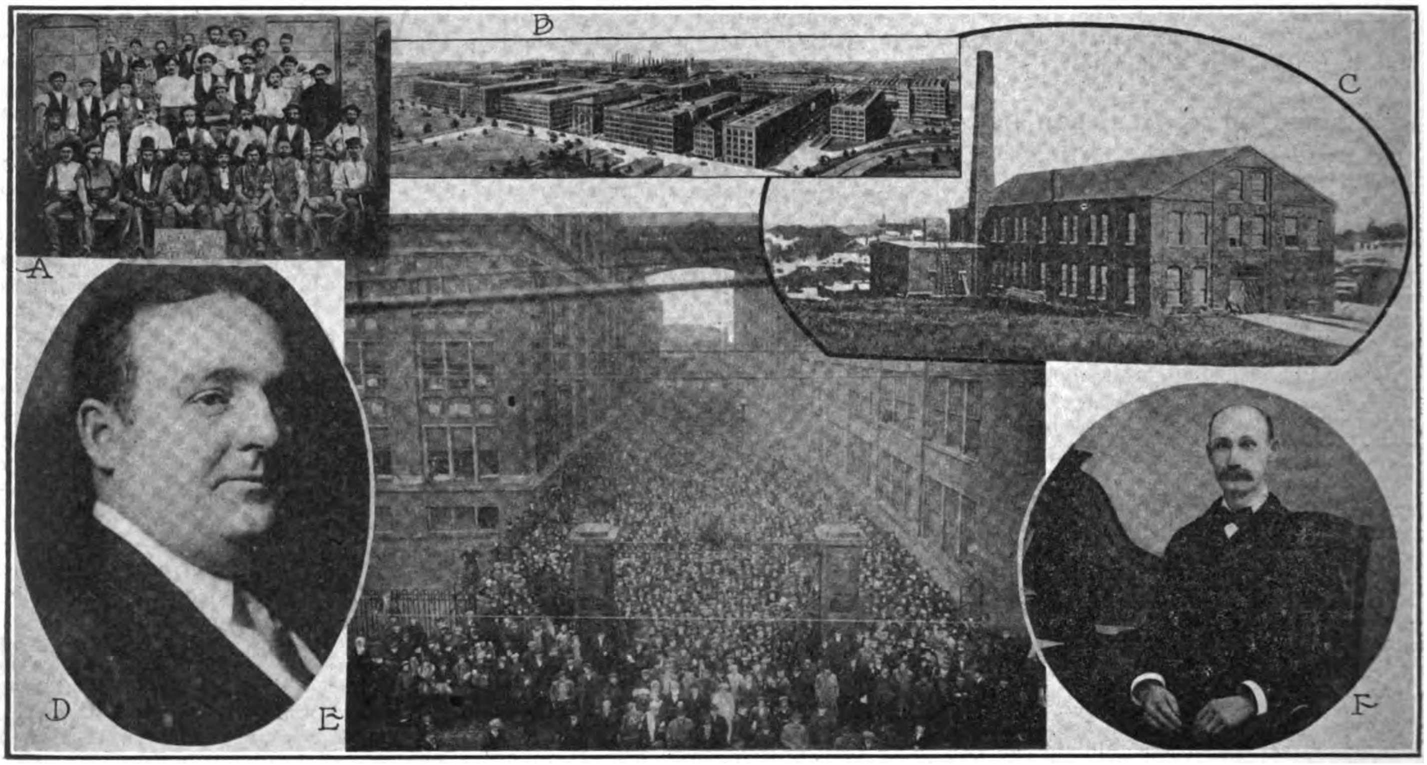
Golden Anniversary of Goodrich Co.

Fifty years ago, Dec. 31, 1870, saw the incorporation of the B. F. Goodrich Rubber Co., Akron, O., the pioneer rubber factory of the Rubber City. The founder, Dr. B. F. Goodrich, was a physician by profession, and became interested in the industry by having acquired a small rubber factory at Hastings-on-the-Hudson, N. Y., in a real estate deal.

As a result of a quest for financial help he finally went to Akron and located in a small two-story brick building with a force of 25 employees. This little factory of 50 years ago has grown until today it comprises 63 buildings of brick and steel, covering 110 acres of ground.

The first product Goodrich ever made was fire hose. Article after article was then added to its list of manufactured goods until today approximately 30,000 rubber products are made. The next step in its growth came with the development of the bicycle, for which Goodrich designed and manufactured pneumatic tires. Before this period, however, the company had taken the initial step in the evolution of rubber shod wheels by perfecting the solid rubber tire for carriages. The success of this tire, followed by that of the pneumatic tire for bicycles, naturally led to consideration being given for auto tires.

The Goodrich company is commemorating the anniversary by publishing a 48-page booklet called the "Golden Year of Goodrich," telling of the romance of the rubber industry, its history and its progress.



Golden Anniversary of B. F. Goodrich Rubber Co, Akron, O.: A—Goodrich Factory Force in 1870; B—Bird's-Eye View of Plant, 1920; C—First Goodrich Building, 1870; D—B. G. Work, President of B. F. Goodrich Co.; E—Employees Leaving Plant in 1920; F—Dr. B. F. Goodrich, Founder of B. F. Goodrich Rubber Co.

Delion Co. Marketing Two New Tires

The Delion Tire & Rubber Co., Baltimore, Md., signalized the opening of the new year by the offering to the public of two new models, one a cord and the other a fabric tire, which, it is claimed, embody the most recent tested improvements in design, construction and processes of manufacture.

The new Delion cord tire is cured over air bags, under a constant pressure, to stretch cut any possible buckles in the fabric, the frequent cause of fabric separation. It has the new jet black, crown tread, which affords an unusual broad, practically flat, non-skid wearing surface, and which distributes road strain evenly throughout the carcass. The husky tread and the broad white band on the side wall make this tire as attractive on the car as it is flexible, resilient and strong.

The new fabric tire is the wrapped tread model with jet black, clover leaf tread, contrasting with white side walls. Its broad tread was designed to afford the maximum non-skid protection combined with long wear.

Both of these tires are stated to be made of the finest quality material it is possible to buy. They are permanently cured by a process which has been worked out through years of study by the company's chemists. Every step in their manufacture is given the continual supervision of experienced engineers.

After its seven years of successful business experience the Delion Tire & Rubber Co. has now moved to its new plant in Baltimore, where improved machinery and the most modern tire building equipment make this what is claimed to be one of the most up-to-the-minute tire factories in the country.

The present persommel of the company is as follows: John W. Price, president, is a man who has achieved an enviable reputation in the fields of law and of big business. Robert B. Arnold, vice president, in charge of production, is chief chemist and a master in his profession. He has devoted years of intensive study to the manufacture of rubber and rubber compounds. W. C. Price, vice president, in charge of purchase and sales, is well known to the trade, through his long association with the Delion company. He has behind him 20 years of successful experience in his particular branch of executive work.

R. L. Swats, sales manager, is a sales veteran, having been identified with the mechanical rubber goods and tire industry for 18 years. Earle E. Harrington, general superintendent of the plant, is a native of Akron, O., and has held positions of importance in the Marathon, Firestone and Goodyear companies.

The branch managers of the company, H. F. Seltzer of Washington, D .C., Wm. J. Wilson of New York and Charles B. Lynch of Philadelphia are boosters well known to the trade in their respective territories.

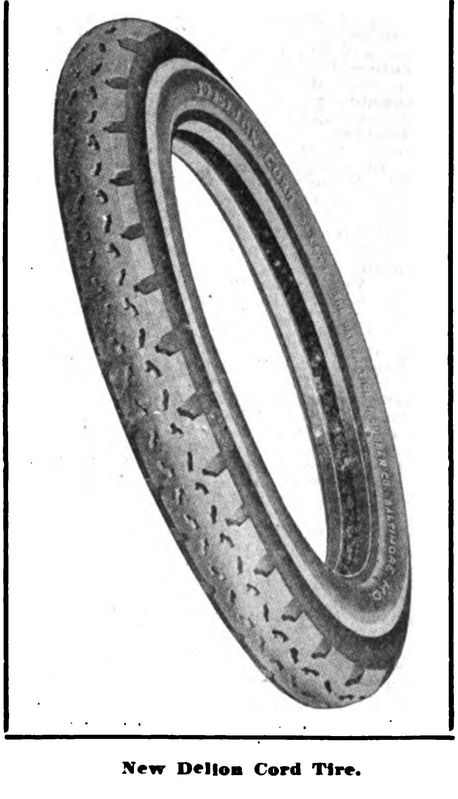
C. L. Mason, Who Has Just Been Appointed Sales Manager of the Denman Myers Cord Tire Co.

New House Organ.

The Delion company has just issued the first number of a magazine for Delion dealers. The January issue of this crisp little 16-page book is printed in two colors, on high quality stock, and is full of attractive illustrations and interesting information for the tire dealer. It is named "Free Air."

Any tire dealer may have this publication sent to him regularly by mailing his request to the Delion Tire & Rubber Co., Baltimore, Md.

The India Tire & Rubber Co., Akron, O., has declared a quarterly dividend of 1¾ per cent. on preferred stock and two per cent. on common, payable Jan. 3.



New Delion Cord Tire.

Mason Becomes Sales Manager

The Denman Myers Cord Tire Co., with general offices at Cleveland, O., and factory at Warren, O., has just announced the appointment of C. L. Mason as sales manager.

Mr. Mason was selected by the executive committee of the Denman Myers Co. from a long list of applicants for this important position, being considered particularly qualified from his long and successful experience in the rubber industry. He has held the office of sales manager for one or two of the largest rubber companies in Akron.

Mr. Denman, general manager of the company, also announces that within a very few weeks the factory output will be more than doubled.

BRIEF FINANCIAL NOTES.

Wilson Tire & Rubber Co., Springfield, Ill., is reported to have voted to pass dividends for the year 1921.

Kelly-Springfield Tire Co., New York city, has declared dividends of $1 and three per cent. in stock on common stock, payable Feb. 1, and a quarterly dividend of $2 on preferred stock, payable Feb. 15.

United States Rubber Co. will pay a regular quarterly dividend of $2 a share on its first preferred, and $2 a share on common stock on Jan. 31.

Keystone Tire Co. has decided to pass its quarterly dividend of three per cent. due at this time in order to conserve its cash resources and to take advantage of the present low price of crude rubber and fabric. Since the latter part of 1916 quarterly dividends of three per cent. have been paid on the common. In 1918 a stock dividend of 33 1/3 per cent. was declared, followed by two stock dividends of 15 per cent. each in March and July last year.

The Boston Woven Hose and Rubber Co., Cambridge, Mass, has issued a financial statement as of Aug. 31, 1920, which gives total assets of $10,448,348 as compared to $7,340,409 of a year ago. Merchandise is $4,926,299 as against $2,675,-255 of a year ago, while cash and debts receivable are $2,506,938 compared to $1,809,192 for the year before. Accounts and notes payable are given at $3,336,352 compared to $1,460,026, while the surplus is recorded as being $2,161,996 against $2,030,383 for the previous year.

Doss Rubber & Tube Co., Atlanta, Ga., has filed a petition for permission to increase its capital to $1,000,000.

ADDITIONAL FUNDS FOR AMERICAN DUNLOP.

The Dunlop Rubber Co. of London, England, has announced that it has assumed the responsibility for providing additional funds to place its American subsidiary in a position to complete construction work on its $15,000,000 plant at Buffalo, N. Y., and to provide working capital.

ACTIVITIES IN GARAGE AND REPAIR SHOP FIELD

Happenings of the Month Briefly Noted and Classified by States and Towns

Alabama.

Anniston—Denegre Car & Truck Co. rebuilt burnt garage.

Birmingham—Consolidated Motor Car Co., 1st Ave. and 23rd St., will rebuild burned garage.

Luverne—Smith Hornsby otor Co. will rebuild burned garage.

Georgia.

Atlanta—J. F. Tyler purchased Shores & Ewing garage and repair shop.

Illinois.

Abingdon—Codding Garage & Repair Shop sold by L. H. Robertson to Emery Stegall.

Alton:

Geo. Daft taken over repair shop and service department of L. T. Hudson Auto Agency.

J. E. Orr purchased interest of Denny Hayward in garage and repair shop, J. J. Hewey Mldg., Wash. Ave.

Arcola—A. Franklin & Son opened garage and repair shop.

Arlington Heights—Gage Motor Sales Co. opened sales room and service station.

Arthur:

Earl Dixon sold garage and accessories business.

Fleming Bros. opened garage and service station.

Bement—West End Garage and Service Station opened by Earl H. Welch.

Bloomington—John A. Beck Garage and Repair Shop opened at Main and Olive Sts.

Bluff City—Bluff City Auto Co. opened garage and repair shop, E. Broadway and Shilds Sts.

Bryant—D. Bryant opened garage and accessory shop, Reynolds Bldg.

Buffalo;

J. A. Lee sold garage and repair shop to John B. Edwards.

I. O. White and G. Rutherford, Decatur, opened garage and repair shop, Turley Bldg.

Cache—Alvin Wood, opened garage and repair shop.

Cairo—C. A. Dillow and John H. Davis, leased Alba block, 18th and Commercial Sts., for garage, service station and repair shop.

Canton:

Cleveland Co., opened service station in Burlington Way Garage.

Jay Elliott and Floyd Morris purchased Joiner Garage, E. Chestnut St.

Champaign:

Harry Casper and Jas. Everence opened garage and repair shop, University Ave.

O. E. Cox sold tire and repair shop.

Chicago—Rudolph Huebach, 4525 S. Ashland Ave., opened garage and accessory shop, 5008 S. Ashland Ave.

Chicago Heights—Virgils and Robt. Hoecker purchased garage and filling station, 1644 Chicago Road, from Arthur and Albert Hecht.

Clinton;

D. M. Selsor, bought garage business of F. C. Tuggle, 216 N. Quincy St.

Carl West, opened repair shop, 700 E. Main St.

Coal Valley—Edward Landek sold garage and repair shop to Ralph Spargot.

Crystal Lake—Arwin and Edwin Bauer sold garage and repair shop to Frank Citizen.

Danville—Geo. Durdenhofer opened garage and repair shop 108 South St.

Decatur:

Saml. Merris sold auto business, 122 S. Franklin St., to W. H. Fathauer & Son.

Edward Ohaver opened garage and repair shop.

A. A. Wolfe and R. J. Kaylor taken over Prairie Ave. Garage and Repair Shop.

De Kalb—Mitchell & Bresnaham sold garage and repair shop to Robt. Frizol.

Dixon:

Claude E. Horton opened garage and repair shop, Chas. Dement Bldg., Hennepin Ave.

Wilson Auto Co.'s Garage, Ottawa Ave., purchased by Geo. Nettz Co.

Douglas—Chas. Hitchcock and Elmer Moore, opened garage and repair shop.

E. Peoria—Wm. H. Schein will open garage and repair shop, 117 E. Wash. St.

E. St. Louis—Frank R. Schmidt opened garage and repair shop, 209-11 N. 5th St.

Effingham—Wilson Cavanaugh, purchased Gay Garage and Repair Shop.

Elizabeth—Chas. H. Bray purchased half interest in Orville Goldsworthy vulcanizing shop, Westphal Bldg., Main St.

Evanston—Henry Bauer and John E. Anderson purchased Modern Garage and Repair Shop.

Farmington—Ray Livesay sold battery service station to Elmer Barlow.

Findlay—Tracy Cross, purchased interest of partner in Findlay Tire & Repair Co.

Flora—Flora Auto Co. sold garage and repair shop.

Freeport—Star Garage & Repair Shop. 56 Galena St., purchased by Bushelle Bros. & Byrem.

Galesburg—J. H. Asdell, Little York, Ill., purchased Beatherage Garage.

Gibson City—John Miner, Jr., conduct garage and repair shop, 8th St.

Grand Ridge—Crawford Bros., opened new garage and accessory shop.

Heyworth—R. E. Bishop will open garage and filling station.

Highland Park—John Peters has become partner of A. E. Smith in Central Tire Co., Sheridan Road.

Hillsboro—Wm. Haggard sold Buick service station and repair shop, Hamilton St., to Leroy Gilmore.

Hopedale—C. D. Crawford to open garage and service station, 2nd St.

Ivesdale—Leo Auth opened garage and repair shop, Main St.

Jacksonville:

E E. Caldwell, man. Overland service station leased repair shop of Barger Motor Co., 228 Spring Sandy St.

C. N. Priest sold garage and repair shop to Geo. Lukeman and J. N. Conover.

Zahn Auto Inn opened for business.

Jerseyville—L. W. Sunderland and Philip Taylor sold garage and repair shop to Jersey Garage Co.

Jonesboro—Curtis Hunsaker moved garage and repair shop into new quarters.

Joy—Robt. Willis to open garage and repair shop.

Kell—Lee Riley purchased garage and repair shop.

Kewanee:

R. F. Couve will open garage and service station, 6th and Lexington Sts.

Quick Tire Service Co. reopened by Walter H. Hawkes, 109 N. Tremont St.

Ladd—Mart Laking opened battery station and repair shop, Jones Bldg.

Lafayette—M. G. Humphrey sold garage and repair shop to Forrest Dunbar.

La Salle—Eisel Motor Co. leased Clinch Bldg., 2nd St., for garage and sales room.

Lincoln—Broadway Auto Sales Co., W. Broadway, dissolved partnership.

Litchfield—Frank Nash purchased Beardsley Garage and Accessory Shop.

Lovington:

Burns Bros. sold garage, repair shop and filling station, Jefferson St., to H. S. Joe, Shirey and R. Weidner.

Dixon & Co. purchased R. B. Maxwell Garage and Repair Shop.

R. B. Maxwell sold vulcanising business to G. W. Bryant.

McComb:

Glen Switzer opened garage and repair shop, N. College St.

Harold White sold interest in garage and repair shop to partner, John Hutchins.

Mackinaw—Hamilton Cardwell sold repair shop to Lloyd Scott and Walter Kerrick.

Mansfield—Stanley Brown purchased Robt. Leach Garage and Repair Shop.

Marion—Smith Keffer sold interest in Keffer & Co garage to Claude Craver.

Marion—Reid & Monroe sold Eagle Garage to Duff Roberts and E. Lacey.

Maywood—Booth Moxley opened American Tire Repair Shop, 15½ N. 5th Ave.

Moline—Fred Day will open garage and sales room, 1417 16th Ave.

Monmouth:

W. J. Kenna sold auto business to son, John Kenna.

Lloyd Rickey purchased interest of partner, Walter Allsup, in Seaton Garage and Accessories Shop.

Morrisonville—Pierce & Buckles opened garage and accessories shop, Stretton Bldg.

Mt Vernon:

Egyptian Auto Parts & Wrecking Co and Guy Kyle Tire Shop merged to conduct garage, 300 N. 12th St., and sales room, 1012 Broadway.

Jefferson Garage and Repair Shop, formerly conducted by C. M. Purdue, D. H. Whitlock and Robt. L. Rean, taken over by Elmer Talbott.

Oak Park:

Detroit Electric Car Co. assumed management of Oak Park Electric Garage, 720 Madison Ave.

Paul R. Heyman opened auto painting and refinishing shop, 818 North Blvd.

R. W. Menke opened garage and battery station, 818 North Blvd.

Oblong—Otto Smith purchased garage and battery station of H. G. Kernerson, S. Range St.

Ogden—John Black will open garage and repair shop.

Ottawa:

Guy Kyle purchased Roll & Johnson auto accessory shop, Star Creamery Bldg., Broadway.

National Refining Co. will open garage and accessory shop, Young St.

Paris—Davis Garage opened for business.

Paxton—Paxton Auto & Implement Co. purchased by Walter Nordgren.

Pecatonica:

Walter Blake and Jos. Farren purchased Hamilton Garage & Service Station.

Harry Corwin and G. Sewalson opened garage and service station, E. 4th St.

Wm. Roth and A. S. Nelson opened garage and welding shop.

Peoria:

Clarence W. Fishbaugh sold interest in Esner Mfg. Co. and opened garage and repair shop.

L. A. Poffenberger purchased interest of Frank H. Dalzell in Dalzell Auto Supply & Repair Shop, Strehlow Bldg., Main and University Sts.

Pesotum:

English Bros. sold garage and accessory shop to Clyde Fletcher.

N. R. Piper opened garage and repair shop.

Petersburg—H. Shirding opened new garage and repair shop.

Plainfield—Glasgow Bros. made improvements on garage and repair shop.

Pontiac:

B. Bogg opened garage and service station, N. Mill St.

Pontiac Motor Car Co. remodelled garage and built 2-story brick, stone and concrete addition costing $50,000.

Roy Potter opened vulcanizing shop, W. Livingston St.

Princeville—Sinclair Oil Co. opened service station.

Prophetstown—Albert Field will open garage and repair shop.

Quincy:

Walter Awerkamp opened garage and service station, 908 Hampshire St.

Roanoke—Fred J. Darnell enlarged garage and service station.

Rockford:

John P. Brown, Caledonia, purchased Roscoe Garage from Jas. McDowell.

C. E. Erickson will enlarge garage and repair shop.

Victor Faust, 1127 5th Ave. will open garage and accessory shop, 5th Ave.

Williamson Motor Co. opened sales room and service station, 7th St. and 5th Ave.; Louis L. Lebkicher, man.

Rock Island—Harry L. Tonn Co. purchased garage equipment of Fred. Gate, 623 17th St. and opened garage, painting and repair shop, 1120 15th St.

Rockport—John Petter sold half interest in Ferguson Garage.

Roseville:

C. E. Chambers opened garage and battery station.

Watson-Oldsmobile Co. opened sales room and repair shop, Johnson Bldg., S. 1st St.

Rossville—Frank Smith and Jos. Williams opened garage and repair shop.

Rutland—Farmer Machine Co. sold repair and accessory department to Edward Besett.

Sandoval—Ruby & Kennedy sold garage and repair shop to Burnett Garage.

Saybrook:

J. A. Brown, Normal, bought garage and repair shop of Louis Martin.

Otto Streubling opened garage and repair shop.

Seaton—Walter Alsupp sold interest in Seaton Garage and Repair Shop to partner, Lloyd Rickey.

Seneca:
- John Gettler will open garage and repair shop, Main St.
- M. B. Smoot garage remodelled and addition, Armour St.

Smithfield—J. E. Murphy sold interest in garage and accessory shop to M. M. and Ralph Waughtel.

Springfield:
- Fred Hoehm and Henry L. Durbon opened Utility Battery Service, 210-12 S. 4th St.
- Jennings Auto Sales Co. located in new quarters, 4th and Jackson Sts., costing $200,000.
- White Battery Station, formerly at 200 N. 7th St., moved to 726-28 E. Adams St., and conduct general garage and battery station.

Staunton—Chas. Blackwell sold garage and repair shop to Chas. F. Franz for $30,000.

Sterling—Pierce B. Hilton, Morrisonville, purchased Motor Inn Garage, E. Main St.

Strassburg—Tracy Cross purchased interest of partner, Ernest Hill, in Findlay Tire & Repair Co.

Streator—Herman Schlageter sold Auto Service Co. garage to Geo. Schlageter.

Sullivan:
- Burns Bros. sold garage and repair shop to Homer C. Shiry and Fred Wagner.
- E. C. Pitts, Champaign, purchased garage and repair shop.

Tiskilwa—C. M. Kuhn opened repair and accessory shop, Russell's Garage.

Tuscola—Moulden Battery Service Station moved from Douglas County Garage to Wausely Bldg.

Urbana—J. A. Sims purchased equipment of Burr auto department and leased entire building; will conduct general garage business.

Virginia—W. W. Beard sold Beard Garage to J. C. and Eugene Baily.

Wasco—A. V. Larson enlarged garage and repair shop.

Washington—Reed & Sons taken over repair department of Washington Garage.

Watseka—C. P. Jensen, Chicago, purchased Donovan Garage.

Waukegan:
- W. C. Parker conducting filling station, Grand and Ash Sts.
- Edward J. Yoeman taken over Waukegan Tire & Battery Service Co.

Winslow—Kennedy & Emerick moved garage and repair shop into new quarters.

Wood River—Chas. Dehler, Jr., purchased Penning Garage and Repair Shop.

Woodworth—John P. Boyer opened garage and repair shop.

Zeigler—Edward Shoemaker purchased interest in garage and service station, Cockspur St.

Indiana.

Anderson—W. C. McLean, Frankfort, purchased half interest in Gault Auto Co.

Ashley—Noover & Leple opened garage and repair shop.

Attica:
- Jos. Norton sold Willard Service Station, N. Perry St., to Adam A. Metzger, Lafayette.
- Jas. T. Ross & Son, Crawfordsville, purchased Allbright Garage & Repair Shop for $20,000.
- Williamsport Auto Station, Williamsport, opened garage and service station, 1st St.

Auburn—C. Ray Thomas opened Willard Service Station, W. 7th St.

Aurora:
- Walter Decker opened battery service station, Fisk Bldg., Main St., and installed modern repair equipment.
- J. M. Thompson & Son opened garage and repair shop, 215 Bridgeway St.

Bear Branch—Frank Elder opened garage and repair shop.

Bloomington—Jos. Hunter and Mark Miltenberger opened garage and sales room, 220 S. College Ave.

Bluffton:
- Buick Agency opened service station.
- P. F. Hunt opened sales room and repair shop, N. Main St

Boswell—W. H. Cook will open garage and repair shop.

Brazil:
- A. T. Crabb purchased A. H. Hadely Bldg., W. National Ave., and will remodel it and build an addition for vulcanizing and repair shop.
- C. E. Quigley and Chas Scott, Terre Haute, reopened City Garage, National Ave. and Central Indiana R. R.
- Service Station Co., 522 National Ave., purchased by C. M. Wilson.
- E. S. Winkelpleck sold tires, parts, accessories and filling station business, Hill Block to Anderson Falls.
- L. W. Winn & Son opened new repair shop, 20 N. Franklin St.

Brown's Valley—Russell Canine purchased half interest in garage and accessories shop of J. W. Bayless.

Carlisle—W. D. Boswell sold garage and repair shop.

Chesterton—C. L. Whitney sold Chesterton Garage to Guy Mangleson.

Clayton—C. A. Edmondson will open garage and repair shop.

Clinton:
- W. B. Nichols reopened garage and sales room, S. Main St.
- Paige sales room moved from 214 S. Main St. to new service garage, Vine St.
- Edward Ruby opened a sales room and garage.
- R. Stogsdill completed gasoline station, Main and Elm Sts.
- Horace Wright made improvements on J. J. Flynn Service Station and added accessory department.

Cloverdale—Guy Martin and Paul Sandy taken over Overland Service Station.

Columbia City:
- Consumers' Filling Station, N. Main St., opened.
- Chas. Thompson moved garage from E. Van Buren St. to W. Van Buren St.

Columbus—A. T. Griffith sold service station and repair shop, Franklin St., to Earl Winton and Herbert Adams.

Connersville:
- Herman Broadling opened garage and repair shop.
- Service Co. Garage, 10th St. and Eastern Ave., opened.

Crawfordsville:
- Jesse Mitchel purchased building and equipment of Wallace Garage Co.
- Frank C. Mueller and Albert E. Wray opened auto paint shop, 211-13 S. Green St.
- Jas. T. Rosses & Son purchased T. E. Albright Garage & Service Station.

Daleville—Props-Dunn Motor Co. opened sales room under management of S. R. Summers.

Danville:
- Mrs. Nora Benbow sold Danville Garage & Repair Shop, N. Wash St.
- Danville Motor Co. moved to County Fair Bldg., Main St.
- Stringer Garage purchased by Danville Motor Co.

Dublin—Gilbert & Hines opened garage and accessory shop.

Eaton—R. H. Tate sold Auto Tire Hospital's vulcanizing plant to Asa Babb.

Edgerton—Ivan & Herschell Day, Hamilton Ind., opened garage and repair shop.

Elkhart—W. L. Stuyverson and Bruce Walnut opened repair shop in Edward Fisher Garage, 117-19 E. Franklin St.

Elwood—Jas. H. Edwards, Alexandria, Ind., opened sales room, 1604 S. A. St.; Albert Waymire, man.

Fairbanks—O. Thompson and P. O. Dickey purchased Kisner & Johnson Garage.

Ferdinand—Muller Bros purchased garage and repair shop of Muller & Remke.

Flora—Jay Penn sold repair shop in Perry Bldg., Center and Walnut Sts, to Harry Wilkinson.

Ft. Wayne:
- Wm. Chapman sold Lincoln Highway Garage and Repair Shop, Pearl St, to Jas. D. Case.
- Uprive Auto Co. opened branch garage and repair shop in Electric Garage Bldg., Broadway and Wash St.

Fountain City—Chas. Kales will open garage and repair shop.

Fowler:
- Wm. Fields sold auto supply business to Key & Larch, Boswell, Ind.
- Hal Morine will open garage and repair shop, 1st St.

Frankfort:
- Coulter Auto Co., dissolved.
- J. H. Garage & Accessories Shop, purchased by R. D. Voorhees, Lebanon, Ind.
- L. J. Shaw, W. F. Lower and O. A. Miller opened tire service station, 251 N. Jackson St.

Grandview—E. P. Hefner and Herbert Kinney sold garage and repair shop to Grandview Motor Co.

Greensburg—Roy Vail purchased building for garage and filling station.

Hartford City:
- Clinton Chaney sold equipment in Guarantee Service Station, Monroe and Washington Sts., to Schug Brothers
- Greenlee Ford Garage installed an oil filling station.
- C. L. Patterson purchased interest of partner, S. S. Carrell, in garage and accessory shop, West Main St
- Joseph Stroup moved garage and accessory shop to new building, Washington St.

Huntingburg—Edward Jennings sold garage and accessory shop, 5th St., to Arthur Sakee, Stendal, Ind.

Indianapolis:
- Dickey Motor Sales Co., opened sales room and service station, 1207 N. Meridian St.
- Larues Hare and William L. Bake purchased Maples Road Garage & Repair Shop, 38th and Illinois Sts.
- Inland Motor Sales orp. opened garage and sales room Meridian and Illinois Sts.
- Ned Inlow opened Monroe Sales Agency in E. M. Kellar building.

Knightstown—Goodwin Brothers Auto Co. opened garage and repair shop.

Knox—William Alcoin sold interest in Alcoin-Olson Garage Co.

Lafayette—Master Motors Co. opened garage, sales and service station, 7th and Main Sts.

La Grange—Long & Price sold business to La Grange Auto Co.

Lapel—Frank Teeters taken over American Garage and Repair Shop.

La Porte:
- M. C. Kale remodelled garage and repair shop.
- Leo Steele sold his garage and repair shop, Tyler St., to Arthur Johnson
- Ben Travis and Basil Rotzein reopened Paxton Garage, 108 Jefferson Ave.

Lebanon—J. H. Airhart sold Buick garage and repair shop, S. Lebanon St., to Stanley Jones and E. J. Sullivan.

Ligonier—George W. Woodhouse purchased Blazed Trail Garage & Repair Shop.

Loogootee—Bernard Gates purchased interest of partner, Louis Keith, in garage and repair shop.

Lovington—H. D. Maxwell sold garage and repair shop to Dixon & Co., Sullivan, Ind.

Markle—Irvin Miller and Benjamin Studebaker, Bluffton, Ind., opened garage and repair shop.

Michigan City—Swartzell & Benwell reopened Swartzell Garage and Repair Shop, 121 N. Nixon St.

Middletown—C. R. Bell purchased interest in Middletown Motor Co.

Monticello—B. & H. Auto Sales Co., moved sales room and service station from S. Main St. to Main and Marion Sts.

Montmorenci—George Smith sold garage and service station

Morrocco—Hamilton Stewart and Fred Bisselberg purchased interest in garage and accessory shop.

Mt. Ayr—Frank Ricker opened vulcanizing shop.

New Albany—Woods Auto Co., 415 Vincent St., opened for business.

New Carlisle—P. Curtiss purchased half interest in garage and repair shop.

New Market—H. B. Sayler and N. Reeves opened accessory and repair shop.

Newton—A. T. and Albert Galloway opened garage and repair shop.

Noblesville—Brock Filling Station Co., Anderson, Ind., opened station to do general garage and auto repair work.

N. Manchester:
- Olinger & Warvel sold Wabash Garage and Repair Shop to Brown & Pottenger, Detroit, Mich.
- Knull Garage, Mill St., opened for business.
- Charles Nichols sold accessory business to Carl Pilgrim.
- Charles Westerick, Huntington, Ind., purchased Bolinger Garage and Repair Shop.

N. Salem—Morton Harding, Jamestown, Ind.; purchased garage and service station.

Ogilville—D. D. Morrison opened garage and repair shop.

Otterbein—Purdue Garage & Repair Shop purchased by Bowles & Abel.

Patriot—Hubert Lowe sold garage and repair shop to Sheldon & Lee.

Perrysville—Partnership of Coffing & Brewyer dissolved; Mr. Coffi will conduct business hereafter.

Plymouth—John Field purchased garage and accessories shop of Joseph Reid.

Portland:
- Maurice Elverson opened garage and sales room for Overland, Willys-Knight and Cleveland Six cars, 211 W. Main St.
- Homer J. McConochy purchased Maurice Elberson Garage on N. Meridan St.

Richmond—Webb & Coleman moved garage and repair shop to N. 9th St.

Ridgeville—Aaron Niel & Son enlarged garage and repair shop.

Roann—Wright & Son, Peru Ind., sold garage and repair shop to Q. A. Carver.

Rockville:
- Wallace Bradfield sold Parke County Garage to Perley Davis and Delbert Lewis.
- Shade Co., Evansville, Ind., taken over R. J. Coleman Garage and Accessory Shop.

A. W. Zigler sold interest in garage and repair shop to Guy Alden.

Rossville—Foster & Dillinger purchased Market St. Garage & Accessories Shop from William Harrison.

Rushville—Carl Foster sold Uwanta Garage & Filling Station, E. 2nd St., to Frank C. George.

Salem—John Archer convert Star Grocery Store into accessory shop.

Sandboin—James Shank purchased garage and repair shop; Homer Brown will have charge.

Seymour—Ever-Ready Battery Station opened by Edward McDougal.

Shelbyville—

Leo & Harrell Garage located in new quarters at 26 E. Hendricks St.

Roscoe Linville sold garage and repair shop to D. C. Tucker.

South Bend:

Harry Grossman opened garage and repair shop at 18-20 S. 9th St.

Charles E. Woolley and Anderson Bros. opened garage and service station, 109 W. Colax Ave.

South Milford—Frank Crawley sold interest in garage to Vern Newman, Alliance, O.

Sullivan—Leslie Atchinson sold interest in Sullivan Tire & Service Station to partner, H. A. Moore.

Syracuse—Charles L. Knauss sold interest in garage and service station to partner, C. B. Hollett.

Tell City—C. D. Lyons conducting garage and service station, Main and Washington Sts.

Terre Haute:

C. L. Carter opened Auto Parking & Oil Station, 10th & Ohio Sts.

Charles and Stanley Fogg opened garage and accessories shop, 1364 Wabash St.

Harry Grossman opened garage and repair shop, 18-22 S. 9th St.

Randolph Auto & Supply Co., 26 S. 6th St., moved to Ohio St., between 6th and 7th.

Willard Storage Battery Station opened, 4th and Poplar Sts.

Tipton—More Mileage Tire Co., Court St., purchased Sterling Tire Shop and moved to Jefferson and Independence Sts.

Tyner—Joseph Reud sold garage and repair shop to John Freed.

Union City—Charles Walters will open garage and accessory shop.

Valparaiso:

B & S Vulcanizing Shop, Washington St., installed additional machinery.

L. C. Jacobs sold his garage and service station, Main St., to Claussen & Kenny.

Roscoe Rogers will open garage and filling station, W. Jefferson St.

Wabash—United Owners' Supply Co., opened Wabash Service Station, Market and Huntington Sts.

Warren—John Poorman opened garage and repair shop, Emick Bldg.

Waterloo—Waterloo Auto Exchange moved to new sales rooms, S. Wayne St.

Waynetown—Wayne Auto Co. purchased Snyder Garage & Repair Shop, Main St.

Williamsport—J. H. Van Reed opened garage and accessory shop, First St.

Winchester—Standard Oil Co. will open service station, N. Main St.

Windfall—L. E., A. B. and O. O. Burkart opened garage and service station, Todd Block, S. McClellan St.

Iowa.

Adel—A. R. Neal sold garage and repair shop to M. Barrett.

Ainsworth—Fred Moore sold garage and repair shop to A. N. McElwain.

Albia—Roy Allen disposed of garage and tire shop, S. Main St., to Earl Streepy and John Miller.

Archer—Jens Anderson sold garage anl service station to Gibson Investment Co., Salem, S. D.

Bassett—Myron Bigelow sold garage and repair shop to Pratt Hammond, Chickasaw, Ia.

Belle Plaine—Rude Auto Co. enlarged building.

Bennett—Leatherby & Millard Brothers sold garage and accessory shop to L. Ahrens and William Edler.

Bloomfield—I. O. Power, Pulaski, Ia., opened oil filling station.

Boone—James Fitzgerald opened garage and repair shop.

Burlington—Harry Brinton opened garage and repair shop.

Cedar Falls—Thompson & Collard rebuilt garage and repair shop.

Cedar Rapids:

C Street Garage & Radiator Shop reopened by Frank E. Dobrovsky and Ludmill Prastka.

Kadlec Garage, 16th Ave., remodelled.

F. W. Little and Harry Porter, taken management of Blume Auto Paint Shop, 585 H St.

Third St. Garage, 510-12 S. Third St., opened for business.

Wheeler Garage & Repair Shop moved to 1205 4th Ave.

Centerville—Bancroft McCormick will open tire and repair shop, W. Van Buren St.

Clarinda—C. E. Dunn and Orville C. Greene will open garage and filling station, S. 18th St.

Clinton—Harold Marcellus and Harry West opened Gould Storage Battery Station and Garage, 118 S. 2nd St.

Crawfordsville—Earl McDowell sold interest in Red Ball Garage to Crockte, Bros.

Creston:

W. G. Chester opened repair shop, 214 N. Elm St.

Garrett Bros purchased Sheridan Battery Shop from George A. Miller & Son.

Davenport:

E. A. Koester, Jr.; 741 Perry St., will open garage and sales room.

Dr. W. F. Speers remodelled garage and repair shop, E. 3rd St.

Delhi—George Angele sold garage and repair shop to Louis Meiners, Eitzen, Minn.

Des Moines:

Midwestern Auto Exchange opened garage and repair shop, 406-10 Grand Ave.

Shureloc Windshield Co. opened garage and repair shop, 1401 Locust St.

White Way Garage & Repair Shop, 917-19 W. Grand Ave., purchased by H. O. Corcoran.

Elizabeth—Sandlin Garage, Myrtle St., remodelled.

Elliott—Amory Penry sold garage and service station.

Exira—Ludwig Jorgensen sold garage and service station to Robert Christensen and Christopher Stone.

Fort Madison—Monroe Garage, Second St., purchased by Marsh Bros.

Greenfield—Meisner Motor Co. enlarged garage and repair shop.

Grinnell—J. A. Hamor opened garage and repair shop.

Griswold—W. J. Grennell reopened garage and repair shop.

Grundy Center—Bailey & Raymond Garage and Repair Shop, purchased by William and Raymond Hawn.

Independence—Fred W. Hillman purchased Acme Tire Shop, Chatham St.

Ionia—A. T. Brookins sold garage and repair shop to Jacob Klassen.

Leon—Estate Garage, remodelled.

Manchester—H. V. Little sold garage and repair shop to Miller & Curtiss, Winthrop, Ia.

Munson—Seger & Swisher sold garage and repair shop to Matt Olson and Elmer Grant.

Maquoketa:

C. R. Bauch purchased Rounds Brothers' garage and repair shop, S. Main St.

Doran Auto Co. enlarged garage and repair shop

H. R. Miller opened garage and repair shop, S. Main St.

Marshalltown—Motor Inn, 8 W. State St., opened by . H. Vogt and J. J. oung; 2-story brick and hollow tile structure; $40,000.

Milford—Bert Randolph purchased McClurg Bros.' garage and repair shop.

Montezuma—O. E. Quaintance, remodelled garage and repair shop, 219 High Ave., E.

Mustatine—E. Stender and E. Richardson opened garage and sales room, Gremmel Bldg.

New Hampton—J. L. Curtis sold garage and accessories shop to E. W. Manning.

New London—Wind Auto Co., enlarged garage and repair shop.

Northwood—H. J. Squires and L. W. Seltz opened garage and repair shop.

Olin—E. R. Gart opened garage and repair shop.

Osage—Birum Garage & Repair Shop, E. Main St., opened or business.

Oskaloosa:

J. G. Booles & Son removed tire and repair shop from N. Market St. to A. Ave.

Clarence Flanders sold interest in Oskaloose Garage Co., 215-17 E. High Ave., to Carl Smith.

Grinnell Nash Co. opened sales room, 4th Ave.

Ossian—Joseph Schultz purchased garage and repair shop from Dewey Tatro.

Red Oaks—Oakland Gibson Co., purchased Red Oak Storage Garage & Repair Shop.

Reinbeck—Harold K. Wilson Co., installed Willard battery station.

Sas City—J. V. Cain, Moline, Ill., purchased Auburn Garage & Service Station from A. Calfee.

Sheldon:

Edward Christiany and Fred G. Miller opened garage and repair shop.

Sheldon Auto Co., remodelled garage and repair shop.

Shenandoah—Dr. R. E. Gidley opened garage and repair shop, Maple St.

Stockton—H. I. Lange sold his garage and repair shop to Jas. Duncan, Walcott, Ia.

Waverly—P. F. Klein purchased interest of L. F. Dunnwald in Waterloo Vulcanizing Co., 102 5th St.

What Cheer—J. H. Doan Auto Co., purchased building from Frank Emerly and will convert it into garage and repair shop.

Kansas.

Anthony—Justice Battery Co., located in new quarters, E. Main St.

Arkansas City—K. J. Harrington sold interest in O. K. Tire Repair Shop to partner, C. M. Heathmen.

Atchison—B. W. Tire Co. has purchased building for $20,000 for tire repair sno,

Baxter Springs:

Liberty Garage remodelled and enlarged.

Square Deal Garage, West 11th St., operated by G. M. Logan.

Belleville—Belleville Motor Co., moved garage and repair shop to Saip Bldg., 19th St.

Beloit—W. D. Johnston purchased Exide Service Station.

Bonner Springs—Golden Belt Garage, remodelled.

Cherryvale—Jackson Bros. sold garage and repair shop to Kenneth P. and Arthur Baty.

Concordia—Harry Nelson sold his repair shop, E. 6th St., to V. H. Tucker.

Council Grove—Whitaker & Featherston enlarged garage and service station, Main St.

Cuba—Jerry Svoboda opened garage and repair shop.

Dodge City—Machine and repair shop, operated by H. W. Voorhies in connection with Dodge City Auto Top & Painting Co., sold to Clarence Yuncker and Deacon Godfrey, Jr.

Elkhart—Bradford Auto Co. enlarged garage and accessory shop.

Fredonia—Harry and Charles Singleton will open garage and service station.

Galena—Galena Automobile Co., moved to 5th and Main Sts.

Goodland—Kent Garage, N. Main St., opened for business.

Great Bend—Hoge Bros. purchased interest of D. Clarke in C-H Garage & Repair Shop.

Hutchinson:

W. S. Kennedy purchased Polly & Riggs Garage, 116-18 S. Main St.

S. M. Smith purchased Jolly Garage & Service Station, 118 Ave. A.

Independence:

Lee Doggett and Harry Sappington opened repair shop.

Edward Reynold built addition to garage and repair shop, Maple and Pennsylvania Aves.

A. W. Shulthis will open garage and repair shop, Laurel St.

Junction City—Van L. Birch will move garage to N. Washington St.

Manhattan—A. E. Lynde sold garage and repair shop, 308 Houston St., to Martin and Alvin Bonhenblust.

Mount Hope—O. Osboine, Berger Bldg., will open garage and tire supply store.

Newton—Newton Iron & Salvage Co. opened garage and repair shop, D. 4th St.

Osawatomie—E. J. Ferguson and W. C. Alexander purchased White Way Garage.

Oswego—Bert Gore sold O. T. Garage & Service Station to P. E. Hankins.

Parson—Amos Valtz, McCune, Kan., purchased Fischer Battery Station.

Sedan—W. H. Sproul purchased building from N. B. Wall for garage and filling station.

Wichita:

F. B. Callender sold his interest in Callender Tire Co., 239 S. Market St., to L. W. Brett for $30,000.

Howatt Cox opened repair and accessory shop, 301 Market St.

J. T. Ogden sold garage, 1619 W. Douglas Ave., to C. W. Davis.

B. H. Porter sold garage and repair shop, 425 N. Main St., to A. B. Simon for $3500.

H. R. Tillotson purchased Wichita Liberty Auto Co., 312 S. Market St.

Kentucky.

Bowling Green—Quick Service Tire Repair Co. opened at 1043 State St.

Carlisle—Stump & Henry sold their vulcanizing and repair shop.

Cynthiana—Garage and accessory shop of I. R. Jones moved to Pike St.

Danville:

Dunn Bros. moved tire shop into Bruce Bldg., 4th and Main Sts.

  Lee Ford purchased half interest in Southern Motor Co. garage, Main and McGorty Sts.

Eddyville—O. C. Catlet sold interest in Eddyville Vulcanizing & Supply Co. to Eugene Crumbaugh.

Franklin—W. H. Winnfield and Paul Massey opened garage and repair shop.

Georgetown—Kinnard Rowe purchased interest of Zach D. Lustry in service garage; will be conducted as Georgetown Auto Supply Co.

Lexington—O. M. Powell, Georgetown, Ky., opened tire and accessory shop, 229 Main St.

Louisville:
  Bensinger Auto Co. opened branch sales room and repair shop, 405 W. Broadway.
  W. S. Overstreet purchased half interest in Ellis Garage.

Newport:
  Standard Auto Garage Co., 6th and York Sts., will open garage and service station, 1028-32 Monmouth Ave.
  Newport Auto & Service Garage, 803 York St., enlarged garage, 7th and York Sts.

Russellville—Beverly Ransey reopened garage and service station, Center St.

Warsaw—Waller, Brown & Clark opened Black Diamond Garage in old Hobbs building.

Wilmore—Wilmore Auto Service Co. opened for business.

Winchester—Repair and tire shop of Swope Garage purchased by Paul Young and Sid Baught.

Louisiana.

Shreveport—344 Tire Service Co., 402 Marshall St., recently organized with Jas. R. Emry as president and manager, will install vulcanizing plant and tire sales and service station.

Michigan.

Adrian:
  Frank McKinster & Co., build addition to garage and repair shop; $8000.
  Raymond Garage Equipment Co. enlarged building.
  L. Weller opened Washburn alley.

Ann Arbor—William J. Mayer sold garage and repair shop, 120 W. Huron St to Raymond Vogel and Rudolph E. Reichert.

Baldwin—Kennedy Garage & Repair Shop purchased by George F. Durfing.

Battle Creek:
  Aldrich Auto Co. opened repair shop in Ward block, 35 N. Jefferson Ave.
  Battle Creek Auto Supply Co., moved from Montgomery Bldg. to Arcade, W. Jackson St.
  New addition built to Post Tavern Garage.

Benton Harbor:
  Harvey R. Baldwin opened garage and repair shop, 3080 Colfax Ave.
  Wm. A. Wall, Chicago, Ill., purchased Pamer Tire & Rubber Co. for $17,000.

Charlotte—Standard Oil Co., opened 1-story garage and filling station, Main and Seminary Sts.

Detroit:
  Kelly-Springfield Tire Co. and W. E. Deyo Co., Ford Sales and Service Station, moved to Cass Ave. and St. Antoine St.
  Walker Sax Motor Co., 1515 Gratiot Ave., enlarged garage at Gratiot Ave. and Grand Blvd.
  B. A. Young will open garage and service station, Woodward Ave.

Fremont—John J. Hanzel & Co. purchased Auditorium building at Division Ave. and Sheridan St., and will convert it into garage and repair shop.

Grand Rapids:
  Payne & Newton opened an auto trim shop, 147 Maple St.
  Universal Car & Service Co. opened garage and service station, Ransom Ave. and Liberty St.

Greenville—Western Oil & Distribution Co. opened filling station, Lafayette and Grove Sts.

Hillsdale—Pinkham & Wright opened garage and repair shop, Collum St.

Howell:
  Fred H. Grant and Walter Robbage opened auto paint shop, Michigan Ave., N.
  Hoff Brothers moved into garage and repair shop, S. Michigan Ave.

Jackson:
  C. C. House purchased Franklin Tire & Rubber Co, 804 E. Main St.
  William A. Potts will open garage and repair shop, 2108 E. Main St.

Kalamazoo—M. A. Hennes installed repair shop in M. C. Garage.

Lansing:
  Gates & Storey opened Exide battery station, 301 River St.
  Lansing Nash Sales Co. will open sales room and repair shop, S. Washington Ave.
  H. C. Minnie opened garage and service station, S. Main St.
  Milton H. Perry will open garage and repair shop, S. Washington Ave.

Lapeer:
  Arnold Gillett sold repair and vulcanizing business to Cleve Raymond.
  Northern Oil Co. opened filling station.

Manistie—Thompson Auto Co. opened garage and repair shop; $30,000.

Monroe—Joseph Bairley sold interest in Central Garage & Repair Shop, E. Front and Macomb Sts., to James O. Lone, Ida., Mich.

Moscow—Herman H. Paul opened garage and repair shop.

Mt. Clemens:
  A. A. Carter purchased Foley Garage.
  Operative Oil Co. will open garage and repair shop, Market St.
  White Front Garage, Ferry St., purchased by Berrien Spring Garage.

Muskegon:
  Charles Cooper opened garage and accessory shop.
  William Heiser and David Robarge formed partnership to conduct garage and repair shop.
  Muskegon Cooperative Filling Station opened, 3rd St. and Houston Ave.
  H. Valle Vulcanizing Co., opened second shop.

Pontiac:
  John Green and Elmer Farlow purchased Cole Garage and Repair Shop, Water St.
  Pontiac Oakland Sales Co., enlarged garage and sales room.

St. Johns—Standard Oil Co. of Indiana will open filling station, High and Spring Sts.

Sheboygan—Jones & Wheelock sold their garage and repair shop, Division St., to Care Harding of Detroit.

Witehall—John O. Reed taken over White Lake Garage & Accessories Shop.

Zeeland—Holleman De-Weerde Auto Co. will open garage and repair shop.

Massachusetts.

Lawrence—J. R. Haverty will open garage and repair shop.

New Bedford—Motor Sales Co., 514 Pleasant St., will open sales room and service station, Pearl and Purchase Sts.

Worcester—W. H. Trulson, 35 Berkman St., will open public garage, Pleasant and Fruit Sts.

Minnesota.

Olivia—Melhouse & Heinz enlarged public garage.

St. Paul—Roller Motor Co. remodelled public garage, 6th and Main Sts.

Mississippi.

McComb—Hugh L. White will open filling station.

Missouri.

Bethany—Reliance Motor Supply Co., 14th and Main Sts., open garage and repair shop.

Cameron—Wesley Todd opened garage and repair shop, W. 3rd St.

Cape Girardeau—Henry Dooley, Indianapolis, Ind., purchased from Walter D. Black garage and accessory shop, 217 Broadway.

Carthage—Southwest Tire & Supply Co., purchased tire stock of Owen Tire Co., 4th St. and Howard Ave.

Columbia—Reno & Brewster purchased garage and accessory shop building from Boone Realty Co. for $20,000.

Eolia—Harry Gooch purchased interest of James Graham in Graham & Jensen Garage & Accessory Shop.

Henrietta—C. E. Traylor opened garage and filling station.

Higginsville—A. D. Allen & Co., 515 Reliance Bldg., Kansas City, Mo., will open filling station.

Houston—W. J. McGee and T. M. Moody purchased interest of A. Young in Houston Garage.

Jefferson City:
  J. M. Hoffman opened garage and repair shop in Masonic Bldg., High St.
  Wm. Remmert purchased interest of Herman McKinney in Main St. Garage.

Jonesburg—Fred Patterson sold his interest in Star Garage to Brother Roy.

Joplin:
  George Minnick purchased Southern Automobile Co., 401 Virginia Ave.
  Sorber-Kuhn Auto Supply Co., moved from 512 Joplin St. to new 2-story reinforced concrete building, 5th and Wall Sts.

Kansas City:
  F. H. Fitch and J. W. Grounds will open garage and repair shop.
  Clem Mahan purchased Taylor Buick Garage and Repair Shop, 5th St. and Osage Ave.

Lees Summit—Burney Garage completed at cost of $25,000 and opened for business.

Lexington—Palmer Garage & Repair Shop purchased by John Morrison & Sons.

Milan—George W. Mock sold garage and accessory shop to E. D. Michael & Son.

Millersville—W. C. Miller opened garage and repair shop in Martin Bldg., Broadway.

Monett—Daniel Lautaret opened garage and repair shop, Central Ave.

Mound City—Harold Ward and Claude Brown will open garage and accessory shop.

Mountain Grove—J. W. Dunafon sold City Garage to C. C. Mashburn.

St. Louis—Chase Ulman, 4540 Linden Bldg. will open garage and accessory shop.

Shelbina:
  Grundy Veal purchased interest of partner, Lee Manuel, in Center St. Garage.
  T. E. Hawkins enlarged garage and service station.

Springfield:
  Carl A. Bissmann, owner U-Auto Stop Garage, moved from 521 E. Commercial St. to 605-7 N. Jefferson St.
  Link McClure Motor & Supply Co. opened for business.

Sturgeon—Pollard Bros. sold garage and repair shop.

Montana.

Baker—Ward Wells, Willard, Mont., taken over Baker Auto Co.

Belgrade—C. F. McKibben, Bozeman, Mont., purchased interest of E. Bunnell in Independent Garage.

Dodson—Kelly & Barrett sold garage and filling station to Earl Lansdon and Harold Mummey.

Great Falls—Bowen S. Conrad sold Auto Wash & Oiling Station, 7th St. and Central Ave., to L. E. Taylor.

Laurel—Charles Wulff opened filling station in Main Bldg., First Ave. and Main St.

Terry—Leif Young purchased Yellowstone Garage & Repair Shop.

Whitehall—Walter Rickert sold interest in Yellowstone Garage to partner, A. Bertogle.

Nebraska.

Alliance—Garage and service station of A. H. Jones Co. moved to 3rd and Cheyenne Sts.

Franklin—William Bendel sold garage and repair shop to Dick & Emerson.

Lindsay—Joseph Wessel opened battery shop and service station.

Omaha—Garage and sales room of Oakland Motor Car Co., 30th and Harney Sts., remodelled.

Overton—L. E. Minear purchased interest of Jay Guillion in South Side Garage.

North Dakota.

Berthold—E. Holliday sold garage and repair shop to Berthold Moore Motor Co.

New Jersey.

Collingswood—Two-story addition built to Collingswood Garage, 660 Haddon Ave.

Ohio.

Alliance—Texaco Filling Station & Garage opened at Main and Union Sts.

Bellaire—George La Roche opened garage and tire repair shop, Noble St.

Bluffton—Large addition built to Stratton Garage, Elm St.

Bryan:
  K. F. Boothman sold Jefferson Garage to William H. Storrell, Akron, O.
  A. M. Strayer opened garage and battery station in Elder Bldg., W. High St.

Bucyrus:
  W. H. Brause sold Standard Garage & Accessory Shop, N. Sandusky Ave., to Elkenberry Bros., Kokomo, Ind.
  Eichenberry Bros., Kokomo, Ind., sold Standard Garage and Filling Station, 234 N. Sandusky Ave., to L. B. Dunn.

Cadiz—E. E. Shively, New Philadelphia, O., opened Willard service station.

Cincinnati:
  Gittleson & Dell leased garage, 3110-12 Gilbert Ave.
  N. E. Harris purchased Holbrook Garage & Repair Shop.
  Nash Motor Co., 836 Sycamore St., will open garage and sales room, southeast cor. Reading Road and oMrgan St.

Cleveland:
  Judd Automobile Co., 1216 Huron Road, enlarged garage, E. 46th St. and Euclid Ave.
  Lakeside Motors Co., purchased building, E. 69th St. and Euclid Ave.

Columbus:
  Erner-Hopkins Co. moved electrical supplies and automobile equipment business to 146-48 N. 3rd St.
  H. C. Godown sold interest in D & D Battery Service Co., 232 N. 4th St., to George A. Archer.

H. J. Morton Motor Sales Co. opened garage 78 N. 4th St.

Topper Tire Sales Co. 5th and Long Sts., installed vulcanizing equipment.

Dover—S. M. Miller moved repair shop from Pike St. and Plum alley to 437 4th St. and joins Hostetler Bros.

Findlay—C. F. Sattler Garage & Service Station opened at W. Crawford and Cory Sts.

Fremont:

John and Orville Cherry purchased interest of C. Wahl in auto and electrical shop Berger block.

George Langerman and Richard L. Null, Woodville, O., converted building on Grant St. into garage and repair shop.

Hamilton—Joseph A. Marrhas opened garage and repair shop, 625 E. Ave.

Hillsboro—E. M. Bowman purchased Washington C. H. Arcade Garage.

Ironton—Arthur Chambers opened garage and accessory shop.

Lorain—Smith Motor Co. will open garage and service station.

Marion—Carl H. Postle purchased half interest in Almending Motor Sales Co.

New Haven—Westinghouse Air Spring Co. purchased Bruening Wind Shield Co. Garage and Sales Room, Chester Ave.

Niles—H. J. Burns purchased Economical Vulcanizing Co.

Sulphur Springs—Harriger & Darr sold garage and repair shop to Homer Beamer, Bucyrus, O.

Toledo—L. G. Williams leased garage, 542 Smith St.

Vermilion—Frank Schomer purchased and will open garage and repair shop, Liberty St.

Wellington—O. J. and L. A. Baumgardner purchased garage and filling station, N. Main St.

Oklahoma.

Sayre—G. Harrison and F. Vessels opened garage and accessory shop.

Oregon.

Portland—Morris and W. H. Elberson sold Elberson Garage & Repair Shop, N. Meridian St., to Homer McCouchy.

Pennsylvania.

Beaver Falls—Joseph Cashbaugh will open garage and service station, 6th Ave.

Gettysburg—Peckham & Ott will open public garage.

Lebanon:

J. W. Garrison sold interest in Garrison Motor Co. to James R. Reddick, Salem, Mo.; new owner will equip garage with modern machinery for repair work.

Milton S. Weaver leased garage and repair shop, Cumberland St.

New Castle:

Fred Neri opened garage and repair shop, Mahoning Ave.

Wm. J. Wray opened garage and repair shop.

Philadelphia:

B. Gruber purchased garage, southwest Cor. 52nd St. and Wyalusing Ave., for $51,000.

Leader Vulcanizing & Tire Co. acquired 4-story building 1313 Race St.

Northwestern Garage, 2817-19 Cumberland St., purchased by John Sharpless, for $35,000.

James K. Stone sold garage and repair shop, 4810-20 Chestnut St.

T. D. Sullivan purchased electrical auto battery charging plant and storage building, east side 31st St., extending from Sanphin St. to Fletcher; $60,000.

Pittsburgh—Fiat Motor Car Co., Union Arcade, will open garage and sales room, Cypress and Aspen Sts.

Pottstown—City Council has decided to charge a $30 annual license for gasoline pumps and service stations.

Reading:

Automobile dealers organized interstate trade association.

Hettinger Bros. opened garage and repair shop, 249 Penn St.

Scranton—Figures compiled in office of E. L. Walter, superintendent of bureau of building inspection, show eight times as many garages as homes have been built here since January.

Shamokin—Edgewood Garage Co. built brick and concrete addition, 25x150, to public garage.

Somerset—Simpson Auto Service Co. enlarged building, Patriot St.

Waynesboro—John D. McKahan enlarged garage and repair shop.

Wilkes-Barre—American Auto Accessory Stores purchased stock and fixtures of Jacobs Tire Store, 45 W. Market St.

Rhode Island.

Providence—Harris Weber, 28 Halsey St., will open public garage, Pratt and Olney Sts.

Tennessee.

Centerville—E. C. Holland sold garage and repair shop to J. B. Bowen and W. P. Ship.

Crossville—G. E. Harrison & Sons opened garage and accessory shop.

Fayetteville—Hall & Lewter opened garage and repair shop, W. Maple St.

Gallatin—N. T. Donoho opened garage and repair shop.

Lebanon:

Arthur Chambers opened battery service station W. Main St.

A. N. Smith sold Hot Spot Garage to C. C. Colbeer and Jean Hager.

Martin—Johnson & Sons sold battery service station to O. T. Parrish.

Murfreesboro—A. Williams and Alfred Harrison, garage and accessory shop, S. Maple St.

Ripley—J. G. Smith opened garage and accessory shop in Klutts Bldg.

Rome—T. G. Gann opened garage and repair shop.

Tazewell—Louie Cook purchased garage and repair shop, Main St

Trenton—Rice Smith will open garage and service station.

Union City—Semones & Sons purchased Bransford building, 1st St., for garage and repair shop.

Texas.

Fort Worth—Ellison-Friend Tire Co. leased building and installed $4000 vulcanizing and tire service equipment.

West Virginia.

Parkersburg—J. W. and D. P. Feres will open garage and repair shop, 7th St.

Wisconsin.

Almond—C. R. Vehrs sold service garage to E. A. Sold Sales Co.

Amherst—Ole Evenson leased Allen Garage, Main St.

Antigo—Louis Porlier purchased half interest in tire shop of Elwin Billings.

Beloit—Walter L. Baker purchased Broad St. Garage & Repair Shop.

Briggsville—Frank McDougal purchased N. Side Garage fsom Floyd Pippen.

Burlington—Migneault & Winkler, who operated as Automotive Co., 577 Chestnut St., dissolved partnership.

Clinton—Harry and Emery Nelson purchased Riemer Repair Shop.

Durand—Wm. Flynn purchased garage from Bert Hulse.

Eau Claire—Auto Specialty Mfg. Co., dealer in auto accessories, moved into new quarters, 416 S. Barstow St.

Tennimore—August J. Maso purchased interest of partner, Jos. H. Whitish, in Automotive Sales Co.

Fond Du Lac—Engels & Romame purchased Helmer Garage & Service Station, 19-23 4th St.

Fremont—Kramer Garage & Repair Shop purchased by Koch Bros.

Hammond—R. H. Vosberg sold garage and repair shop to Hanson Bros., Little Falls, Minn.

Highland—Joseph Frye sold Ford service station to Walter Carroll & Co.

Hilbert—C. L. Van Wagner and E. Schmitt, Hilbert Auto Co., purchased garage of V. L. Luedeke.

Janesville—Automotive & Tool Machine Co., general machine repair work, opened at 822 Beloit Ave.

Kennan—Wm. Christman, Tony, Wis., and E. Ripley, Superior, Wis., opened garage and repair shop.

Kewannee:

Herlik & Salkowska enlarged garage and repair shop.

New equipment installed in Salkowske Herlik Garage.

Lake Geneva—Wm. B. Krueger purchased interest of Ira A. Flack in Lake Geneva Auto Station.

Madison:

N. W. Fox will open garage and repair shop, Doty St.

H. M. Ratcliff will open garage and service station, 18 E. Mifflin St.

Manitowoc—H. M. S Motor Car Co. moved garage and repair shop into new quarters.

Marshfield:

Auto Sales & Service Co., 903 S. Central Ave., purchased Victory Garage, W. 2nd St.

Marshfield Hardware & Auto Co. will open garage, W. 4th St.

Medford—Hal Brown, Milwaukee, purchased interest in Frindell Bros.' garage

Montort—F. A. Goold sold half interest in garage and repair shop to Jos. Richter, Jr.

Mt. Sterling—Julius Jackson built addition to garage and repair shop.

Neenah—Henry Knutson opened garage and accessory shop, 124 N. Commercial St., to be known as Service Auto Shop.

N. Fond Du Lac—Yellowstone Sales & Service Co. will open garage and service station.

Norwalk—Zimmerman Bros. moved garage and repair shop to Ford Bldg., S. Main St.

Oconomowoc:

Bente Bros. sold garage, Milwaukee St., to Emil A. Harthun, Milwaukee.

Harthun Garage purchased garage building, 146 Milwaukee St.

Oconto Falls—Eugene Goddard and Lawrence Junco opened garage and repair shop.

Plymouth:

W. A. Herr sold interest in Central Garage and Implement Co.

Walter Sanders and Edgar Higgins purchased Service Motor Co.

Sheboygan—S. V. T. Garage, remodelled.

Shullsburg—W. H. Look sold interest in Look & Fox Garage & Accessory Shop to partner, Edward Fox.

Whitehall—G. S. and Tracy Rice purchased Auto Sales Co.

Brief Notes from the Southwest

Van Buren, Ark.—Paul W. Sheridan, Ford distributor, Ft. Smith, will open Ford agency, head of Main St.

Council Grove, Kan.—T. L. Acrea bought Quick Service Tire Shop, Baugh Bldg., E. Council Grove, from Pat Deal.

Dighton, Kan.—W. J. Wickham leased repair shop of Eagle Garage.

Downe, Kan.—Central Garage sold by Florea & Leslie to Woolley Service Station.

Elkhart, Kan.—Van's Motor Inn opened garage, Kansas St.

Howard, Kan.—Austin Kimzey moved garage from Metropolitan Bldg. and consolidated with Rhodes & Elledge Buick station, Burchfield Blk.; will make alterations.

Hutchinson, Kan.—Service Airless Tube Co., factory distributor, opened branch, 14 Ave. A, west; mgrs., F. Thorpe, C. M. Wates.

Sharon Springs, Kan.—Gale Welch leased auto repair department of Gannon Garage.

Armstrong, Mo.—Geo. Burton bought half interest in A. A. Duncan Garage.

Barnett, Mo.—Cap Crane sold garage to Shirley Phillips.

Harrisonville, Mo.—Carpenter & Wirt, public garage, S. Independence St., dissolved, Reid Carpenter having bought interest of partner, Socia M. Wirt.

Independence, Mo.—Clay-Oakland Motor Co. to move from Maple Ave. to Lewis Garage Bldg., S. Liberty St. Paxton, Duke & Bradley will occupy Clay-Oakland Bldg. and will establish Buick sales room in Paxton Bldg.

Joplin, Mo.—Wallace Porter and Arch McDonland, Joplin and L. Ashcraft, Carthage, engage in tire business, 5th and Joplin Sts.

Kirksville, Mo.—M. E. Cook purchased Chas. Novinger's interest in Cannon Ball Garage.

Montgomery City, Mo.—Hanson Smith's auto sales shop and W. H. Blake's garages, destroyed by fire; loss $30,000.

Republic, Mo.—Alvin Coggin sold City Garage to Harvey Howard, Springfield.

Polo, Mo.—Orville Hunt sold garage near depot to Jas. H. Miller, Hammond.

Rockport, Mo.—Ben Travis purchased Ford Garage and Agency.

St. Louis—Hudson-Grampton Motor Car Co., new service station, north side Belmar Blvd.

Spickard, Mo.—Logan & Schooler Motor Co. bought Ford agency from Noel Moss Motor Co.

Clovis, N. M.—C. W. Bradley purchased Motor Inn Garage, W. Otero St., from E. Nicodemus.

Altus, Okla.—E. C. Keith sold interest in Keith Motor Sales Co., E. Broadway, to partner, Fred Caves. W. A. Kempf and H. A. Hoffman bought Modern Garage, E. Broadway.

Ardmore, Okla.—J. E. Keys bought half interest in Ardmore Auto & Supply Co. His partner is Don Cochran, formerly of Wynwnod.

Elk City, Okla.—Gordon & Co. bought Croswell & Watson Garage, 5th and Jefferson Sts.

Enid, Okla.—R. A. Shepherd sold Reo Garage and agency, 10 S. Independence St., to John, J. H. and Benj. Cramer.

Krebs, Okla.—DeFrange Bros.' garage and machine shop, cor. 3rd and Washington Sts., open for business.

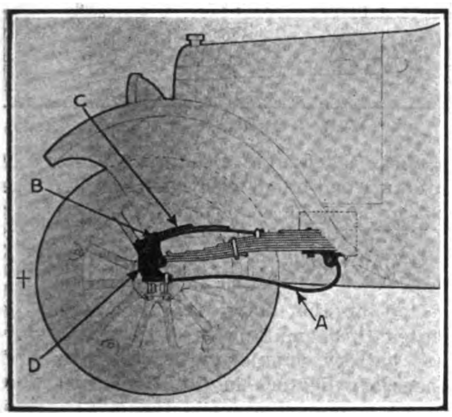
Picher, Okla.—A. L. McKinney, Netta St. Garage, 201 S. Netta St., to build new garage near 3rd and Connell Ave.

NEW MARVEL SHOCK ABSORBER.

A shock absorber known as the Marvel, Type C, designed for cars having cantilever springs, the product of the Marvel Shock Absorber Corporation, 6520 Carnegie avenue, Cleveland, O., is a new addition to the automobile accessory field.

The Marvel is unique and original in design in that the cantilever spring of a car is lifted off the axle and suspended in a full floating hanger free to move. A radius rod of spring steel is employed parallel to and under the main car spring. The weight of the car is still on the cantilever spring, but the propelling force pushing the axle is in the radius rod, A, shown in cut.

Thus a shock to reach the body of the car must pass from the axle to the pivotal hanger, D, then the force is shunted directly to the roller bearing in the pendulum hanger, B, and is drawn off by the sensitive equalizer springs, C, thus absorbing approximately 75 per cent. of all road shocks.



Type C, Marvel Shock Absorber: A, Radius Rod; B, Pendulum Leverage Hanger; C, Vibration Equalizer Spring; D, Pivotal Hanger.

The manufacturer states that an exclusive feature of the Type C Marvel Shock Absorbers lies in the fact that they produce vertical or up and down resilience similar to all snubbers and shock absorbers, and that in addition they cushion longitudinal or head-on thrusts due to the slight slipping action of the main cantilever springs of the car within the pendulum hangers.

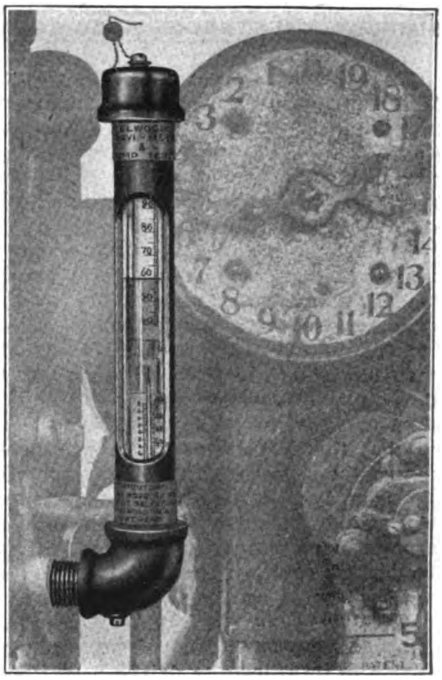
The Marvel Shock Absorber Corporation was originally a western concern, conducting a plant at Portland, Ore., for the past year having manufactured and distributed 5000 sets of type A and B models almost exclusively on the Pacific coast. A modern factory was recently opened in Cleveland, which will render possible the distribution of the Marvel product over a wider territory.

The several cars equipped with cantilever springs, and to which Marvel shock absorbers are applicable, are the Chevrolet, Buick, Dort, Mitchell, Haynes, Saxon and Paige. A complete set of Marvels, front and rear, for 490 model Chevrolet, sells for $35.

ELWOOD GRAVITY GAUGE.

The Elwood Gravity Gauge Sales Corporation, Elwood, Ind., after several years of experimental work by Billy Tidmarsh, the ex-auto race driver, is offering to the public a gauge termed the Elwood Gravi-Meter and Pump Tester, that is claimed to be unique in its field. It is stated to follow a scientific principle and to be right not only theoretically, but gives practical proof of its utility in every day use. The manufacturer also claims that this gauge will afford protection to the buying public inasmuch, as is shown in the cut, it shows the actual test of the gasoline. This is stated to be accurate regardless of weather conditions and, being easily read, it enables the buyer to determine its quality. If air is being given instead of liquid, it also is detected by the appearance of small bubbles which arise in the Gravi-Meter, this air taking the place of the liquid and leaving the gauge dry as pressure is applied to the pump. This gauge not only enables the operator to detect in his system any leaky foot valves, loose connections, cuts, but also to determine when the tank is pumped dry. It turns a non-visible pump into a visible one, as the gasoline is visible in the gauge moving up and down as it is being discharged. It is fool proof in every respect.

It is manufactured by the Elwood Gravity Gauge Co. and distributed by Elwood Gravity Gauge Sales Corporation, Elwood, Ind. Prices and distributors' proposition and literature will be furnished upon request.



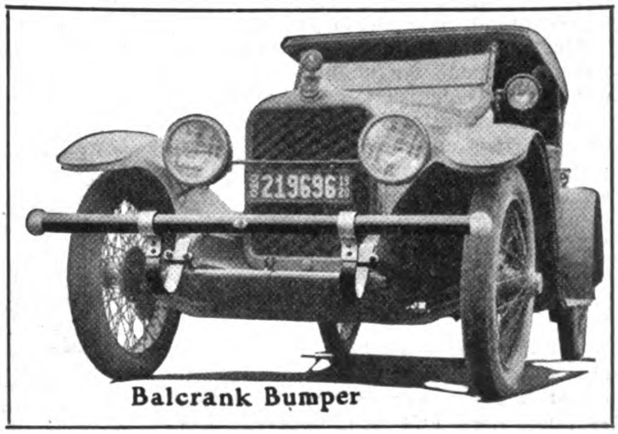
Elwood Gravity Gauge—Liquid Visible in Gravi-Meter at All Times Insures Correct Measure.

CINCINNATI BALCRANK BUMPER.

One of the accessories that was exhibited for the first time at the Chicago and later at the St. Louis and Cincinnati automotive equipment shows, and occasioned a considerable amount of favorable comment was the Balcrank Bumper, which is manufactured by the Cincinnati Ball Crank Co., Cincinnati, O.

The Balcrank Bumper is not the development of any particular idea, but is the result of considerable research work from the engineering and experimental side to develop a bumper that would give complete protection. It was found that a straight rigid bar of the proper length, supported by spring steel strips, permitted of universal attachment, and at the same time gave protection. The general principle of the bumper having been determined it was turned over to a number of artists and designers to be developed so as to look well on the car. The result is a bumper which is said to improve the appearance of the car, and at the same time give thorough protection.

The Cincinnati Ball Crank Co., does not confine its activities exclusively to the manufacture of Ford accessories, but furnishes the Balcrank Bumper in a number of different styles and finishes suitable for practically every make of car. Jobbers' and dealers' proposition will be furnished upon request.



Balcrank Bumper

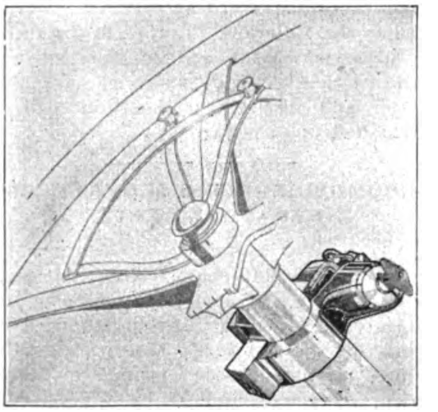
LOCOMOBILE REPRESENTATION IN NEW YORK STATE.

The Locomobile car, one of the products of Hare's Motors, is now to be represented in central and northern New York by the T. N. C. Motor Sales Co., which maintains sales rooms in Watertown, Syracuse and Utica. This company, which was organized in October with a capitalization of $250,000, is officered as follows: President, F. H. Taylor; treasurer, J. R. Newton, and secretary, L. W. Quick, all of Watertown. The Watertown headquarters are at 181 Arsenal street. The Syracuse branch is managed by Malcolm Dorion and is located temporarily at 111 West Taylor street. The Utica branch, at 465 South Genesee street, is managed by E. L. O'Donohue.

SIMPLEX THEFTPROOF AUTO LOCK.

The Simplex Corporation, 2214 South Michigan avenue, Chicago, Ill., maker of the Simplex steering wheel lock for Ford, Dodge, Overland and Chevrolet cars, has added to its line the Theftproof Auto Lock, formerly made by the Hershey Manufacturing Co., Denver, Col.

The Simplex Theftproof Auto Lock consists of a neat nickel plated ring, attached permanently and rigidly to the steering post of an automobile. When lock is in a closed position, a strong, case hardened steel pin passes through the outside steering column into the steering tube and holds the steering gear so that the position of the front wheels cannot be changed. This prevents the car from being driven or towed. A Corbin cylinder lock of the most approved type is used which, it is stated, cannot be picked or forced open. This device can be locked and unlocked in a second's time, right from the driver's seat. It is so convenient that from the very day it is installed the driver uses it unconsciously every time he leaves the car, just as naturally as he switches off his ignition. This is very important, for it has been proven that locks which require more time to operate and which soil the hands and clothes, lead the average driver to "take a chance," if planning to stop only a moment—and in that moment the car is stolen. The Simplex Theftproof Lock is self-adjusting. You simply close the lever, turn the key and step out of the car. The moment a joy rider or a thief turns the wheel the pin snaps into place and the front wheels are locked in "straight ahead position."

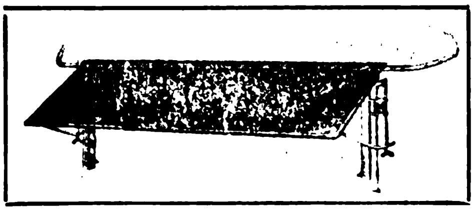


Simplex Theftproof Auto Lock.

The lock is attached permanently and rigidly, without the slightest change in the original construction of the car. Any mechanic can attach it with the use of a screw driver and breast drill. It is approved by the Underwriters' Laboratory, securing a reduction of 15 per cent. in insurance premiums. The price at retail is $15.

SEE-WEL WINDSHIELD CANOPY.

The See-Wel Windshield Canopy is designed to shield the eyes from the sun, street lights or approaching head lights of other cars, and to protect the windshield from rain, snow and sleet, giving the driver and occupants of the car a clear vision across the full length of the windshield in any weather, day or night.



See-Wel Windshield Canopy.

The See-Wel is made in two sizes to fit all open and closed cars, is easily attached in a few minutes and is stated to add a touch of refinement and beauty, as well as serving a needed comfort and convenience.

It does not interfere with the operation of the windshield, spot light, side wings, rear view mirror or top of car, and can be instantly adjusted to any angle to suit the vision when driving.

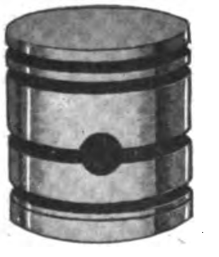
The See-Wel is attached with Universal clamps, which fit any shape of windshield post; it can also be attached to Ford touring cars and roadsters by the use of extension bars, and does not interfere with the operation of the windshield or top. Closed car models are screwed to the body of the car and can also be attached in the same manner to cars already equipped with glass rain shields, without interfering with the operation of either.

The See-Wel is furnished complete with proper fittings ready to attach. It is manufactured by the Model & Metalwork Manufacturing Co., 120 Opera place, Cincinnati, O. The retail price in the standard finish (black top and under side) is $8.50; de luxe finish (black top and green under side), $10.

SPECIAL WAINWRIGHT PISTONS.

Among the special types of pistons now being featured by the Wainwright Engineering Corporation, Connersville, Ind., is one especially designed for Oakland, Olds and Scripps-Booth cars, which are equipped with Northway motors. This is an especially light weight design to replace aluminum and weighs but 14½ ounces. The wide oil relief groove entirely around the piston at the level of the piston pin hole may be particularly mentioned; also the oil grooves in the piston pin bearing, which insure ample lubrication of the piston pin.

Another special type is one for the Ford motor, which is made from the finest gray iron, ground to a glass surface and guaranteed to be absolutely accurate in every detail. The dome shaped head increases its strength and prevents the accumulation of carbon.



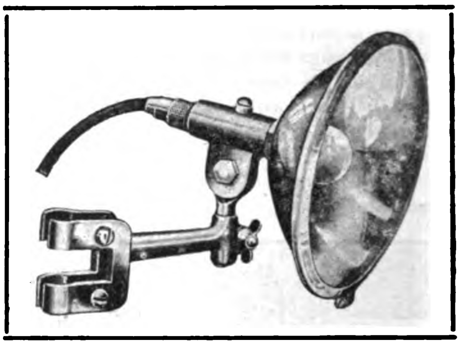
Special Light Weight for Olds and Oakland "6."

The Wainwright Engineering Corporation is making pistons for all the other popular makes of cars in standard sizes and oversizes.

K-D DELIGHT SPOT LAMP.

One of the products that is now being featured by the K-D Lamp Co., 108 West Third street, Cincinnati, O., maker of the well known K-D line of automobile lamps, is the Delight Spot Lamp, which is illustrated herewith. The lamp is of the latest form of construction, single shell type. The reflector is pressed from brass, of proper gauge, polished and silver plated. The glass is convex, held securely in place by a nickel plated band. The bracket is K-D special design, made from brass and nickel plated. As it will be noted that all parts of this lamp are made from brass and nickel plated it is therefore rust proof.

The bulb is 6-8-volt, 21 candlepower Mazda "C," double circuit. Five feet of cord are supplied with each outfit. The list price is $9.



K-D Delight Spot Lamp.

UNIVERSAL POST CONNECTION.

One of the many features which is stated to be making the Cincinnati storage battery popular with motorists and accessory dealers is the Universal post connection. The Cincinnati Storage Battery Co. states that this device assures a positive terminal connection in all cases where dealers are called upon to replace batteries with the "Cincinnati."

The Universal post connection consists of a patent locking nut and sleeve, the sleeve being firmly welded to the top of the center post and holding the locking nut in position when it is drawn into place.

It is furnished with various sized tapered posts to make a perfect fit with any terminal, no shims are required, and thus the connections cannot come loose through vibration. This feature makes it possible to instantly replace all standard batteries with the Cincinnati storage battery.

A letter or post card, addressed to the Cincinnati Storage Battery Co., Moorman avenue, Cincinnati, O., will bring full information concerning the product.

ECLIPSE TAKES OVER SAVIDGE.

The Eclipse Manufacturing Co., Indianapolis, Ind., manufacturer of the Hercules line of spark plugs, has announced the taking over of the distribution and sale of Savidge valve lathes and reamers, made by the A. C. Savidge Co. of Indianapolis.

Directory of Passenger Car Manufacturers

Trade Names of Vehicles, Names of Makers and Their Addresses, by Cities and States, of Principal Concerns Now Actively Engaged in the Industry

The Basis of This Directory Is the Trade Names, Which Are Alphabetically Arranged, and Each Individual Group Is Identified by a Letter, So That Reference to Any One Can Be Made Almost Instantly. The Models Produced by These Concerns Are Included in the Mechanical Specifications That Appear on the Following Pages.

Trade Name	Manufacturer	Address
Allen	Allen Motor Co.	Fostoria, O.
Alsace	Automotive Products Corp.	New York, N. Y.
American Beauty	Pan American Motors Corp.	Decatur, Ill.
American	American Motors Corp.	Plainfield, N. J.
Anderson	Anderson Motor Co.	Rock Hill, S. C.
Apperson	Apperson Brothers Automobile Co.	Kokomo, Ind.
Argonne	Argonne Motor Car Co.	Jersey City, N. J.
Auburn	Auburn Automobile Co.	Auburn, Ind.
Austin	Austin Automobile Co.	Grand Rapids, Mich.
Beggs	Beggs Motor Car Co.	Kansas City, Mo.
Bell	Bell Motor Car Co., Inc.	York, Pa.
Biddle	Biddle Motor Car Co.	Philadelphia, Pa.
Birch	Birch Motor Cars, Inc.	Chicago, Ill.
Bour-Davis	Louisiana Motor Car Co., Inc.	Shreveport, La.
Brewster	Brewster & Co.	L. Island City, N. Y.
Briscoe	Briscoe Motor Corp.	Jackson, Mich.
Buick	Buick Motor Co.	Flint, Mich.
Bush	Bush Motor Co.	Chicago, Ill.
Cadillac	Cadillac Motor Car Co.	Detroit, Mich.
Cameron	Cameron Motors Corp.	Stamford, Conn.
Campbell	Campbell Motor Car Co.	Kingston, N. Y.
Case	J. I. Case Threshing Machine Co.	Racine, Wis.
Chalmers	Chalmers Motor Co.	Detroit, Mich.
Champion	Direct Drive Motor Co.	Philadelphia, Pa.
Chandler	Chandler Motor Car Co.	Cleveland, O.
Chevrolet	Chevrolet Motor Co.	New York, N. Y.
Cleveland	Cleveland Motor Co.	Cleveland, O.
Climber	Climber Motor Corp	Little Rock, Ark.
Cole	Cole Motor Car Co.	Indianapolis, Ind.
Colonial	Colonial Automobile Co.	Indianapolis, Ind.
Columbia	Columbia Motors Co.	Detroit, Mich.
Comet	Comet Automobile Co.	Decatur, Ill.
Commonwealth	Commonwealth Motors Co.	Chicago, Ill.
Crawford	Crawford Automobile Co.	Hagerstown, Md.
Crow-Elkhart	Crow-Elkhart Motor Co.	Elkhart, Ind.
Cunningham	James Cunningham Son & Co.	Rochester, N. Y.
Daniels	Daniels Motor Car Co.	Reading, Pa.
Davis	George W. Davis Motor Car Co.	Richmond, Ind.
Disbrow	Disbrow Motor Co.	Cleveland, O.
Dispatch	Dispatch Motor Car Co.	Minneapolis, Minn.
Dixie Flyer	Dixie Motor Car Co., Inc.	Louisville, Ky.
Dodge Brothers	Dodge Brothers	Detroit, Mich
Dorris	Dorris Motor Car Co.	St. Louis, Mo.
Dort	Dort Motor Car Co.	Flint, Mich.

Trade Name	Manufacturer	Address
Douglas	Douglas Motors Corp.	Omaha, Neb.
Du Pont	Du Pont Motor Mfg. Corp.	Wilmington, Del.
Duryea Gem	Duryea Motors, Inc.	Baltimore. Md.
Economy	Economy Motor Co.	Tiffin, O.
Elcar	Elkhart Carriage & Motor Car Co.	Elkhart, Ind.
Elgin	Elgin Motor Car Corp.	Chicago, Ill.
Erie	Erie Motor Co.	Painesville, O.
Essex	Essex Motors, Inc.	Detroit, Mich.
Ferris	Ohio Motor Vehicle Co.	Cleveland, O.
Fiat	F. I. A. T.	New York, N. Y.
Ford	Ford Motor Co.	Highland Park, Mich.
Franklin	H. H. Franklin Mfg. Co.	Syracuse, N. Y.
Gardner	Gardner Motor Co.	St. Louis, Mo.
Geneva	Geneva Wagon Co.	Geneva, N. Y.
Geronimo	Geronimo Motor Car Co.	Enid, Okla.
Globe Four	Globe Motors Co.	Cleveland, O.
Grant	Grant Motor Car Corp.	Cleveland, O.
Hackett	Hackett Motor Car Co.	Jackson, Mich.
Halladay	Haladay Motor Car Co.	Mansfield, O.
Hamlin-Holmes	Holmes Automobile Co.	Canton. O.
Handley-Knight	Handley-Knight Co.	Kalamazoo, Mich.
Hanson	Hanson Motor Co.	Atlanta, Ga.
Harroun	Harroun Motors Corporation	Wayne, Mich.
Harvard	Harvard-Pioneer Motor Car Corp.	Troy, N. Y.
Hatfield	Cortland Cart & Carriage Co.	Sidney, N. Y.
Haynes	Haynes Automobile Co.	Kokomo, Ind.
Hollier	Lewis Spring & Axle Co.	Chelsea, Mich.
Holmes	Holmes Automobile Co.	Canton, O.
Hudson Super-Six	Hudson Motor Car Co.	Detroit, Mich.
Hupmobile	Hupp Motor Car Corp.	Detroit, Mich.
Jones	Jones Motor Car Co.	Wichita, Kan.
Jordan	Jordan Motor Car Co.	Cleveland, O.
King	King Motor Car Co.	Detroit, Mich.
KisselKar	Kissel Motor Car Co.	Hartford, Wis.
Kline Kar	Kline Car Corp.	Richmond, Va.
Lafayette	Lafayette Motor Co.	Indianapolis, Ind.
La Marne	La Marne Motor Car Co.	Cleveland, O.
Laurel	Laurel Motor Corp.	Anderson, Ind.
Lenox	Lenox Motor Car Co.	Hyde Park, Mass.
Lexington	Lexington Motor Co.	Connersville, Ind.

Trade Name	Manufacturer	Address
Liberty	Liberty Motor Car Co.	Detroit, Mich.
Lozier	Lozier Motor Car Co.	Detroit, Mich.
Locomobile	Locomobile Co. of America	Bridgeport, Conn.
Lorraine	Lorraine Motors Corp.	Grand Rapids, Mich.
Madison	Bull Tractor-Madison Motors Corp.	Anderson, Ind.
Malbohm	Malbohm Motors Co.	Sandusky, O.
Marion Handley	Mutual Motor Co.	N. Tonawanda, N. Y.
Martin-Wasp	Martin-Wasp Corp.	Bennington, Vt.
Marmon	Nordyke & Marmon Co.	Indianapolis, Ind.
Marshall	Marshall Mfg. Co.	Chicago, Ill.
Maxwell	Maxwell Motor Co.	Detroit, Mich.
McFarlan	McFarlan Motor Co.	Connersville, Ind.
Mercer	Mercer Motors Co.	Trenton, N. J.
Mercury	Mercury Motor Car Co.	Chicago, Ill.
Meteor	Meteor Motor Sales Co.	Piqua, O.
Mets	Mets Sales Corp.	Boston, Mass.
Milburn	Milburn Wagon Co.	Toledo, O.
Mitchell	Mitchell Motors Co.	Racine, Wis.
Moller	Moller Motor Co	Lewistown, Pa.
Monitor	Monitor Motor Car Co.	Columbus, O.
Monroe	William Small Co.	Indianapolis, Ind.
Moon	Moon Motor Car Co.	St. Louis, Mo.
Moore	Moore Motor Vehicle Co.	Danville, Ill.
Murray	Murray Motor Car Co.	Newark, N. J.
Nash	Nash Motors Co.	Kenosha, Wis.
National Sextet	National Motor Car & Vehicle Corp.	Indianapolis, Ind.
Nelson	E. A. Nelson Motor Car Co.	Detroit, Mich.
Noma	Noma Motor Corp.	New York, N. Y.
Norwalk	Norwalk Motor Car Co.	Martinsburg, W. Va.
Oakland	Oakland Motor Car Co.	Pontiac, Mich.
Ogren	Ogren Motor Car Co.	Milwaukee, Wis.
Oldsmobile	Olds Motor Works	Lansing, Mich.
Olympian	Olympian Motors Co.	Pontiac, Mich.
Overland	Willys-Overland Co.	Toledo, O.
Owen Magnetic	Baker R & L Co.	Cleveland, O.
Packard	Packard Motor Car Co.	Detroit, Mich.
Paige	Paige-Detroit Motor Car Co.	Detroit, Mich.
Pan-American	Pan-American Motor Corp.	Decatur, Ill.
Paragon	Paragon Motor Car Co.	Connersville, Pa.
Parenti	Parenti Motors Corp.	Buffalo, N. Y.
Paterson	W. A. Paterson Co.	Flint, Mich.
Pennsy	Pennsylvania Motors Co.	Pittsburgh, Pa.
Peerless	Peerless Motor Car Co.	Cleveland, O.
Peters	Peters Motor Corp	Trenton, N. J.
Phianna	M. H. Carpenter	
Piedmont	Piedmont Motor Car Co.	Lynchburg, Va.
Pierce-Arrow	Pierce-Arrow Motor Car Co.	Buffalo, N. Y.
Pilgrim	Pilgrim Motor Car Co.	Detroit, Mich.
Pilot	Pilot Motor Car Co.	Richmond, Ind.
Porter	American & British Mfg. Corp.	Bridgeport, Conn.
Premier	Premier Motor Corp.	Indianapolis, Ind.
Premocar	Preston Motor Corp.	Birmingham, Ala.
Raulang Electric	Rauch & Lang, Inc.	Chicopee Falls, Mass.
Renault	Renault Selling Branch, Inc.	New York
Reo	Reo Motor Car Co.	Lansing, Mich.
Revere	Revere Motor Car Corp.	Logansport, Ind.
Roamer	Barley Motor Car Co.	Kalamazoo, Mich.
Rock Falls	Rock Falls Mfg. Co.	Sterling, Ill.
R. & V. Knight	Root & Van Dervoort Eng. Co.	East Moline, Ill.
Saxon	Saxon Motor Car Corp.	Detroit, Mich.

Trade Name	Manufacturer	Address
Sayers	Sayers & Scovill Co.	Cincinnati, O.
Scripps-Booth	Scripps-Booth Corp.	Detroit, Mich.
Seneca	Seneca Motor Car Co.	Fostoria, O.
Severin	Severin Motor Co.	Kansas City, Mo.
Shaw	Walden W. Shaw Livery Co.	Chicago, Ill.
Sheridan	Sheridan Motor Car Co.	Muncie, Ind.
Simms	Simms Motor Car Corp.	Atlanta, Ga.
Simplex-Crane	Simplex Automobile Co.	L. Island City, N. Y.
Singer	Singer Motor Co., Inc.	Mt. Vernon, N. Y.
Skelton	Skelton Motors Corp.	St. Louis, Mo.
Southern	Southern Automobile Mfg. Co.	Memphis, Tenn.
Spacke	Spacke Machine & Tool Co.	Indianapolis, Ind.
Standard	Standard Steel Car Co.	Pittsburgh, Pa.
Stanwood	Stanwood Motor Car Co.	St. Louis Mo.
Star	Star Motor Co.	Frederick, Md.
Stearns-Knight	F. B. Stearns Co.	Cleveland, O.
Stephens	Moline Plow Co., Stephens Motor Branch	Moline, Ill.
Sterling	Sterling Motors, Inc.	Newark, N. J.
Stevens Duryea	Stevens Duryea, Inc.	Chicopee Falls, Mass.
Studebaker	Studebaker Corp.	South Bend, Ind.
Stutz	Stutz Motor Car Co.	Indianapolis, Ind.
Templar	Templar Motors Corp.	Cleveland, O.
Texan	Texas Motor Car Ass'n.	Fort Worth, Tex.
Thomas	E. R. Thomas Motor Car Co.	Buffalo, N. Y.
Tulsa	Tulsa Auto Mfg. Co.	Tulsa, Okla.
Vanderbilt	Union Steel Mfg. Co.	Brazil, Ind.
Velie	Velie Motors Corp.	Moline, Ill.
Vernon	Vernon Automobile Corp.	Mt Vernon, N. Y.
Vogue	Vogue Motor Car Co.	Tiffin, O.
Waco	Western Automobile Co.	Seattle, Wash.
Washington	Washington Motor Co.	Eaton, O.
Wasp	Martin-Wasp Corp.	Bennington, Vt.
Wharton	Wharton Motor Co.	Dallas, Tex.
Westcott	Westcott Motor Car Co.	Springfield, O.
Willys-Knight	Willys-Overland Co.	Toledo, O.
Winton	Winton Co.	Cleveland, O.
Wolverine	Wolverine Motor Car Co.	Kalamazoo, Mich.
	STEAM CARS.	
Doble-Detroit	Doble-Detroit Steam Motors Co.	Detroit, Mich.
Stanley	Stanley Motor Carriage Co.	Newton, Mass.
Super-Steamer	Gearless Steam Auto Mfg. Co.	Denver, Col.

NATIONAL MANUFACTURING AND TRADE ASSOCIATIONS.

American Gear Manufacturers' Association—4401 Germantown Ave., Philadelphia.
Automotive Electric Association—5363 Hamilton Ave., N. E., Cleveland, O.
Automotive Equipment Association—1813 City Hall Square Building, Chicago.
Gas Engine & Farm Power Association—1456 Monadnock Building, Chicago.
Mid-West Rubber Manufacturers' Assn.—McCormick Bldg., 332 S Mich. Ave., Chicago.
Motor & Accessory Manufacturers' Association—33 W. 42nd St., New York City.
Motor Truck Assn. of America, Inc.—1790 Broadway, New York City.
National Auto. Cham. of Com.—Marlin-Rockwell Bldg., Mad. Ave. and 46th St., N. Y. C.
National Automobile Dealers' Association—320 North Grand Ave., St. Louis, Mo.
National Electric Vehicle Association—29 West 39th St., New York City.
National Hardware Association of America—505 Arch St., Philadelphia.
National Implement & Vehicle Association—72 W. Adams St., Chicago.
Rubber Association of America, Inc.—52 Vanderbilt Ave., New York City.
Society of Automotive Engineers—Eng. Societies Bldg., 29 W. 39th St., New York City.
Tire & Rim Association—Leader-News Building, Cleveland, O.
Trailer Manufacturers' Association of America—Grand Central Palace, New York City.

Mechanical Specifications of Passenger Cars—1921

REVISED EACH MONTH

KEY OF ABBREVIATIONS: *Against name, first time listed. **PRICE**–⊙ chassis; □ runabout; △ 4-passenger. **ENGINE**–Colon., Colonial; Cont., Continental; Duesen., Duesenberg; H-Spill., Herschell-Spillman; G. B. S., Golden, Belknap & Swartz; Lycmg., Lycoming; Masnk., Massnick; North., Northway; Ruten., Rutenber; Ster., Sterling; Tter., Teeter; Wisc., Wisconsin. **TYPE OF CYLINDER**–L., valves on one side of cylinder; T., valves on opposite sides of cylinder; I., valves in head; F., valves on side and in head; S. sleeve valve. **CAMSHAFT DRIVE**–Hel., Helical; Chn., Chain; Spr., Spur; G., Gear. **ENGINE COOLING SYSTEM**–P., Pump circulation; T-S, Thermo-Syphon circulation; Thermostatic control of circulation; A., Air Cooling. **OILING SYSTEM**–F., Force Feed; S., Splash. **IGNITION SYSTEM**–Eisen., Eisemann; West., Westinghouse; Conn., Connecticut; G & D, Gray & Davis; Al-Ch., Allis-Chalmers; At-K., Atwater Kent; Auto., Autolite; Split., Splitdorf; U. S. L., U. S. Lighting & Heating; Wd. Leon., Ward Leonard; N. E., Northeast; S., Single; D., Double; H., Manual Spark Advance; A., Automatic Spark Advance; Dup., Duplex. **CARBURETOR**–Stmb., Stromberg; Schb., Schebler; Rayf., Rayfield; Till., Tillotson; Cart., Carter; Newc., Newcomb; John., Johnson; Marv., Marvel; Holl., Holley; Zeni., Zenith; Buic., Buick; Mill., Miller; Shakes., Shakespeare; Mon., Monarch; Stew., Stewart; Dupl., Duplex. **CLUTCH**–D., Disc.; D-D., Dry Disc; P., Plate; D-P., Dry Plate; C., Cone; O-C., Oil Cone; C-U., Control Unit; F-D., Friction Drive. **GEARSET LOCATION**–U P P., Unit with Power Plant; ToT., on Forward End of Torque Arm; R-Ex. Unit with Rear Axle; Sep., Gearset Independent of Engine or Axle. **TIRES**–C., Clincher; Q., Quick Detachable; S., Straight Side. **REAR AXLE**–F., Floating; S-F., Semi-Floating; D., Dead. **GEARS**–Sp. B., Spiral Bevel; C-U., Control Unit. **DRIVES THROUGH**–S., Springs; T., Torque Tube; R., Radius Rods. **REAR SPRINGS**–Semi., Semi-Elliptic; ¾-El., Three-Quarters Elliptic; F-El., Full Elliptic; Cant., Cantilever; D. Cant., Double Cantilever; 3P. Cant., Three Point Cantilever; Plat., Platform. **BEARINGS**–B., Ball; R., Roller; P., Plain.

TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	Wheelbase in Inches	TIRES AND RIMS		ENGINE															IGNITION SYSTEM		Carburetor				REAR AXLE							BEARINGS			
				Size	Make of Rims	Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	Wth. P. Ring Groove	Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	Make and Type	Make of Starting-Lighting System	Make	Fed by	Clutch Type	Gearset Location and Forward Speeds	Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
Allen, 43	1595	2580	110	32x4	Stanweld	Own	4	3½x5	192	19.60	37	2200	L	Blk	3/16	1⅝	5/16	Hel	T-S	F & S	Conn S-H	West	Stmb	V	D D	U P 3	Columbia	¾ F	Sp B	4.63	S	S	Semi	3	B-R	R	R
Alsace	1485	2600	116	32x4	....	H-Spill	4	3½x5	192	19.60	....	....	....	....	....	....	....	....	T-S	F	Bosch	Dyneto-2	Zeni	V	D D	3	Standard	....	....	....	S	S	Semi	....	....	....	....
American Beauty	2000	2950	121	34x4¼	Firestone	Cont	6	3¼x4½	224	25.35	48	2400	L	Blk	¼	1.39	9/32	Hel	P	F & S	At-K	West	Rayf	V	D D	U P 3	Timken	S-F	Sp B	4.45	S	S	Semi	3	B-R	R	R
*American	2395	2900	127	32x4s	Opt	H S	6	3¼x5	248	25.35	45	2200	L	Blk	3/16	1 5/16	5/16	Hel	P	F & S	Conn S-H	G & D	Stmb	V	D D	U P 3	Salisbury	F-F	Sp B	4.42	S	S	Semi	3	B-P	B-R	R
Anderson 30	2145	2700	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Remy	Remy	Ray	V	D D	U P 3	Salisbury	F F	Sp B	4.50	S	S	Semi	3	B-P	B-R	R
Apperson Anniver	4250	3600	130	34x4½	Firestone	Own	8	3¼x5	332	33.80	65	2500	L	4	3/16	1⅜	11/32	Hel	T-S	F	Remy D-H	Bijur-2	John	V	D D	Sep 3	Own	F	Sp B	4.25	S	S	¾ El	3	R	R	R
Apperson, 8-20	3500	3600	130	34x4½	Firestone	Own	8	3¼x5	332	33.80	65	2500	L	4	3/16	1⅜	11/32	Hel	T-S	F	Remy D-H	Bijur-2	John	V	D D	Sep 3	Own	F	Sp B	4.25	S	S	¾ El	3	R	R	R
Argonne	4000	.....	119	32x4	....	....	4	3¾x5⅛	226	22.50	....	....	L	Blk	....	....	....	....	....	....	....	West	....	V	D D	4	....	....	....	....	....	....	Semi	....	....	....	....
Auburn, 6-39H	1895	2800	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	3/16	1 5/16	5/16	Hel	P	F	Remy S-H	Remy-2	Rayf	V	D D	U P 3	Salisbury	F-F	Sp B	4.75	S	A	Semi	3	B	R	B
Austin, 12	4250	.....	142	34x4½q	Firestone	Weidely	12	2⅞x5	389	39.68	....	....	I	3	3/16	....	....	Hel	P	F	Delco S-H	Delco-2	Stmb	V	D D	U P 6	Spec. Austin		2-sp	Axle	S	S	D Cant	3	B	B & R	R
*Beggs Six	....	2840	120	33x4	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	3	3/16	1.39	.28	Hel	P	F & S	Conn	Auto	Stmb	V	D D	U P 3	Timken	¾ F	....	....	S	S	Semi	3	....	R	R
*Bell, '18	1395	.....	114	31x4s	Firestone	GB&S	4	3¾x4¼	188	22.50	32	2800	L	Blk	¼	....	....	Hel	T-S	F & S	At-K S-H	Auto	Stmb	V	D D	U P 3	Peru	F	Bev	4.25	S	S	Cant	3	R	R	B
Biddle, '18	2985	3250	121	32x4s	Firestone	Buda	4	3¾x5⅛	226	22.50	48	2200	L	Blk	3/16	1⅝	⅜	Hel	T-S	F & S	Bosch	G & D-2	Zeni	V	D D	U P 4	Standard	¾ F	Sp B	4.00	S	S	Semi	3	B	R	R
Birch Light Six, 66	1695	2680	117	33x4	Firestone	H S	6	3¼x5	249	25.35	57	2200	L	Blk	3/16	1½	5/16	Hel	P	F & S	Conn	Dyneto-2	Zeni	V	D D	U P 3	Peru	F F	Bev	4.15	S	S	Semi	3	B	R	R
Birch Super-Four 44	1495	2200	117	33x4	Firestone	H S	4	3½x5	192	19.60	36	1800	L	Blk	3/16	1 3/16	5/16	Hel	T-S	F & S	Conn	Dyneto-2	Zeni	V	D D	U P 3	Peru	F F	Sp B	4.25	S	S	Semi	2	B	R	R
Bour-Davis 21S	2585	....	126	33x4½	Firestone	Cont	6	3½x5¼	303	29.40	55	2600	L	Blk	3/16	1¾	....	Hel	P	F & S	West	West	Zeni	V	......	U P 3	Salisbury	F	Sp B	4.50	S	S	Semi	3	B-R	R	B
Brewster	7200	.....	125	34x4½s	Firestone	Own	4	4x5½	276	25.26	...	2200	S	Blk	3/16	....	....	Ch	P	F	Bosch S-H	U S L-1	Zeni	V	C	To-T 3	Own	F	Sp B	4.25	T	T	Cant	3	B	B	R
Brook S-21	395	840	90	28x3	Wire W	Own	2	3½x3⅝	70	9.80	...	....	F	2	3/16	....	....	Hel	A	F & S	At-K H	Bat	Cart	G	D D	U P 2	Own	F	Bev	5.09	S	S	Cant	2	B	B	B
Briscoe, 4-24	985	2100	104	30x3½q	Cleveland	Own	4	3 3/16x5⅛	163	16.25	30	2000	L	Blk	3/16	1 7/16	9/32	Hel	T-S	F & S	Conn S-H	Auto-2	Buic	G	C	R Ax 3	Own	S-F	Bev	4.23	S	A	F-El	2	BRP	B & R	B
Buick, H-45	1795	.....	118	33x4s	Baker	Own	6	3⅜x4½	241	27.34	50	....	I	Blk	3/16	1⅝	9/32	Hel	P	S	Delco S-H	Delco-1	Marv	V	D P	U P 3	W. Mott	F	Sp B	4.07	T	T	Cant	4	B	B & R	R
Buick, H-49	2065	.....	124	34x4½s	Baker	Own	6	3⅜x4½	241	27.34	50	....	I	Blk	3/16	1⅝	9/32	Hel	P	S	Delco S-H	Delco-1	Marv	V	D P	U P 3	W. Mott	F	Sp B	4.61	T	T	Cant	4	B	B & R	R
Bush	1245	2450	116	32x3½	Firestone	Lycmg	4	3½x5	192	19.60	35	2500	L	Blk	3/16	1 3/16	5/16	Hel	T-S	S	At-K	Dyneto-2	Cart	V	D	U P 3	Salisbury	F-F	Bev	4.00	T	T	¾ El	2	B	R	B
Bush 6	1575	2800	120	32x4	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	3/16	1 5/16	5/16	Hel	P	F & S	Conn	Dyneto-2	Stmb	V	D	U P 3	Salisbury	F F	Bev	....	....	....	Semi	3	B	R	R
*Cadillac, 59	3940	4050	132	35x5	Kelsey	Own	8	3⅛x5⅛	314	31.25	..	2650	L	4	3/16	1 11/16	5/16	Ch	P	F	Delco S-A	Delco-1	Own	P	D D	U P 3	Own	F	Sp B	4.43	S	A	Plat	3	B-R	R	R
*Cameron, 55	1400	.....	108	32x4	....	Own	..	2 11/16x4½	....	....	....	....	....	Blk	....	....	....	....	A	F	Conn	....	Rayf	V	......	Sep	Own	.....	Sp B	....	....	....	....	....	....	....	....
*Cameron, 45	1700	.....	123	32x4	....	Own	..	3¾x4½	...	33.75	....	....	....	Blk	....	....	....	....	P	F	Conn	....	Rayf	V	......	Sep	Own	.....	Sp B	....	....	....	....	....	....	....	....
Campbell	835	2000	110	30x3½c	U. S.	Own	4	3⅞x4	189	24.00	....	....	L	Blk	....	....	....	Spur	T	F & S	At S-H	Auto	Amer	V	D	U P 3	Salisbury	F-F	Sp B	4.25	S	S	Semi	3	B	B	B-R
Carroll Six C	3985	3800	128	32x4½	Wire W	Roch	6	3½x5	295	29.40	65	2800	L	Blk	3/16	1½	⅜	G	P	F	KW	Bijur	Stmb	V	D P	U P 3	Salisbury	FF	Hel	4.50	S	S	Semi	3	B	B	B
Case	2650	3450	126	34x4½	Firestone	Cont	6	3½x5¼	303	29.40	55	2000	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Delco	West	Rayf	V	D D	U P 3	Columbia	¾ F	Sp B	4.45	S	S	Semi	3	B	R	R
Chalmers, 6-30	1795	2800	117	32x4s	....	Own	6	3¼x4½	224	25.35	45	2650	L	Blk	3/16	1½	5/16	Ch	T-S	F & S	....	....	......	V	D D	U P 3	....	S-F	Sp B	4.75	S	S	Semi	3	R	R	R
Chalmers, 6-30	1945	2950	122	33x4½	....	Own	6	3¼x4½	...	25.35	45	....	L	Blk	3/16	1½	5/16	Ch	T-S	F & S	....	....	......	V	D D	U P 3	....	S-F	Sp B	5.18	S	S	Semi	3	R	R	R
Champion	1150	.....	116	32x3¼	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	......	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Champion	1295	.....	116	32x3¼	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	......	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chandler	1895	2985	123	33x4s	Fire&Clev	Own	6	3½x5	289	29.40	....	....	L	3	3/16	1 5/16	9/32	Ch	P	F & S	Bosch S-H	G & D	Rayf	V	D D	U P 3	Own	F	Sp B	4.40	S	A	Semi	3	B	B	R
Chevrolet, 490	820	1890	102	30x3½q	Demount	Own	4	3 11/16x4	171	21.75	32	2100	I	Blk	3/16	1 5/16	7/32	Hel	P	F & S	Remy S-H	Auto-2	Zeni	G	C	U P 3	Own	¾ F	Bev	3.63	S	S	¼ Cant	3	B	R	B
*Chevrolet, F B	1345	3200	110	33x4s	Demount	Own	4	3 11/16x5¼	224	21.75	....	....	I	Blk	3/16	1 5/16	¼	Hel	P	F & S	Remy S-H	Auto-2	Zeni	V	C	U P 3	Own	¾ F	Sp B	4.25	S	S	Cant	3	B-P	R	B
*Cleveland	1435	.....	112	32x4	Firestone	Own	6	3x4½	191	21.60	....	....	I	Blk	....	....	....	Ch	P	F & S	....	G & D	Stmb	...	D	U P 3	Own	.....	Sp B	....	....	....	Semi	3	....	R	R
*Climber S	2750	3050	125½	32x4½	Jaxon	H S	6	3¼x5	248	25.35	57	2200	L	Blk	3/16	1 9/16	5/16	G	P	F & S	Bosch	West	Stmb	V	D	U P 3	Adams	S F	Sp B	5.12	S	S	Semi	3	B	R	R
*Climber K	1550	2550	114	33x4	Jaxon	H S	4	3½x5	192	19.60	37	1800	L	Blk	3/16	1 9/16	5/16	G	T	F & S	At-K	West	Stmb	V	D	U P 3	Adams	S F.	Sp B	5.12	S	S	Semi	2	B	R	R
Cole, 870	3250	3590	127	33x5q	Firestone	North	8	3½x4½	346	39.22	80	2800	L	4	3/16	1½	5/16	Spur	P & T	F & S	Delco S-H	Delco-2	John	V	C	U P 3	Columbia	F	Sp B	4.46	S	S	Semi	3	B	R	R
Colonial, 35	1095	2775	116	32x3½	Goodyear	Falls	6	3x4½	191	21.60	....	....	....	Blk	....	....	....	Hel	T-S	F & S	Remy S-H	Al-Ch-1	Stew	V	C	U P 3	Lewis	F	Beb	4.41	..	..	Cant	3	B	B	B
Columbia Six C	1795	2800	115	32x4	Firestone	Cont	6	3¼x4½	224	25.35	38	2000	L	Blk	3/16	1.39	.31	Hel	P†	F & S	A-K	Auto	Stmb	V	D D	U P 3	Timken	½ F	Sp B	4.75	S	A	Cant	4	B	R	R
Comet, 6-C-53	2350	3200	125	33x4½s	Firestone	Cont	6	3½x5¼	303	29.40	55	2600	L	Blk	3/16	1 11/16	....	Hel	P	F & S	Wagner	Wagner	Stmb	V	D D	U P 3	Columbia	F-F	Sp B	4.50	S	A	Cant	3	B	R	R
Commonwealth □	1595	2600	117	32x4	Stanweld	H S	4	3½x5	192	19.60	40	2200	L	Blk	3/16	1 5/16	5/16	Hel	T-S	F & S	Split	Dyneto-2	Cart	V	D D	U P 3	Peru	F-F	Sp B	4.25	S	S	Semi	2	B	R	R
Crawford	3000	3400	122½	32x4c	Firestone	Cont	6	3½x5¼	303	20.40	55	2000	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Bosch	West	Stmb	V	D	U P 3	Timken	¾ F	Sp B	4.50	..	S	Semi	3	R	R	R
Crow-Elkhart, L-55	1295	2270	117	32x3½s	Firestone	Lycmg	4	3½x5	192	19.60	35	1800	L	Blk	3/16	1 3/16	5/16	Hel	T-S	F & S	Conn S-H	Dyneto-2	Zeni	V	D D	U P 3	Peru	F-F	Bev	4.25	S	S	Semi	2	B	R	R
Crow-Elkhart, S-65	1545	2470	117	33x4s	Firestone	H S	6	3¼x5	230	25.35	45	2400	L	Blk	5/32	1 5/16	5/16	Hel	P	F & S	Conn S-H	Dyneto-2	Stmb	V	D D	U P 3	Peru	F-F	Bev	4.25	S	S	Semi	3	B	R	R
Cunningham, V	on ap	4350	142	35x5	Firestone	Own	8	3¾x5	445	45.00	90	2200	L	4	3/16	1¾	5/16	Hel	P	F	Delco S-H	Delco	Stmb	V	D D	U P 3	Timken	F	Sp B	4.08	S	A	¾ El	3	B-R	....	R
*Daniels, D	4850	3800	132¼	34x4½s	Firestone	Own	8	3½x5¼	404	39.20	70	2000	L	4	3/16	1 11/16	⅜	Hel	P	F	Delco S-H	Delco-2	Zeni	P	D D	U P 3	Timken	F-F	Sp B	4.42	S	A	Semi	3	B	R	R
*Davis, 51	2085	2750	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	58	2650	L	Blk	3/16	1 9/16	¼	Hel	P	F & S	Delco D-H	Delco-2	Stmb	V	D D	U P 3	Timken	S-F	Sp B	5.09	S	S	Semi	3	B	R	R
Disbrow, A □	2950	.....	116	33x4½	Wire W	Wisc	4	5 1/16x5½	446	41.60	....	....	T	....	....	....	....	Hel	P	F	KW S-H	Leece-N	Mill	P	D	U P 3	American	F	Bev	....	..	S	Semi	3	R	R	R
Dispatch	1290	2300	120	34x4	Stand	Wisc	4	3¾x5	221	22.50	35	2000	L	Blk	¼	1¾	9/32	Hel	T-S	F	Bosch	U S L	Ray	V	C U	....	Own	.....	C U	4.12	R	S	El	3	B	P	B
*Dixie Flyer, H-S50	1595	2450	112	32x4s	Fick	H-Sp ll	4	3½x5	190	16.90	42	2200	L	Blk	3/16	....	....	Hel	T-S	F & S	Eisemann	Dyneto-2	Stmb	V	D D	U P 3	Peru	F F	Sp B	4.70	T	T	¾ El	2	B-P	B & R	B

TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	TIRES AND RIMS			ENGINE															IG-NITION SYSTEM	Make of Starting-Lighting System	Car-buretor		Clutch Type	Gearset Location and Forward Speeds	REAR AXLE				Car Driven Through	Torque Taken By	Type of Rear Springs	BEARINGS			
			Wheelbase in Inches	Size	Make of Rims	Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	Wth. P. Ring Groove	Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	Make and Type		Make	Fed by			Make	Type	Type of Gears	Gear Ratio				No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
Dodge Brothers	1285	2425	114	32x3½s	Own	Own	4	3⅞x4½	212	24.03	35	2200	L	Blk	3/16	1 9/16	5/16	Hel	P	F & S	N-E A-H	N. East-1	Stew	V	D D	U P 3	Own	F-F	Sp B	4.17	S	T	¾ El	3	B	R	R
Dorris, 6-80	4785	4000	132	35x5	Firestone	Own	6	4x5	377	38.40	....	....	I	3	¼	1⅞	11/32	Hel	P	F	Bosch S-H	West-2	Stmb	V	D D	U P 3	Timken	F-F	Sp B	4.08	S	S	Semi	7	R	R	R
*Dort	1215	2300	105½	31x4	Cleveland	Lycmg	4	3½x5	192	19.60	35	2000	L	Blk	3/16	1⅝	19/64	Hel	T-S	S	Conn S-H	West-2	Cart	V	C	U P 3	Flint	¾ F	Bev	4.07	S	T	Cant	2	B	B R & P	R
Douglas	2000	2350	122	34x4	Firestone	H-Spill	8	3¼x5	332	33.80	75	2400	L	4	3/16	1 9/16	⅜	Hel	P	F	West S-H	West-1	Zeni	V	D D	U P 3	Columbia	F-F	Sp B	4.42	S	A	Cant	3	B	R	R
*Du Pont, A	3400	3200	124	32x4½s	Firestone	Own	4	3 13/16x5⅛	247	24.80	55	2000	L	Blk	3/16	1¾	⅜	Hel	T-S	F	Eism	West	Yale	V	P	U P 3	Columbia	¾ F	Sp B	4.45	S	S	Semi	3	R	R	R
Duryea Gem	400	515	100	28x3	Standard	Spacke	2	3½x3⅝	71	9.80	13	2500	L	Sing	3/16	1¼	¼	Hel	A	F	Mag	Own	Schb	G	None	....3..	Own	D	......	5.00	S	..	Torsion	2	P	B	B
Duesenburg	....	3100	134	33x4½	Goodyear	Own	8	2⅞x5	260	26.40	90	3200	I	Blk	3/16	1 5/16	5/16	Sp B	P	F	Delco	Delco	Miller	P	D	U P 3	Own	S-F	Sp-B	4.12	T	T	Semi	3	B	B	B
*Economy, 6-46	1795	2750	115	33x4	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	3/16	1 5/16	5/16	Hel	P	F-S	Conn	Auto	Zeni	V	D P	U P 3	Salisbury	F-F	Sp B	4.50	S	S	Semi	3	B	R	R
*Elcar, D-4	1495	2740	116	33x4s	Firestone	Lycmg	4	3½x5	192	19.60	38	2100	....	Blk	3/16	1½	5/16	Hel	T-S	F & S	Delco	Delco	Stmb	V	D P	U P 3	Salisbury	F-F	Sp B	4.50	S	S	Semi	2	B	B	R
Elcar, D-6	1795	2850	116	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	....	....	....	Blk	3/16	1 9/16	9/32	Hel	P	F & S	Delco	Delco	Stmb	V	D P	U P 3	Salisbury	F-F	Sp B	4.50	S	S	Semi	3	B	B	R
Elgin	1775	2650	118	33x4s	Firestone	Falls	6	3⅛x4¼	196	23.44	40	2000	I	Blk	3/16	1¼	9/32	Hel	T-S	F & S	Wagner	West	Stmb	V	D D	U P 3	Columbia	¾ F	Sp B	5.00	S	A	Cant	3	B	B	R
Erie	850	2300	118	33x4s	Stanweld	GB&S	4	3¾x4¼	188	22.50	....	....	L	Blk	3/16	....	....	Chn	T	F & S	Split	Dyneto	Scheb	G	D D	U P 3	Salisbury	F	Sp B	4.00	T	T	Semi	3	R	B	R
*Essex	1595	2700	108½	32x4	Kelsey	Own	4	3⅜x5	179	18.22	55	2800	F	Blk	3/16	1⅞	5/16	Hel	T	S	Delco	Delco	Own	V	O D	U P 3	Timken	S-F	Sp B	4.67	S	S	Semi	3	R	R	R
Ferris, C-21	3350	3500	130	32x4½	Disteel	Cont	6	3½x5¼	303	29.40	50	2000	L	Blk	3/16	1½	5/16	Hel	P	F & S	Aero-Split	Leece N	Zeni	V	D D	U P 3	Columbia	¾ F	Sp B	4.12	S	A	Semi	3	B	R	B
Fiat, 55	6000	4335	140	35x5c	Firestone	Own	4	5¼x6¾	557	42.03	....	....	L	Blk	....	....	....	Hel	P	F	Bosch D-H	West-2	Zeni	P	O D	Sep 4	Own	S-F	Sp B	2.75	T	T	Semi	3	B	B	R
Ford, T	440	1560	100	30x3½c	Clincher	Own	4	3¾x4	177	22.50	20	1400	L	Blk	¼	1 5/16	7/32	Hel	T-S	S & G	Own S-H	....	Holl	G	O D	U P 2	Own	S-F	Bev	3.63	T	T	Trans	3	P	R	B
Franklin, 9-B	2600	2445	115	32x4s	Goodyear	Own	6	3¼x4	199	25.35	....	....	I	Sing	3/16	1 5/16	5/16	Hel	A	F	At K S-A	Dyneto-1	Own	V	D P	Sep 3	Own	S-F	Sp B	4.33	S	S	F-El	7	B	B	B-R
Friend 4	1585	....	112	32x3½s	Goodrich	Own	4	3¼x4½	149	16.90	40	2600	I	Blk	3/16	1⅝	⅜	Hel	T-S	F	Conn	Wag	Stmb	V	D D	U P 3	Own	F F	Sp B	4.50	..	R	Trans	2	B	B-R	B
*Gardner G	1195	2400	112	32x3½s	Jaxon	Lycmg	4	3½x5	192	19.60	35	2000	L	Blk	3/16	1½	19/64	Hel	T-S	F & S	West	West	Cart	V	D D	U P 3	Flint	¾F	Bev	4.42	S	S	Semi	2	B	R	B
Geneva	2500	....	139	34x4½	D Wheels	H-Spill	6	4x5½	415	38.40	....	....	T	3	9/32	....	....	Hel	P	F & S	Eise'n S-H	West-2	Rayf	V	D D	U P 4	Timken	F	Sp B	3.76	S	S	Semi	3	R	R	R
Geronimo	1995	2700	122	32x4s	Firestone	Ruten	6	3⅛x5	230	23.44	45	2400	L	Blk	5/32	....	....	Hel	P	F & S	Delco	Dyneto	Stmb	V	D D	U P 3	W-Weiss	¾-F	Sp B	4.50	S	S	Semi	3	B	....	R
Globe Four	....	2600	115	32x4	Firestone	Supreme	4	3⅜x5	179	18.20	31	1400	L	Blk	3/16	1⅝	5/16	Hel	T-S	F	Delco	Delco	Stmb	V	D D	U P 3	Eaton	S-F	Sp B	4.90	S	S	Semi	3	B	R	R
*Grant H	1550	2700	116	32x4s	Goodyear	Own	6	3 1/16x4½	198	22.60	40	2200	I	Blk	3/16	1⅜	9/32	Hel	T-S	F & S	At-K S-A	Bijur	Stmb	V	D D	U P 3	Columbia	¾-F	Bev	4.63	S	S	Semi	3	B-P	B & R	R
Hackett	....	....	114	32x4	....	H-Spill	4	3½x5	192	19.60	....	....	L	....	....	....	....	Hel	T	S-P	U.S.L.-S-H	West	John	V	P	U M 3	Stanpar	S F	Sp	4.75	S	S	¾ El	2	B	R	R
Halladay, 22	1985	2750	118	33x4	Firestone	Ruten	6	3⅛x5	230	23.44	46	2400	L	Blk	5/32	1 5/16	5/16	Hel	P	F & S	At-K	West	Stmb	V	D D	U P 3	Spacke	F	Sp B	4.75	S	S	¾ El	3	B-P	R	R
Hamlin-Holmes	550	1200	100	30x3½	....	....	4	3x4	113	14.40	....	....	L	Blk	....	....	....	....	T-S	F & S	At-K	Wagner	....	..	D D	U P 3	....	¾	....	....			¼ El	....	....	....	....
Handley-Knight A	2985	3400	125	32x4½	Firestone	Knight	4	4⅛x4½	240	27.20	54	1800	S	Blk	3/16	....	....	Chn	T-S	F & S	Auto	Auto	Till	V	D D	U P 3	Timken	S F	Sp B	4.45	S	S	Semi	3	B	R	R
Hanson	2365	....	119	32x4	....	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	3/16	1 5/16	5/16	Hel	P	F & S	....	....	Stmb	V	D P	U P 3	Timken	¾-F	Sp B	....	..	..	Semi	3	....	....	....
Harroun AA[illegible]	1195	2240	106	30x3½	Stanweld	Own	4	3¼x5¼	174	16.90	43	2400	I	Blk	¼	1 7/16	5/16	Hel	T-S	F & S	Remy	Remy-2	Stmb	V	C	U P 3	Own	¾F	Bev	4.06	S	T	Cant	3	B	B & R	R
Harvard, 4-20	850	....	100	28x3	Baker	Sterl	4	3x4¼	120	14.40	28	....	L	Blk	3/16	....	....	Hel	T-S	S & F	At-K S-H	Wagner-2	Zeni	G	C	U P 3	....	S-F	Bev	4.00	S	S	Cant	2	B-P	B & R	B
*Hatfield, A-42	1695	....	115	32x4	Firestone	....	4	3¼x5	....	16.90	42	....	....	....	....	1 9/16	5/16	....	T-S	F & S	Conn	Dyneto	....	V	D D	3	....	F-F	Sp B	....	S	S	Semi	....	....	....	....
Haynes, 47	2935	3225	132	34x4½s	Firestone	Own	6	3½x5	289	29.40	50	2000	L	Blk	¼	1 9/16	.31	Hel	P	S	Kings	Leece N-2	Rayf	V	D D	U P 3	Own	¾-F	Sp B	4.70	S	S	Semi	3	B	B	B
Haynes, 48	....	3700	132	34x4½s	....	Own	12	2¾x5	356	36.30	70	2200	I	6	¼	1.19	.31	Chn	P	F	Delco SHA	Leece N-2	Rayf	V	D D	U P 3	Own	¾-F.	Sp B	4.70	S	S	Semi	3	B	B	B
Holmes	3350	3036	126	34x4½	Firestone	Own	6	3½x4¼	245	29.40	....	....	I	Sing	3/16	1⅝	5/16	Hel	A	F	Eise'n S-A	Dyneto	Stmb	V	D P	U P 3	Timken	S-F	Sp B	4.90	S	S	F-El	7	B-R	R	R
Hollier, 206	1985	2800	120	32x4s	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	3/16	1 3/16	9/32	Hel	P	F & S	Remy	West	Zeni	V	D D	U P 3	Own	F-F	Sp B	4.41	T	T	Cant	3	B	B	B
*Hudson-Super 6	2400	3500	125½	34x4½s	Kelsey	Own	6	3½x5	288	29.40	76	2450	L	Blk	3/16	1 11/16	5/16	Hel	P	S	Delco SHA	Delco-1	Own	V	O D	U P 3	Timken	S-F	Sp B	4.90	S	.	Semi	4	R-P	R	R
Hupmobile, R. O	1385	2470	112	32x4s	Kelsey	Own	4	3¼x5½	183	16.90	....	....	L	Blk	3/16	1⅝	5/16	Chn	T-S	F&S	At-K-S-H	West 2	Stmb	V	D D	U P 3	Own	¾-F	Sp B	4.87	S	S	Semi	3	B-R	B-R	B
Jackson	2150	3400	121	32x4½	Jackson	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	¼	1½	5/16	Hel	P	F	Remy	Auto	Stmb	V	D P	U P 3	Salisbury	¾F	Sp B	4.50	S	S	Semi	3	B	B & R	R
Jones, B-28	2250	3000	126	34x4s	Firestone	Cont	6	3½x5¼	303	29.40	60	2600	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Remy D-H	Auto	Rayf	V	D D	U P 3	Stan-Par	S-F	Sp B	4.50	S	S	Semi	3	R	R	R
*Jordan, M	2550	2900	120	32x4s	Goodyear	Cont	6	3¼x4½	224	25.35	55	2750	L	Blk	3/16	1½	5/16	Hel	P	F & S	Delco	Delco	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.66	S	S	Semi	4	B	R	R
*Jordan	2975	3200	127	32x4½s	Goodyear	Cont	6	3½x5¼	303	29.40	60	2275	L	Blk	3/16	1 17/32	5/16	Hel	P	F & S	Delco SHA	Delco	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.08	S	S	Semi	3	B	R	R
*King, G	2585	3150	120	32x4½s	Stanweld	Own	8	3x5	283	28.80	60	2400	L	4	3/16	1½	5/16	Chn	T-S	F	At-K S-H	West	Ball	V	D D	U P 3	Columbia	F	Sp B	4.87	S	T	Cant	3	R-B	R	R
*Kissel, C. B., 6	3475	3400	124	32x4½	Goodyear	Own	6	3 5/16x5½	284	25.75	61	2300	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Remy S-H	Remy	Stmb	V	DD	U P 3	Own	F-F	Sp B	4.25	S	S	Semi	3	B	R	R
*Kline, 6-55 K	1965	2800	121	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	55	2500	L	Blk	¼	1 3/16	9/32	Hel	P	F	Conn	Wagner-2	Rayf	V	D D	U P 3	Hess	F	Sp B	4.58	S	S	¾-El	4	B	R	R
Lafayette 134	562[illegible]	4180	132	33x5	Firestone	Own	8	3¼x5¼	348	33.80	90	2700	L	Blk	3/16	1¾	⅜	Chn	P	F	Delco	Delco	Own	P	D D	U P 3	Own	F-F	Sp B	4.50	T	T	Semi	5	B-R	R	R
La Marne	1485	2900	128	33x4s	Stanweld	Own	8	3¼x5½	365	33.80	85	2200	I	Blk	¼	1⅝	5/16	Hel	....	F & S	West	West	Own	V	D D	U P 3	....	F-F	Sp B	4.00			Semi	5	B	B	....
Laurel, 35	895	....	112	32x3½s	Goodyear	G-B- & S	4	3¾x4¼	188	22.50	....	....	L	Blk	3/16	....	....	Chn	T-S	F & S	Split S-H	Disco-2	Schb	G	O D	U P 3	Peru	F	Bev	4.25	S	T	Cant		B	R	R
Leach Six, 5 ..... (3&7-5700)	5200	3850	128	32x4½	Wire-Disc	Cont	6	3½x5½	303	29.40	66	2600	L	Blk	3/16	1¾	7/16	Hel	P	F & S	Delco	Delco	Ray	V	D	U P 3	Columbia	S-F	Sp B	4.60	S	S	Semi	3	R	R	R
Lenox, O	2850	....	130	34x4½	Firestone	Buda	6	3¾x5½	364	33.50	....	....	....	Blk	¼	....	....	Spur	P	S	Eise'n S-H	Bijur-2	Cart	V	D D	U P 3	Timken	F	Sp B	4.10	..	..	Semi	3	....	....	....
Lexington, S	2285	2875	122	34x4s	Kelsey	Cont	6	3¼x4½	224	25.30	47	2200	L	Blk	3/16	1½	316	Hel	P	F	Conn	G & D	Rayf	V	D P	U P 3	Own	¾ F	Sp B	4.60	S	S	Semi	3	B-R	B	B
Lexington T	2985	3250	128	32x4½	Firestone	Own	6	3¼x4½	224	25.30	60	3000	L	Blk	3/16	1⅝	7/16	Hel	P	F	Conn	G & D	Rayf	V	D D	U P 3	Own	¾ F	Sp B	4.60	S	S	Semi	3	B-R	B	B
Liberty, 10-C	1795	2800	117	32x4s	Firestone	Own	6	3⅛x5	230	23.40	53	2300	L	Blk	3/16	1½	5/16	Hel	T-S	F	Wagner	Wagner	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.66	S	S	Semi	3	B	R	R
Locomobile, 48-4	8100	....	142	35x5q	Firestone	Own	6	4½x5½	525	48.60	....	....	T	2	¼	2⅛	⅜	Hel	P	F & S	Berling D	West-2	Ball	P	D D	Sep 4	Own	F-F	Sp B	3.85	R	A	¾-El	7	B	B	R
*Lorraine	1575	2400	114	32x4s	Firestone	H. Spill	4	3½x5	192	19.60	37	2200	L	Blk	3/16	1 9/16	5/16	Hel	T-S	F & S	West	West	John	V	D P	U P 3	Stanpar	S-F	Sp B	4.75	S	S	¾ El	3	B-P	R	R
Lone Star BT4-30	1595	2650	116	33x4	Firestone	Lycmg	4	3½x5	192	19.60	35	1800	L	Blk	¼	1¾	5/16	Sp	T-S	S	Delco	Dyneto	Zeni	V	D	U P 3	Peru	F-F	Sp B	4.50	S	S	½-El	3	R	R	R
Lozier, 84 Made to order	1695	....	120	36x4½s	Stanweld	Own	4	4¼x6½	369	28.90	....	....	L	Blk	¼	....	....	Chn	P	F & S	Bosch D-H	G & D-2	Stew	P	O D	U P 3	Timken	F	Bev	3.91	..	..	Plat	3	....	....	....
Lozier, 82 only	2775	....	132	36x4½s	Stanweld	Own	6	3⅞x6	424	36.04	....	....	L	3	¼	....	....	Chn	P	F & S	Eise'n S-H	G & D-2	Rayf	P	O D	U P 3	American	F	Sp B	3.27	..		Plat	3	....	....	....
Madison	1550	2950	115	33x4s	Goodyear	Ruten	6	3⅛x5	230	23.44	45	2400	L	Blk	5/32	1 3/16	5/16	Hel	P	F	At-K	West	Rayf	V	D D	U P 3	Salisbury	¾-F	Sp B	4.58	S	S	¾-El	3	B	B	B
Maibohm, B	1395	2350	116	32x3½s	Stanweld	Falls	6	3⅛x4¼	196	23.44	46	2290	I	Blk	3/16	1⅛	9/32	Hel	T-S	F & S	At-K S-H	Wagner 2	Stmb	V	D D	U P 3	Peru	F-F	Bev	4.50	S	S	Semi	3	B	R	R
*Marmon, 34	5000	3900	136	32x4½s	D Wheels	Own	6	3¾x5⅛	340	33.75	80	2450	I	Blk	3/16	1¾	.37	Hel	P	F	Delco	Delco	Stmb	G	D D	To-T 3	Own	¾-F	Sp B	3.74	T	T	C Trans	3	B-R	B R	R
Marshall	1275	....	118	32x3½	....	....	4	3½x5	192	19.60	....	....	....	....	....	....	....	....	T	....	Delco	Dyneto 2	Cart	..	D	....	....	¾-F	....	....	..	..	Semi	....	....	....	....
*Maxwell, 25	985	2100	109	30x3½c	Jackson	Own	4	3⅝x4½	186	21.03	25	1700	L	Blk	3/16	1 11/32	11/64	Hel	T-S	F & S	At-K S-H	Simms-1	John	V	O C	U P 3	Own	¾-F	Bev	3.58	S	S	Semi	2	R-P	R	B
*McFarlan, 147	6300	4650	140	35x5	....	Own	6	4½x6	573	48.60	120	1850	T	3	¼	2	.34	Hel	P	F	Berl	West	Ray	V	D D	Sep 3	Timken	F	Sp B	3.50	S	S	Semi	4	R	R	R
Mercer, Series 5	3950	3900	132	32x4½s	Howard	Own	4	3¾x6¾	298	22.50	72	2800	L	Blk	3/16	2⅛	⅜	Chn	P	F	Eism	West	Ball	V	D D	Sep 4	Own	F	Sp B	3.87	S	S	Semi	3	R	B-R	R
Mercury, 19-50	2750	2500	114	31x4	Firestone	Weidely	4	3½x5½	212	19.60	50	2400	I	Blk	3/16	1⅞	5/16	Hel	P	F	Delco	Delco-2	Stmb	V	D D	U P 3	....	¾-F	Sp B	4.83	S	S	Semi	3	B	-R	B
Meteor	....	....	129	32x4½	....	Dues	4	4x6	301	25.60	....	....	F	....	....	....	....	Ch	P	S P	Simms S-H	Bijur	Zeni	V	P	Amid-4	Stanpar	....	Sp B	4.41	S	S	Semi	..	B	R	R
*Metz	1995	2750	120	32x4s	Cleveland	Ruten	6	3⅛x5	230	....	45	2344	....	Blk	....	....	....	....	P	....	Conn S-H	G & D	Stmb	V	D D	U P 3	Timken	Semi	....	....	S	S	Semi	....	....	R	R
*Mitchell, E-40	1750	3000	120	33x4s	Stanweld	Own	6	3¼x5	249	25.35	40	2200	L	Blk	3/16	1 7/16	5/16	Hel	P	F & S	Remy	Remy	Ray	V	D D	To-T 3	Own	F F	Sp B	4.41	S	T	Cant	3	B-R	R	R
Monitor, 3	2475	2825	117	33x4	Stanweld	Cont	6	3¼x4½	224	25.35	....	....	L	Blk	¼	....	....	Hel	P	S	Conn	Dyneto	Stmb	V	D D	U P 3	Stanpar	F	Sp B	4.25	S	S	¾-El	3	B-R	R	B

TRADE NAME AND MODEL			TIRES AND RIMS			ENGINE															IG-NITION SYSTEM		Car-buretor				REAR AXLE							BEARINGS			
	Price Touring Car	Weight of Car Ready for Road	Wheelbase in Inches	Size	Make of Rims	Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	Wth. P. Ring Groove	Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	Make and Type	Make of Starting-Lighting System	Make	Fed by	Clutch Type	Gearset Location and Forward Speeds	Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
Monroe,	1440	2375	115	32x3½	Firestone	Own	4	3¼x4½	149	16.90	44	2600	I	Blk	3/16	1⅝	⅜	Hel	T-S	F	Conn S-H	Auto-2	Zeni	V	D D	U P 3	Own	S-F	Sp B	4.75	S	A	Cant	2	B	R	R
Moon	1685	2680	118	32x4s	Firestone	Cont	6	3¼x4½	224	25.35	45	2200	L	Blk	3/16	1⅜	9/32	Hel	P	F & S	Delco	Wagner	Tell	G	D D	U P 3	Timken	S-F	Sp B	4.60	S	S	Semi	3	B	R	R
Moore, 30-SF	1095	2000	106	30x3½q	Firestone	G-B & S	4	3¾x4¼	188	22.50	36	2800	....	Blk	3/16	1⅜	7/32	Gr	T-S	F & S	Conn S-H	Auto	Marv	G	D	U P 3	Peru	F-F	Sp B	4.25	S	S	Semi	3	R-B	B & R	B
Murray, 30-F	2800	3750	128	34x4½s	Firestone	H-Splm	8	3¼x5	332	33.80	80	2700	L	4	3/16	....	....	Hel	P	F	Split D-H	West	Zeni	V	D D	U P 3	Timken	F	Sp B	4.46	S	S	¾-El	3	R	R	R
*Nash, 681	1695	2850	121	33x4	Firestone	Own	6	3¼x5	249	25.35	58	2600	I	Blk	3/16	1⅜	.35	Hel	P	S	WagnerSHA	Wagner 2	Marv	V	D D	U P 3	Own	S-F	Sp B	4.50	S	S	Semi	3	R	R	R
*National Sextett	3750	3700	130	32x4½	Firestone	Own	6	3½x5¼	303	29.40	71	2600	I	Blk	3/16	1 21/32	⅜	Chn	P	F	Delco SHA	West-2	Rayf	V	D D	U P 3	Columbia	F	Sp B	4.08	S	A	Semi	3	B R	R	R
Nelson, Four-29	1500	2084	104	32x4s	Kelsey....	Own	4	3⅛x4¾	146	15.60	29	2200	I	Blk	3/16	1⅛	5/16	Bev	T-S	F-F	Bosch -SH	U-S-L-1	Zeni	V	D D	R Ax 3	Own	F-F	Sp B	4.25	...	...	Semi	2	B-R	B & R	B
*Noma,	3200	3000	128	32x4½s	Goodyear	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	3/16	1⅜	9/32	Hel	P	F&S	Delco	Delco	Claud	V	D D	U P 3	Timken	¾ F	Sp B	4.50	S	S	Semi	4	B	R	R
Norwalk	1285	2410	116	32x3½c	Firestone	Lycmg	4	3½x5	192	19.60	35	2500	L	Blk	3/16	1⅝	5/16	Hel	T-S	F&S	Delco	Dyneto	Zeni	V	D	U P 3	Peru	F F	Sp B	4.20	S	S	Semi	2	B	R	R
*Oakland, 34-B	1395	2421	115	32x4s	Jaxon	Own	6	2 13/16x4¾	177	18.97	44	2600	I	Blk	3/16	1⅛	5/16	Hel	P	F	Remy	Remy	Marv	V	C	U P 3	Mott	F	Bev	4.50	S	S	Semi	3	B	R & B	B
*Oldsmobile, 46	2150	3150	122	33x4½s	Jaxon	Own	8	2 13/16x4¾	248	26.55	58	2600	L	4	3/16	1 9/32	5/16	Hel	P	F	Delco S-A	Delco-2	B & B	V	C	U P 3	W. Mott	F	Sp B	4.91	S	S	Semi	2	B-R	B & R	R
*Overland, 4T	895	1940	100	30x3½	Stanweld	Own	4	3⅜x4	143	18.23	27	....	L	Blk	3/16	....	....	Hel	T-S	S	Conn S	Auto 2	Tilt	G	P	U P 3	Own	¾-F	Sp B	4.50	S	T	3 P Cant	3	B	B	R
*Owen Magnetic, W42	6500	5200	142	35x5q	Firestone	Own	6	4x5½	414	38.40	78	....	I	3	¼	1⅞	⅜	Hel	P	F	Bosch	Owen Sys	Zeni	V	Ow. M	ag. T R	American	F	Sp B	4.00	S	S	Semi	3	....	R	R
Packard, Twin Six	6000	4490	136	35x5c	Firestone	Own	12	3x5	424	43.20	95	2600	L	6	3/16	1½	344	Chn	P	F	Delco S-HA	Bijur-2	Own	P	D D	U P 3	Own	S-F	Sp B	4.36	S	A	Semi	3	B-R	B	R
Paige-Linwood, 6-42	1 70	3140	119	32x4	Kelsey	Own	6	3¼x5	248	25.80	....	....	L	Blk	3/16	1 7/16	5/16	Hel	P	F & S	At K	G & D	Stmb	V	D P	U P 3	Salisbury	¾-F	Sp B	4.75	S	S	Semi	3	B-R	B & R	R
Paige, Essex, 6-66	3750	3751	131	33x4½	Kelsey	Cont	6	3¾x5	331	33.75	70	2350	L	Blk	3/16	1 13/16	..	Hel	P	F & S	At K	G & D	Rayf	V	D P	U P 3	Salisbury	¾-F	Sp B	4.55	S	S	Semi	3	B-R	B & R	R
Pann, A	....	2300	108	33x4q	Firestone	Own	..	3¼x5	166	16.00	50	3000	L	Blk	3/16	1¾	5/16	Chn	T-S	F & S	Auto	Auto	Stmb	G	D P	U P 3	Own	Semi	Sp B	4.90	S	S	Semi	2	B	R	R
Paterson, 6-50	1895	2900	120	33x4	Detroit	Cont	6	3¼x4½	224	25.35	38	1600	L	Blk	¼	1¼	9/16	Hel	P	F & S	Delco D-H	Delco-2	Stmb	V	D P	U P 3	Salisbury	S-F	Sp B	4.50	S	S	Semi	3	B	R	R
Peerless, 56	3230	3830	125	34x4½s	Firestone	Own	8	3¼x5	332	33.80	80	2800	L	4	3/16	1 9/16	⅜	Hel	P	F	At-K S-H	Auto 2	Ball	V	D D	U P 3	Own	S-F	Sp B	4.90	S	S	Platt	3	B-R	R	R
Pennsy, 18	1085	2600	115	32x4s	Goodyear	G-B & S	4	3¾x4¼	188	22.50	37	2800	....	Blk	3/16	1⅝	9/32	Hel	T-S	F & S	Conn S-H	Dyneto-2	Cart	V	D D	U P 3	Weiss	S-F	Bev	4.00	S	S	Semi	3	R	R	B
Pennsy, 6-18	1585	....	120	33x4s	....	Cont	6	3¼x4½	224	25.35	....	....	L	Blk	3/16	....	....	Hel	P	F & S	S-H	Heinze	Rayf	V	P	U P 3	Columbia	F	Sp B	4.58	.	S	¾ El	3	B	R	B
Phianna	6000	....	128	32x4½	Firestone	Own	4	3 23/32x6	287	24.90	....	....	L	Blk	3/16	1 13/16	⅜	Chn	P	F	Bosch S-H	Ward L	Stmb	P	D D	Sep-4	American	F	Sp B	4.00	R	R	Cant	3	B	R	B-R
*Piedmont, 4-30	1485	2450	116	32x3½	Firestone	Lycmg	4	3½x5	192	19.60	35	2000	I	Blk	3/16	1⅝	5/16	Hel	T-S	S	Delco	Dyneto	Cart	V	D P	U P 3	Peru	F	Sp B	4.45	S	S	Semi	3	B	R	R
*Piedmont, 6-40	1945	2875	122	32x4	Firestone	Cont	6	3¼x4½	224	25.35	44	2200	I	Blk	3/16	1 9/16	5/16	Hel	P	F	Remy	Remy	Stmb	V	D P	U P 3	Spacke	S-F	Sp B	4.45	S	S	Semi	3	B	R	R
Pierce-Arrow, 38	7500	4370	138	35x5	Firetone	Own	6	4x5½	417	38.40	...	3000	T	Blk	¼	1½	5/16	Hel	P	F	Delco	Delco	Own	P	D	Sep 3	Own	S-F	Sp B	4.28	S	A	Semi	7	B	R	R
Pierce-Arrow, 48	.....	5103	142	35x5q	Goodrich	Own	6	4½x5½	525	48.60	....	....	T	2	¼	1½	5/16	Hel	P	F	Delco	West-2	Own	P	C	Sep 4	Own	S-F	Sp B	Opt	S	A	¾ El	7	B	B & R	R
Pilgrim	895	2350	114	32x3½s	Perlman	G-B & S	4	3¾x4¼	188	22.50	37	2800	L	Blk	3/16	1⅝	½	Chn	T-S	F & S	Elsman	West-2	Zeni	V	O D	U P 3	Hess	¾ F	Sp B	4.08	S	S	Semi	3	B	R	B
*Pilot, 6-45	1895	2890	120	32x4s	Perlman	Teetor	6	3⅛x5	230	23.44	45	2100	L	Blk	3/16	137	.31	Hel	P	F & S	Delco S-H	Delco-2	Tilt	V	D D	U P 3	Spacke	F	Sp B	4.90	S	T	Cant	3	B	B & R	R
Porter 45 (16 valve)	7000	3500	140	36x5	D Wheels	Own	4	4⅜x6¾	448	34.28	....	....	I	Blk	¼	....	....	Wm	P	F & S	Bosch 2-Pt	Bosch 2	Long	P	C	Sep 4	Own	F	Bev	3.00	S	T	Semi	3	B	B	B
Premier, 6-D	4600	4120	126¾	32x4½s	Firestone	Own	6	3⅜x5½	295	27.30	60	2600	I	Blk	3/16	1 21/32	5/17	Hel	P	F & S	Delco S-A	Delco-2	John	V	D D	U P 3	Stanpar	S-F	Sp B	4.50	S	S	Semi	3	B-P	R	R
Premocar, 4-80	3865	....	117	32x4½	Firestone	Duesen	4	4x6	452	25.60	76	2500	I	Blk	¼	1 11/32	⅜	Chn	P	F & S	Bosch	West	Zeni	V	D D	U P 3	Timken	F F	Sp B	4.90	S	A	Semi	2	R	R	R
*Reo, T-6	1850	3050	120	33x4s	Firestone	Own	6	3 3/16x5	239	24.30	50	2000	F	Blk	3/16	2⅛	.375	Hel-	P	F-S	N. E	N. E	Ray	V	D D	Sep 3	Own	S-F	Sp B	4.60	S	S	Semi	4	R	R	R
Ri-Chard	8000	4500	137	34x6	Firestone	Own	8	3¾x6¾	600	45.00	120	1800	I	4	¼	2¾	5/16	Hel	P	F-S	2 Bosch M	West	Own	V	D D	Sep 3	Own	F-F	Bev	2.00	T	T	Semi	5	B	B	B
Revere, B	4650	3850	131	32x4½q	Goodyear	Duesen	4	4⅜x6	361	30.63	105	2600	I	Blk	3/16	2¼	⅜	Chn	P	F-S	Bosch	West	Stmb	V	D D	U P 4	Stanpar	F-F	Bev	3.60	S	A	Semi	2	B	B	B
*Roamer, 6-54-E	.....	3550	128	32x4½s	Wire W	Cont	6	3½x5¼	303	29.40	54	2450	L	Blk	3/16	1.54	.30	Hel	P	F & S	Bosch D-H	Bijur-2	Stmb	V	D P	U P 3	Stanpar	¾ F	Sp B	3.87	S	S	Cant	3	B-R	R	R
*Roamer, 4-75-E	.....	3600	128	32x4½s	Wire W	Duesen	4	4x6	301	25.60	75	1800	I	Blk	¼	2	⅜	Chn	P	F & S	Bosch	West	Stmb	V	D P	U P 4	Stanpar	¾ F	Sp B	3.87	S	S	Cant	2	B	R	R
Rock Falls, 10	.....	2800	136	35x5	Firestone	Cont	6	3¾x5	331	33.75	....	....	L	Blk	3/16	....	....	....	P	F & S	Bosch	West	Rayf	V	D P	U P 3	Columbia	F-F	Sp B	4.87	...	..	¾ El	....	....	....	....
*R. & V. Knight, J	3350	3617	127	32x4½	Firestone	Own	6	3½x4½	260	29.40	....	....	K	Blk	3/16	....	....	Chn	T-S	F	Wagner	Wagner	Stmb	V	D P	U P 3	Timken	S-F	Sp B	4.90	S	S	Semi	3	R	R	R
*R. & V. Knight, R	.....	2900	115	[illegible]	Firestone	Own	4	3¾x5	221	22.50	....	....	K	Blk	3/16	....	....	Chn	T-S	F	Wagner	Wagner	Stmb	V	D P	U P 3	Salisbury	F-F	Sp B	4.75	S	S	Semi	3	B	R & B	R
Saxon Duplex	1895	2770	112	32x4	Firestone	Own	4	3⅜x5	179	18.23	45	2400	I	Blk	3/16	1½	⅜	Hel	T	F	Wagner	Wagner	Stmb	V	D D	U P 3	Adams	¾F	Sp B	4.75	T	T	Cross	2	R	R	R
*Sayers	2295	2800	118	33x4s	Cleveland	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	3/16	1⅝	⅜	Hel	P	F	Delco	Delco-2	Stmb	V	D D	U P 3	Stanpar	S F	Sp B	4.75	S	S	Semi	4	B	R	R
Scripps-Booth, B-39	1545	2500	115	32x4	Kelsey	North	6	2 13/16x4¾	177	18.99	44	2600	I	Blk	3/16	....	....	Hel	P	F	Remy	Remy-2	Marv	V	C	U P 3	W-Mott	¾ F	Bev	4.50	S	S	Semi	3	B-P	B-R	B
Seneca, L.	1185	2100	108	30x3½	Jackson	LeRoi	4	3⅛x4½	138	15.63	27	2200	I	Blk	3/16	....	¼	Hel	T-S	F & S	Conn	Al-Ch	Scheb	V	D D	U P 3	Peru	F F	Sp B	4.50	..	T	Cant	2	B	R	R
Severin Six, H	2550	2985	122½	32x4½	Firestone	Cont	6	3½x5¼	303	29.40	55	2100	L	Blk	3/16	1.54	.30	Hel	P	F & S	Wagner	Wagner	Stmb	...	D D	U P 3	Salis	¾ F	Sp B	4.50	S	S	Semi	3	B-R	B-R	R
Sheridan, B-40	.....	2850	116	33x4	Jaxon	GMC	4	3 11/16x5¼	224	21.75	33	1500	I	Blk	3/16	1 5/16	¼	Hel	P	F & S	Remy	Auto-2	Zeni	V	D P	U P 3	GMC	¾F	Sp B	4.66	S	T	Semi	3	B	R	B
Simplex-Crane	°7000	....	143½	35x5q	....	Own	6	4⅜x6¼	564	45.94	....	....	L	3	3/16	....	....	Chn	P	F	Eisen	Bosch-2	Newc	P	D	U P 4	Own	F	Sp B	Opt	S	S	Semi	3	B	B	R
Singer, 19	5000	4400	139	35x5	D Wheels	H-Splm	6	4x5½	415	38.40	100	1950	T	3	3/16	1⅞	5/16	Hel	P	F	Bosch S-H	West-1	Rayf	V	D D	U P 4	Timken	F	Sp B	3.70	S	A	Cant	3	B	R	R
Skelton 35	1295	2450	112	32x3½	Firestone	Lycmg	4	3½x5	192	19.60	35	2100	L	Blk	3/16	1 5/16	5/16	Hel	T-S	F & S	Conn	West	Zeni	V	D	U P 3	Peru	F-F	Sp B	4.25	S	S	Semi	2	B	R	R
Southern Six	2995	3300	127	32x4½	Firestone	H S	6	3¼x5½	273	25.35	57	2000	L	Blk	3/16	1 9/16	5/16	G	P	F & S	Berl	Bijur	Zeni	V	D D	U P 3	Salis	¾F	Sp B	4.75	S	S	Semi	3	B	B R	R
Spencer E	1200	1500	104	30x3½	Goodyear	Spencer	4	3¼x4½	206	16.90	40	2750	I	4	¼	1¾	⅜	G	A	F & S	Auto	Auto	Schb	V	C	U P 3	Special	F-F	Bev	4 25	..	.	Cant	3	R	R	B
Standard, 1	3400	3500	127	34x4½s	Firestone	Own	8	3¼x5	332	33.80	70	2200	L	4	3/16	1 7/16	⅜	Hel	P	F	Split	West	Cart	V	D D	U P 3	Timken	S-F	Sp B	4.46	S	S	Semi	3	B-R	B R & P	R
Stanwood Six A	2050	2900	118	33x4	Stanweld	Cont	6	3¼x4½	225	25.30	55	2600	L	Blk	3/16	1½	5/16	Hel	P	F	At-K	West-2	Stmb	V	D	U P 3	Stanpar	S-F	Sp B	4.50	S	S	Semi	3	B	R	R
Stearns-Knight, 4	2450	3400	125	34x4½s	Firestone	Own	4	3¾x5⅝	248	22.50	50	2200	S	Blk	3/16	....	....	Chn	P	F & S	At-K S-H	West-2	Schb	V	D D	U P 3	Own	S-F	Sp B	4.50	S	A	Cant	3	B-R	B & R	R
Stephens, 84	2100	3100	122	33x4½s	Stanweld	Own	6	3¼x4½	225	25.35	57	2600	I	Blk	3/16	1⅝	⅜	Hel	T-S	F	Auto	Auto	Till	V	D D	U P 3	Timken	S-F	Sp B	4.90	S	S	Semi	3	B	R	R
Sterling	1185	2000	110	30x3½	Std	LeRoi	4	3⅛x4½	138	15.60	27	2200	L	Blk	3/16	1½	3/16	Hel	T-S	S	Berl	A C	Zeni	V	D D	3	Wisc	F F	Bev	4.00	S	S	Semi	2	R	R	R
Stevens-Duryea, E	8000	4200	138	35x5	Firestone	Own	6	4 1/16x5½	510	47.20	80	1800	L	2	¼	2⅛	7/16	G	P	F & S	Berl 2	West	Stmb	V	D	U P 3	Own	F F	Sp P	3.93	S	T	¾ El	4	B	B	B
S-S-E, A-F	7000	1800	122	33x4½	D Wheels	Own	6	....	300	30.24	77	2700	....	Blk	3/16	2	⅜	Chn	P	F & S	Delco D	Delco-2	Zeni	P	D D	R Ax 3	Own	S-F	Sp B	3.40	T	T	Cant	7	....	....	....
Studebaker, E-H	1685	2950	119	32x4q	Kelsey	Own	6	3½x5	289	29.40	51	2000	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Wagner	Wagner	Stmb	V	C	Sep-3	Own	S-F	Sp B	4.00	S	S	Semi	4	R	R	R
Studebaker, E-G	2135	3125	126	33x4½q	Kelsey	Own	6	3⅞x5	354	36.04	62	2000	L	Blk	¼	1 11/16	5/16	Hel	P	F & S	Wagner	Wagner-2	Ball	V	C	Sep-3	Own	S-F	Sp B	3.70	S	S	Semi	4	R	R	R
Studebaker, E. J	.....	.....	112	32x4	....	Own	6	3⅛x4½	207	23.40	....	....	L	.....	3/16	....	....	Ch	P	S P	Wag. S	Wag	Stmb	V	P	Amid-3	Own	S-F	Sp-B	4.55	S	S	Semi	4	R	R	R
*Stutz 16-valve	4000	.....	130	32x4½s	D Wheels	Own	4	4⅜x6	361	30.63	....	....	T	Blk	¼	....	....	Hel	P	F & S	Delco D-H	Remy-2	Stmb	P	C	R Ax 3	Own	¾ F	Sp B	3.75	T	T	Semi	3	B	B-R	R
*Templar, 4-45	2685	2885	118	32x4	Firestone	Own	4	3⅜x5½	197	18.23	45	2100	I	Blk	3/16	1⅝	⅜	Chn	P	F	Magneto	Bijur-2	Stmb	V	D D	U P 3	U. S.	S-F	Sp B	4.41	S	S	Semi	3	B	B & R	R
*Texan	.....	2550	113	33x4s	Firestone	Lycmg	4	3½x5	192	19.60	35	2000	L	Blk	3/16	1⅝	5/16	Hel	T	F & S	Conn	Bijur	Cart	V	P	U P 3	Peru	F F	Sp B	4.25	S	A	Cant	2	B	R	R
*Tulsa, D-1	1550	2400	117½	33x4s	Stanweld	H S	4	3½x5	192	19.60	35	1800	L	Blk	3/16	....	....	Hel	T	F & S	Conn	Dyneto	Zeni	V	D D	U P 3	Salisbury	S F	Sp B	4.50	S	S	Semi	2	B	R	B
Velie, 34	1385	2600	112	32x3½	Firestone	Falls	6	3⅛x4¼	196	23.50	40	2000	L	Blk	3/16	....	....	Hel	T-S	F & S	At-K S-A	West	Stmb	V	D D	U P 3	Col	S-F	Sp B	4.60	S	S	½ El	3	B-P	R	R
Velie, 48	1595	3100	115	32x4s	Firestone	Cont	6	3¼x4½	225	25.35	55	2600	L	Blk	3/16	....	....	Hel	P	F & S	At-K S-A	Bijur	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.60	S	S	¾ El	3	B-R	R	R
Vernon, 419	845	1600	103	30x3½c	Baker	Own	4	3⅛x4	123	15.62	45	2800	T	Blk	3/16	1¾	7/32	Hel	T	F & S	At-K S-A	Wd. Leon	B&B	G	D	U P 3	Own	F-F	Sp B	4.25	S	S	Cant	2	B	R	R
Vernon, 819	1695	2250	115	31x4c	Harvey	Own	8	2⅝x4	173	22.05	62	2800	T	2	3/16	1⅜	7/32	Hel	T	F & S	At-K S-A	Wd. Leon	B&B	G	D	U P 3	Own	F-F	Sp B	4.63	S	S	Cant	2	R	R	R
Vogue 6-66	2485	.....	124	33x4½	Firestone	Cont	6	3½x5¼	303	29.40	54	2450	L	Blk	3/16	1.54	.30	Hel	P	F & S	Conn	Auto	Schb	V	D	U P 3	Salisbury	¾-F	Sp B	4.50	S	S	....	3	B	R	R
Washington	1685	2490	114	32x4	....	Falls	6	3⅛x4¼	196	23.50	37	2000	I	Blk	3/16	1¼	9/32	Hel	T-S	F & S	At K	Bijur-2	Zeni	V	D D	U P 3	Columbia	¾-F	Sp B	5.11	T	S	Cant	3	B	R	R
Wharton, DeLuxe 8	3450	3800	125	34x4½	Disteel	Curtis	8	4x5	498	51.20	100	1800	I	8	3/16	1 62	.375	Hel	P	F	Berling	Dyneto	Zeni	V	D D	U P 4	Eaton	F-F	Sp B	3.60	S	S	Semi	5	B	R	R

TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	TIRES AND RIMS			ENGINE															IG-NITION SYSTEM		Car-buretor				REAR AXLE							BEARINGS			
			Wheelbase in Inches	Size	Make of Rims	Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	Wth. P. Ring Groove	Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	Make and Type	Make of Starting-Lighting System	Make	Fed by	Clutch Type	Gearset Location and Forward Speeds	Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
*Waco, T-37	950	2350	112	32x3½q	....	....	4	3¾x4¼	188	22.50	37	....	I	Blk	..	......	......	......	T	F & S	Split	....	Schb	V	D	U P 3	....	F-F	......	....	..	..	¾ El	..	....	B	.....
Wasp, 211	6500	3700	132	33x5	Fires one	Wisc	4	4¾x5½	389	36.10	72	1900	L	2	¼	2	¼	Hel	P	F & S	West	West	Stmb	V	D D	Sep 3	Timken	S-F	Sp B	3.77	S	A	Semi	5	R	R	R
*Westcott, C-38	2290	3100	118	33x4	Firestone	Cont	6	3¼x4½	223	25.35	46	2690	L	Blk	3/16	1 43/64	5/16	Hel	P	F & S	Delco	Delco-3	Rayf	V	D D	U P 3	Timken	S-F	Sp B	5.09	S	S	Semi	4	R	R	R
Westcott, C-48	2990	3600	125	32x4½s	Firestone	Cont	6	3½x5¼	303	29.40	51	1900	L	Blk	3/16	1.54	.30	Hel	P	F & S	Delco	Delco-3	Rayf	V	D D	U P 3	Timken	S-F	Sp B	4.45	S	A	Semi	3	B-R	R	R
Willys-Knight, 20T	2195	3695	121	34x4½s	Stanweld	Own	4	4⅛x4½	240	27.23	55	2200	S	Blk	⅜	......	......	Hel	T-S	F & S	Conn S	Auto-2	Tilt	V	C	R Ax 3	Own	F	Sp B	4.30	T	T	Cant	3	B R	PR	R
Winton, 33	4600	4300	132	35x5	Firestone	Own	6	3¾x5¼	348	33.75	70	2200	L	2	¼	1¾	⅜	Chn	P	F	Bosch S-H	Bijur-2	Stmb	V	D D	U P 4	Own	F	Sp B	4.90	S	T	Semi	4	B-R	R	R
Wolverine	3500	2340	117	32x4½	....	Duesen	4	3 43/64x6	299	25.00	90	2600	....	Blk	..	2¼	⅝	Gear	P	F & S	Bosch	Bijur	Mill	V	D D	U P 4	American	F-F	Sp B	2.94	..	S	Semi	3	B	R	R

SPECIFICATIONS OF STEAM PASSENGER CARS

Name and Model	Price	Wheel-Base	Type of Boiler	Boiler Location	Fuel Used	Burner Type	Condensing or Non-Conden.	Type of Engine	Type of Valve Gear	Type of Valves	No. Cyl.	Bore and Stroke	Engine Location	Final Drive	Gear Ratio	Tire Size	Type of Rear Spring	Car Drives Through	Torque Taken by
Doble Detroit	5000	135	Semi Flash	Hood	Kero	Atomizing	Condensing	Simp D Act	Own	Slide	2	5x4	Rear Axle	Spur Gr	1.28	35x5	Semi	Springs	Eng. Frame
Stanley, 735	3950	130	Fire Tube	Hood	Kero	Vaporizing	Condensing	Simp D Act	Steve Link	Slide	2	4x5	Rear Axle	Spur Gr	1.50	34x4½	Elliptic	Springs	Eng. Frame
Super-Steamer	3000	125	Fire Tube	Hood	Kero	Bunson	Condensing	Simp D Act	Steve Link	Slide	4	3¼x5	Rear Axle	No Gr	....	33x4	Semi	Springs	Eng. Frame

Brief Facts and Features of the Automobile Industry in 1920

By Alfred Reeves, General Manager, National Automobile Chamber of Commerce.

AUTOMOBILE USE.

Automobiles registered in U. S. (approx.)	8,500,000
Passenger cars registered in U. S.	7,600,000
Motor trucks registered in U. S.	900,000
Cars and trucks owned by farmers	2,500,000
Per cent. of registration in towns of 5,000 population or less	55%
Per cent. of registration in towns of 1,000 population or less	33%
Per cent. of 1920 output bought by agricultural districts	60%
Passenger cars owned by doctors	110,000
State-owned cars and trucks	30,125
Municipally-owned cars and trucks	10,314
Cars and trucks entering and leaving New York city daily	154,725
Persons carried to and from New York daily by car and truck	420,095
Trucks owned by farmers	80,000
Labor saving value of truck to each farmer annually	$150
Saving in transport charges to each farmer annually through use of truck	$240

AUTOMOBILE'S PART IN NATION'S BUSINESS.

Amount of special taxes paid annually by industry to Federal government	$257,000,000
Registration fees paid by car users	$81,000 000
Per cent. of all cars used more or less for business	90%
Per cent. of total mileage used for business	60%
Gain business efficiency from use of car as reported by average owner	57%
Average increase in doctors efficiency through use of car	104%
Per cent. of steel supply used by automobile industry	4%
Amount paid by industry to railroads for freight on shipments of finished motor vehicles	$100,000,000

PRODUCTION IN 1920.

Cars and trucks produced	2,241,000
Passenger cars produced	1,906,000
Motor trucks produced	335,000
Wholesale value of cars and trucks produced	$2,136,183,676
Wholesale value of passenger cars produced	$1,703,437,213
Wholesale value of motor trucks produced	$432,746,463
Average wholesale price of passenger cars produced	$897
Average wholesale price of motor trucks produced	$1.273
Motor truck manufacturers in production	170
Passenger car manufacturers in production	90
States in which factories are located	32
Employees engaged in car and truck manufacture	300,000
Automobile tires manufactured	32,400,000
Increase in gasoline production over 1919	19%

AUTOMOBILE EXPORTS IN 1920.

Value of motor vehicles and parts exported, including engines and tires	338,000,000
Number of passenger automobiles exported	153,000
Increase in number of passenger cars exported	120%
Value of passenger cars exported	$155,000,000
Number of motor trucks exported	27,000
Increase in number of trucks exported	60%
Value of motor trucks exported	$45,000,000
Number of countries to which automobiles were exported during year	114

DEALERS AND GARAGES IN U. S.

Passenger car dealers	36,210
Motor truck dealers	20,596
Garages	38,538
Repair shops	47,556

Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK MARKET.

Week Ending Jan. 29, 1921.

	High	Low	Last	Change
Advance-Rumely	19	18¼	18¼	— ¾
Advance-Rumely, pfd	51½	51½	51½	+ ⅛
Ajax Rubber	37⅛	35½	35½	+ ½
American-Bosch Magneto	56¾	52½	56¾	+4½
American-La France Fire Engine	9¾	9¾	9¾	— ⅛
Auto Sales	4⅞	4⅛	4⅞	+1⅞
Auto Sales, pfd	15	13	15	+5½
Bethlehem Motors	5⅛	3¾	4⅛	+ ⅜
Chandler Motors	72½	69	72½	+3¾
Fisher Body	87⅜	87⅜	87⅜	+2⅛
Fisher Body, pfd	100	100	100	+ ⅛
Fisk Rubber	14¾	14¼	14⅝	+ ⅜
General Motors	15	14¼	15	+ ⅝
General Motors deb. 7%	82	80	80	+ ¼
General Motors deb. 6%	69⅛	68	68½	— ½
Goodrich, B. F.	41½	40	40½	.....
Goodrich, B. F., pfd	83	83	83	+5
Hupp Motor Car	13½	12¾	13½	+1
India Rubber	6⅝	6¼	6¼	— ¼
International Harvester, new	96	93⅝	96	+2½
International Harvester, pfd.. new	110	110	110	+4
Kelly-Springfield Tire	48½	46½	47	.....
Kelly-Springfield Tire, pfd	94	92	94	+2
Kelsey Wheel	40⅛	40⅛	40⅛	—2⅞
Keystone Tire & Rubber	13¼	11⅝	13⅛	+1⅝
Lee Rubber & Tire	20½	19⅛	19¾	+ ¼
Maxwell Motors	6	5⅝	5¾	.....
Maxwell Motors, pfd. cert. of dep. st.	2⅛	1½	1½	— ¾
Maxwell Motors, 1st pfd	8½	7¾	8½	+1
Maxwell M., 1st pfd. cert. of dep. st.	8	7¾	7¾	— ⅞
Maxwell Motors, 2nd pfd	5	4½	5	+1
Maxwell M., 2nd pfd. cert. of dept. st.	5	5	5	+1½
Mullins Body	25½	25½	25½	+ ½
Pierce-Arrow	26⅝	24⅝	26⅝	+1⅝
Republic Motor Truck	24½	21½	22½	+1½
Saxon Motor	5	4⅝	4⅝	— ¼
Stewart-Warner Speedometer	37	33¾	34	+ ¾
Stromberg Carburetor	40½	37	37¾	— ⅝
Studebarker Corp	59	55⅜	58¾	+3¾
Studebaker Corp., pfd	94⅞	92	94⅞	+7⅞
Times Square Auto Supply	10¾	10¾	10¾	+ ⅜
United States Rubber	70¾	67¾	69⅝	+ ⅞
United States Rubber, 1st pfd	103½	102¾	103½	+ ⅜
White Motors	39½	38¾	38¾	— ¼
Willys-Overland	8¼	7¾	8¼	+ ¼
Willys-Overland, pfd	38½	34¾	38½	+3

AKRON CRUDE RUBBER PRICES.

	Dec. 1		Jan. 3	
	Bid	Asked	Bid	Asked
Amer. R. & T. com	..	70	..	70
Amazon Rubber	..	50	..	45
Firestone Tire & R. com	..	85	75	80
Firestone Tire & R. 6% pfd	87	89	76	80
Firestone Tire & R. 7% pfd	78¼	80	66	70
General T. & R. com	..	500	..	400
General T. & R. 7% pfd	..	90	..	90
B. F. Goodrich, com	42	43½	34	36
B. F. Goodrich, 7% pfd	77	79	70	71
B. F. Goodrich, 5 yr., 7% pfd	88¾	89¼	80	81
Goodyear T. & R. com	43	44	19	21
Goodyear T. & R. 7% pfd	67	68	42	44
India Rubber com	..	130	..	130
India Rubber com. 8% pfd	..	80	..	80
Mason T. & R. com	15	17	14	16
Mason T. & R. 7% pfd	56	60	60	63
Marathon T. & R. com	..	4	..	4
Miller Rubber com	..	95	71	73
Miller Rubber 8% pfd	85	87	90	105
Mohawk Rubber	99	110	90	105
Portage Rubber com	..	38	19	22
Portage Rubber 7% pfd	56	60	40	49
Republic Rubber com	1¼	1¾	1¼	1½
Republic Rubber 7% pfd	..	40	..	40
Republic Rubber 8% pfd	20½	22	20	22
Rubber Products	..	100	..	100
Star Rubber com	..	110	..	100
Star Rubber 8% pfd	..	100	..	100
Swinehart T. & R. com	..	40	..	40
Swinehart T. & R. 7% pfd	..	70	..	70
Phoenix Rubber com	..	20	..	20
Phoenix Rubber pfd	..	90	..	90
Standard Tire com	..	125	..	125
Standard Tire pfd	..	90	..	90

CRUDE RUBBER, NEW YORK PRICES.

	Cts. Per Lb. Dec. 5			Cts. Per Lb. Jan. 5		
Ceylons						
Smoked sheets ribbed, spot	.18	@	—	.16	@	—
Smoked sheets ribbed, Jan.-Mch.	.20½	@	—	.16½	@	—
Smoked sheets rib., Jan.-June	.22½	@	—	.17	@	—
Smoked sheets plain, spot	.16	@	—	.14	@	—
First latex pale crepe	.21½	@	—	.17	@	—
Amber crepe. No. 1	.16	@	—	.13	@	—
Amber crepe No. 2	.15	@	—	.12	@	—
Amber crepe, No. 3@	.14	@	—	.11	@	—
Clean brown crepe	.14	@	—	.11	@	—
Light clean brown crepe	.16	@	—	—	@	—
Roll brown crepe	.13½	@	—	.11	@	—
Grand Central crepe	.13½	@	—	.11	@	.11½
Africans						
Rio Nunez string	—	@	—	—	@	—
*No. 1 Benbuella	.11	@	—	.11	@	—
*No. 2 Benbuella	.08½	@	—	.08½	@	—
Paras						
Up-river fine	.21	@	—	.17½	@	—
Up-river medium	.18	@	—	.14	@	—
Up-river coarse	.14	@	.14	.13	@	@
Caucho ball	.14	@	—	.13	@	—
Islands fine	.18	@	—	.16	@	—
Maderia fine	.23	@	—	—	@	—
Cameta	.13	@	—	.12	@	—
Knapsack	Nominal			Nominal		
Centrals						
Esmerelda prime	.14½	@	—	.14	@	—
Corinto prime	.14½	@	—	.14	@	—
Miscellaneous						
Guayule wet	.18	@	—	—	@	—
*Balata block Panama	.28	@	—	.28	@	—
Balata sheets	.69	@	—	.69	@	—
Palembang	—	@	—	.06½	@	—
Columbian Block Balata	.46	@	—	.46	@	—
Prime Pontianac	.07½	@	—	.06	@	—
Bangermassin	.07½	@	—	.06	@	—

*Nominal.

DIVIDENDS DECLARED.

Company	Rate	Period	Payable	Stock of Record
Cleveland Tractor	1¾%	Quart.	Jan. 1	......
Delion Tire & Rub. pfd	2%	Quart.	Jan. 2	......
Firestone Tire & Rubber	1½%	Quart.	Jan. 15	Jan. 1
Fisher Body	$2.50	Quart.	Feb. 1	Jan. 20
Fisher Body. pfd	1¾%	Quart.	Feb. 1	Jan. 20
General Motors	25c	Quart.	Feb. 1	Jan. 10
General Motors, pfd	$1.10	Quart.	Feb. 1	Jan. 10
General Motors, 6% deb	$1.50	Quart.	Feb. 1	Jan. 10
General Motors, 7% deb	$1.75	Quart.	Feb. 1	Jan. 10
Goodrich, B. F., pfd	1¾%	Quart.	Apr. 1	Mar. 22
Goodrich, B. F.. pfd	1¾%	Quart.	July 1	J'ne 21
Hood Rubber pfd	1¾%	Quart.	Feb. 1	Jan. 20
Hupp Motor Car	2½%	Quart.	Feb. 1	Jan. 15
Hood Motor Car, 7% pfd	1¾½	Quart.	Jan. 2	......
India Tire & Rubber	2%	Quart.	Jan. 3	......
India Tire & Rubber, pfd	1¾%	Quart.	Jan. 3	......
Inter. M. T., 1st and 2nd pfd	$1.75	Quart.	Jan. 3	......
Kelly-Springfied Tire	1%	Quart.	Feb. 1	Jan. 24
Kelly-Springfield Tire, extra	$3.00	Stock	Feb. 1	Jan. 14
Kelly-Springfield Tire, pfd	2%	Quart.	Feb 15	Feb. 1
Kelsey Wheel, pfd	1¾%	Quart.	Feb. 1	Jan. 21
Lee Tire & Rubber	50c	Quart.	Mar. 1	Feb. 15
Miller Rubber com	1%	Quart.	Jan. 20	Jan. 1
Moon Motor Car Co	1¾%	Quart.	Jan. 3	......
Mullins Body	$1.00	Quart.	Feb. 12	Jan. 17
Mullins Body, pfd	$2.00	Quart.	Feb. 12	Jan. 17
Nash Motors	$10.00	......	Feb. 1	Jan. 20
Nash Motors, pfd	$1.75	Quart.	Feb. 1	Jan. 20
Reo Motor Car	2½%	Quart.	Jan. 3	......
Selden Truck, 1st pfd	2%	Quart.	Jan. 3	......
Selden Truck, 2nd pfd	2½%	Quart.	Jan. 3	......
Standard Motor Construc	2½%	Quart.	Feb 1	Jan. 3
Stewart-Warner Speed	$1 00	Quart.	Feb. 15	Jan. 31
Stutz Motor Car	$1.25	......	Jan. 12	Dec. 20
Times Square Auto Sup	62½c	Quart.	Jan. 27	Jan. 5
Timken-Detroit Axle	2%	......	Jan. 15	Jan. 10
Timken-Detroit Axle, pfd	1¾%	Quart	Mar. 1	Feb. 19
United States Motor Truck	2½%	......	Jan. 10	......
United States M. Truck, pfd	7%	Annual	Jan. 10	......
United States Rubber	$2.00	Quart.	Jan. 31	Jan. 15
United States Rubber, pfd	$2.00	Quart.	Jan. 31	Jan. 15
Westinghouse Elec. & Mfg	2%	Quart.	Jan. 31	Dec. 31
Westinghouse E. & Mfg., pfd	2%	Quart.	Dec. 31	Jan. 15

Ford Factories Resume Operations

(Continued from Page 30.)

new units of production in fields into which he had never before ventured. He was all prepared for the commencement of the fulfillment of his vision.

But he spent the millions at a time when the inflow of cash into the Ford coffers was growing scantier, and he became cramped for ready money as so many successful enterprises have before. And who shall say, in the light of past achievements, that Henry Ford may not eventually realize this latest and most astounding project?

Marvellous Development of Ford Industry.

The development of the Ford Motor Car Co. in the last decade is unparalleled in the industrial history of the world, as the following brief sketch of its growth and statement of its present immense activities will show.

The Ford Motor Co. was organized June 16, 1903. In the first fiscal year only 1708 cars were made and sold, and it was not until 1909 that the phenomenal growth began, when the production had reached 10,607 cars. In 1913 a new high water mark was reached with 168,200 Fords turned out; 1914 saw an even greater achievement in a production of 248,307, and the output thereafter increased by leaps and bounds, until it is reported that the plant at Highland Park reached the astounding figure of 941,042 cars during the fiscal year ending July 31, 1920. The Ford Motor Co. of Canada made 55,618 cars in its plant at Ford, Ont., during the same period, bringing the total production for the year only 3400 short of the million mark. To this may be added that during the same 12 months the company made 79,008 tractors, and there were made at the Ontario plant 2647 more, an aggregate of 81,655.

The officials of the Ford company had set its production programme for the calendar year, 1920, at 1,000,000 cars and trucks, and this stupendous figure was exceeded by almost 25,000, the actual figures being 1,023,552, of which 153,532 were trucks. The production mark was set at the beginning of this year at 1,250,000 cars for 1921.

Extent of Detroit Property.

The following facts are culled from an interesting booklet, Factory Facts from Ford, published by the Ford company, and are illuminating as to the extensive scope of the concern's activities. The entire Detroit property comprises a plot of ground containing 305 acres; there are 88.22 acres of floor space actually under roof. The annual business approximated $350,000,000 at the time the pamphlet was compiled, which means that each acre of floor space produced at the rate of $4,000,000 annually. The average number of employees was around 36,000 on the factory payroll regularly, and wages and share of profits to workmen averaged $4,498,570 a month.

The buildings are as follows: Administration, a four-story structure which contains the general offices. This is 300 feet long and 65 in width, and the average number on the pay roll is 950, averaging about $115,000 a month, exclusive of executives and department managers. North of the administration building is the power house, in the construction of which 5200 tons of structural steel were used, equivalent to that needed in the erection of a modern 20-story sky scraper. Nine engines housed here give a combined horsepower of 54,500.

The main factory buildings are 900 feet long and 300 wide, four stories in height and of fireproof construction. In the rear of the main plant are four six-story buildings officially designated W, X, Y and Z buildings, each 60 feet wide by 845 feet long, built parallel to each other and connected by a crane way 40 feet wide, the full length and height of the buildings. These buildings are of reinforced concrete, steel doors and sash being used throughout. Their erection increased the factory floor space by 1,376,560 square feet, and involved an expenditure of about $2,500,000.

Parallelling these four six-story buildings and connected by covered courts, are four single-story structures. Building No. 5, which adjoins Z building, is 60 feet wide and 1140 feet long; Nos. 3 and 4 each measures 64 feet in width by 1200 feet in length; while Nos. 1 and 2 are each 72 feet by 363 feet. These five buildings with the connecting courts add 465,000 square feet to the floor space.

Other buildings include a garage housing 64 cars, for the use of the officials of the company, tool construction shop, affording 96,000 feet of floor space, boiler house and foundry, and it is needless to say that all hospital, emergency and welfare departments are generously provided for. The company has also worked out its own plan of profit sharing and bonus features and was among the first in the country to give attention to the housing problem.

At the period Ford Factory Facts was issued, the Ford organization included, besides the main plant at Detroit, a factory in Ontario, Canada, and another in Manchester, England. Thirty assembling plants were maintained, all housed in substantial and commodious buildings of factory construction.

The wholesale branches are located in 40 of the largest cities of the United States, serving all sections of the country, and this organization is supplemented by more than 10,000 agents in this country alone, and there is hardly a city or town in the Union in which Ford service cannot be promptly secured.

The foreign department has its headquarters at 17 Battery place, New York city, and foreign branches and service stations are maintained in Bordeaux, France; Buenos Aires, Argentine Republic; Calgary, Alta., Can.; Hamilton, Ont.; London, Eng.; London, Ont.; Manchester, Eng.; Melbourne, Australia; Montreal, Quebec; Paris, France; Saskatoon, Sask., Can.; St. John, N. B.; Toronto, Ont.; Vancouver, B. C., and Winnipeg.

Calendar of Coming Events

Feb. 5-12—Minneapolis, Minn., Annual Winter Automobile Show, Minneapolis Automobile Trade Association. Walter R. Wilmot, Manager, 709 Andrus Building.

Feb. 6-12—Newburgh, N. Y., Annual Automobile Show, Benefit Companies E and L, State Armory. J. J. Callahan, Manager.

Feb. 7-12—Columbus, O., National Tractor Show, Columbus Tractor and Implement Club, Ohio State Fair Grounds.

Feb. 7-12—Parsons, Kan., Fifth Annual Automobile and Accessory Dealers' Association Show, Passenger Cars, Trucks, Tractors and Accessories. W. N. Chapman, Secretary, 1818 Broadway.

Feb. 8-10—Oklahoma Hardware and Implement Association Convention, Oklahoma City. W. B. Porch, Secretary-Treasurer, Oklahoma City.

Feb. 10—Columbus, O., Tractor Meeting, Association of Automotive Engineers.

Feb. 12-19—Kansas City, Mo., Annual Passenger Car and Truck Show, Kansas City Motor Car Dealers' Association. Ed. E. Peake, Manager.

Feb. 14-19—St. Louis, Mo., 14th Annual Show, Passenger Cars, Trucks and Accessories. Robert E. Lee, Manager, 3124 Locust Street.

Feb. 18-28—San Bernardino, Cal., Show, Passenger Cars, Trucks, Tractors and Accessories. Fred M. Renfro, Manager, Chamber of Commerce Building.

Feb. 19-26—Newark, N. J., Passenger Car, Truck and Accessory Show, Newark Auto Trade Association, First Regiment Armory. Claude E. Holgate, Manager.

Feb. 21-26—Deadwood, S. D., Eighth Annual Automobile Show, Auditorium, Passenger Cars, Trucks, Tractors and Accessories.

Feb. 21-26—Bethlehem, Pa., Seventh Annual Show, Passenger Cars and Accessories, Coliseum, Broadway and Montclair streets. J. L. Elliott, Manager, 1038 Norway Place.

Feb. 21-26—Elmira, N. Y., 11th Annual Passenger Car Show, Elmira Auto Club, State Armory. H. S. Bryan, Manager, 210 East Water Street.

Feb. 28-March 5—Bethlehem, Pa., Truck and Tractor Show, Coliseum, Broadway and Montclair Streets, J. L. Elliott, Manager, 1038 Norway Place.

March 1-5—Quincy, Ill., Third Annual Auto Show, Passenger Cars, Trucks and Accessories. J. W. Hart, Secretary, Whig Journal.

March 7-12—Indianapolis, Ind., 22nd Semi-Annual Show, Passenger Cars, Trucks, Accessories and Farm Lighting Outfits. John B. Orman, Manager, 338 North Delaware Avenue.

March 7-12—Paterson, N. J., Fifth Annual Show, Passenger Cars, Trucks, Tractors and Accessories, Fifth Regiment Armory. H. MacGinley, Manager.

March 7-12—Scranton, Pa., 11th Annual Show, Passenger Cars, Trucks, Tractors and Accessories. Hugh B. Anderson, Manager, Board of Trade Building.

March 12-19—Boston, Mass., 18th Annual Automobile Show, Boston Automobile Dealers' Association, Mechanics' Building. Chester I. Campbell, Manager, 5 Park Square.

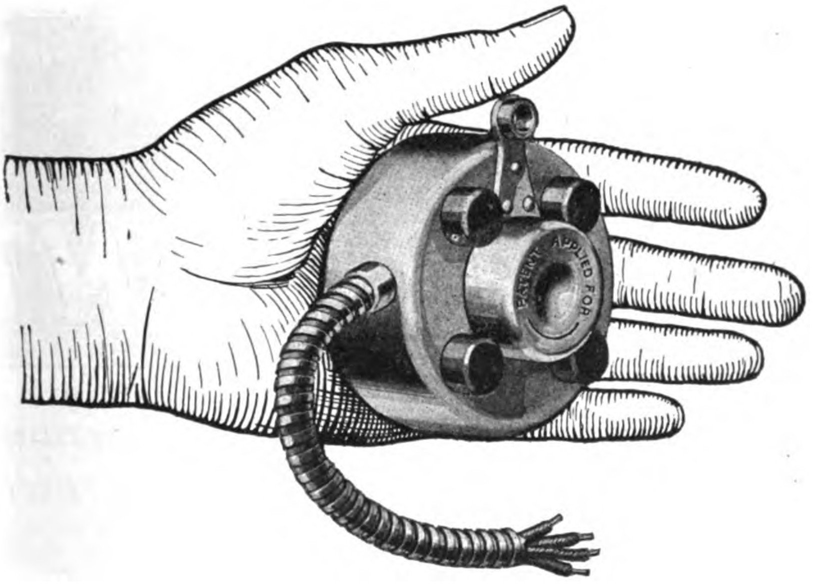
March 14-19—Trenton, N. J., Sixth Annual Passenger Car and Truck Show, Trenton Automobile Trade Association, Second Regiment Armory. Frederick Perry, Jr., Manager, West, State and Willow Streets.

March 15—Fort Worth, Tex., 24th Annual Southwestern Exposition and Fat Stock Show. Passenger Cars, Trucks and Tractors. M. Sasson, Jr., Secretary.

March 20-26—Torrington, Conn., Show, Company M, State Armory. J. J. Callahan, Manager, Box 1186, Pittsfield, Mass.

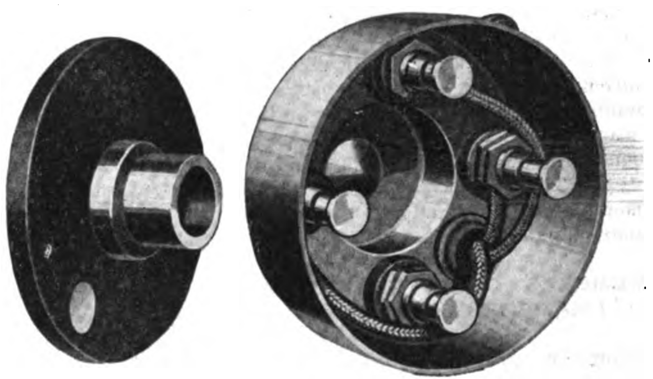
March 25—York, Pa., Passenger Car, Truck and Tractor Show, York Auto Dealers' Association.

April 3-9—Gloversville, N. Y., Annual Gloversville-Johnstown Automobile Show, State Armory. J. J. Callahan, Manager.



THE SCHOFIELD TIMER FOR FORD CARS

Built Like a Magneto



THIS TIMER HAS THESE ADVANTAGES

1—All wire connections are inside of the timer shell---no terminals are exposed---there can be no accidental short circuit --- connections cannot work loose from vibration.

2—Contact surfaces are generously large---timing is positive and accurately synchronized to give maximum power with minimum fuel consumption; also preventing knocking and excessive wear of bearings.

3—Delivers to the coil the full volume of current coming from the generator---thus fully energizing the coil and producing a big, hot spark---*at the right time.*

4—Has few parts to wear, none to get out of adjustment. The rotator is in *one* piece and is *not* subjected to mechanical shock---it makes perfect contact even when camshaft is loose or "wobbly."

5—All four wires are protected by flexible metal conduit from timer to coil. There is no abrasion, no insulation rotted by oil and moisture, no chance of failure by reason of unprotected wires.

6—The user gets a Timer that really *gives service.* For this reason, the "Schofield" is a good Timer to *sell.* The retail list price is $4.00 for Timer conplete with wires and conduit.

Discounts are attractive. Territory is now being allotted. Write for Dealer's proposition.

Schofield Manufacturing Co.

1917 East 61st Street Cleveland, Ohio

EXPORT DEPARTMENT
W.

National Chamber Favors Lower Duty

The foreign trade committee of the National Automobile Chamber of Commerce, meeting at New York, Jan. 11, reaffirmed its position relative to a lowering of United States duty from 45 to 30 per cent. to cover all automobiles, and for a scientific tariff arrangement which will both prevent discrimination against American products shipped abroad and provide for mutual advantages in a greater exchange of commodities between foreign countries and the United States. This plan will be urged in a presentation to be made to the National House Ways and Means committee.

MEMBERS OF INTERNATIONAL CHAMBER OF COMMERCE.

American participation in the International Chamber of Commerce has become fully organized by the appointment of the American committee by Joseph H. Defrees, president of the Chamber of Commerce of the United States, ocmposed of 57 of the leading business men of the country.

The board includes a number of leading officials closely associated with the automotive industries, as follows, in addition to A. C. Bedford, chairman, who is chairman of the board of directors of the Standard Oil Co. of New York:

Harry A. Black, president, Black Hardware Co., Galveston, Tex.; William Butterworth, president, Deere & Co., Molina, Ill.; E. M. Herr, president, Westingnouse Electric & Manufacturing Co., East Pittsburgh, Pa.; Alexander Legg, vice president and general manager, International Harvester Co., Chicago, Ill.; John J. Raskob, vice president, E. I. Dupont de Nemours & Co., Wilmington, Del.

IMPORTATION OF CARS TO PORTUGAL.

An order recently issued by the Portuguese government stipulates that all permits for importation of passenger automobiles, complete or incomplete, which had not been made use of previous to the date of the order because of inability to dispatch such goods, whatever may have been the alleged reason, shall be void.

These permits, however, may be revalidated when the commission appointed for that purpose considers that circumstances warrant it. In the meantime, even in these cases, petitions for re validation will be granted only when they contain all the details about the automobiles involved. These permits are not transferable and notice is to be sent to the respective customs authorities after the arrival of the vehicles.

RUBBER ASSOCIATION TO HAVE EXPORT DEPARTMENT.

The directors of the Rubber Association of America has decided to go ahead at once on the work of organizing a foreign trade department which was recommended at the general meeting of the association show week and referred to the directors for final action. The object of the new section is stated to be to aid member manufacturers of tires and rubber goods in the exploitation of the foreign field.

An export manager will be employed and the activities gotten under way at once. These will consist of research, publicity advisory and similar lines.

An additional programme of expansion, to be considered later, includes the establishment of departments of publicity, cost accounting, industrial relations, research, statistics and technical and standardization.

CONNECTICUT IGNITION IN ENGLAND.

The use of American ignition as standard equipment on European automobiles is reported as rapidly increasing, and this is exemplified by the statement that no less than three manufacturers in Englaid, the Cubitt, Phoenix and Castle, are using the Connecticut system, made by the Connecticut Telephone and Electric Co., Meriden, Conn., which are in production on a scale rather above the average for manufacturers on the other side. Still further use of the Connecticut system is being made by smaller cars. Certain British manufacturers of generators, in supplying complete electrical systems, are also using Connecticut ignition.

The number of automobiles owned in Sweden is estimated at 8600, and motorcycles at 9059.

Trade Opportunities ni Foreign Field

Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce and its district and co-operative offices upon written request by opportunity number.

32,424—An importing firm in India desires to be placed in touch with manufacturers and exporters for the purchase of hardware, cutlery, machinery, electrical goods; cotton mill, gin, press and railway stores; glassware, kitchen and household goods, metals and metal products, pipes and fittings, boiler fittings, harnesses, motor cars, bicycles and accessories, watches and clocks, musical instruments, food products, stationery, hosiery, second hand clothing, velvets, laces, piece goods, woolens, boots and shoes and sundries. Reference.

34,328—A commercial agent in Argentina desires to secure the representation of firms for the sale of general lines of hardware, automobile accessories and paper of all kinds. Quotations should be given f. a. s. New York or c. i. f. Buenos Aires. References.

32,494—A trading company in the Netherlands desires to secure an agency for the sale of motor cycles, bicycles, bicycle frames and accessories, sewing and knitting machines and similar articles. Quotations should be given c. i. f. Amsterdam or Rotterdam. Payment to be made upon receipt of goods. Reference.

34,295—A commission company in Maderia desires to secure agencies for the sale of pneumatic tires, paste shoe polish, textiles, hosiery, suspenders, linens, varnish, rice, flour and scissors. Correspondence should be in Portuguese. Reference.

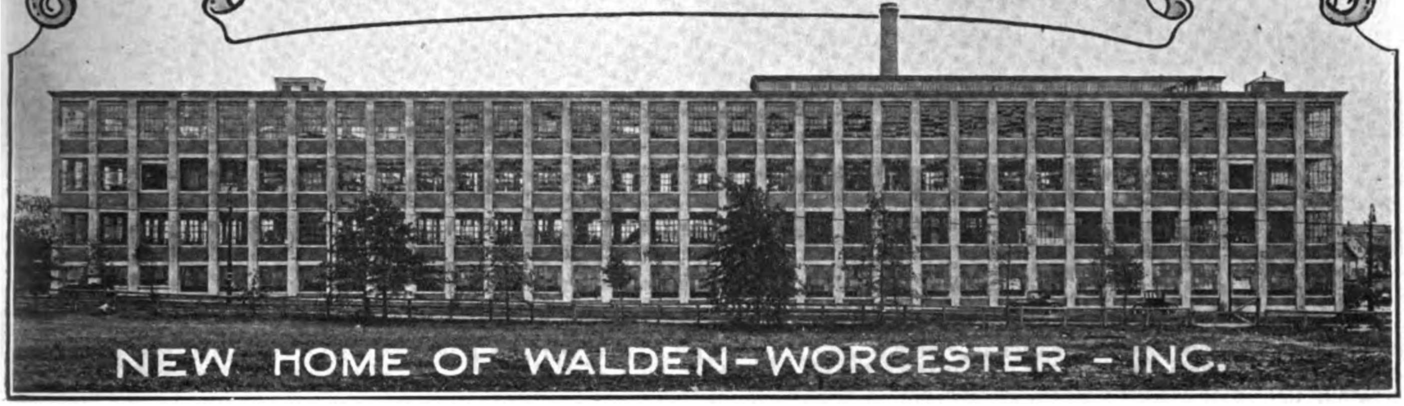
34,299—A mercantile company in Norway desires to secure an agency for the sale of machinery, automobiles, accessories and electric specialties. Quotations should be given c. i. f. Norwegian port. Payment to be made through banks in Norway and in New York. References.

34,334—A New Zealand purchasing agent who is at present in the United States desires to secure agencies for electrical appliances, including electric household devices and automobile accessories, hardware and office appliances. References.

STEEL RACE COURSE IN GERMANY.

The building of a steel-surfaced automobile race course is contemplated in Hanover, Germany. The circumference will be five miles, and the track is to be about 140 feet in width. The foundation will be of trussed concrete, and steel plates are to be laid on top of the concrete. The plans also call for numerous buildings to be erected within the diameter of the track, including a gigantic structure containing private assembling plants and testing laboratories.

Accessory and Garage Journal



NEW HOME OF WALDEN-WORCESTER - INC.

WALDEN-WORCESTER,

INCORPORATED

FIFTEEN years have rolled by since the start of Walden-Worcester, Inc., then known as Walden Manufacturing Co. From a business consisting of one small invention, employing three men, it has grown to a large modern factory employing 300.

To consider the actual growth of the company by comparison of employees hardly gives a real conception of its extension. In 1906 the production of wrenches, which included one type of ratchet wrench, was not in excess of 5000. In 1920 the 4,500,000 mark was reached.

If it were possible to turn back time for a moment to 1906, and make inquiries of a thousand dealers or jobbers whether they knew Walden-Worcester or what they manufactured, the prevailing answer would be in the negative. If the same 1000 dealers and jobbers are asked today about Walden-Worcester, these two words would be instantly connected with the word wrenches.

It might be well at this point to say a few words of the history of the company during the past 15 years. The corporation was organized and incorporated in 1906 by F. E. Walden and associates. Mr. Walden was the patentee of the wire handle ratchet wrench. The corporation was organized to manufacture that tool. Wire handle ratchet wrenches today do not represent more than two per cent. of the actual production.

In 1907 Mr. Warren S. Bellows bought out F. E. Walden and associates. On Dec. 31, 1916, the name of the concern was changed to Walden-Worcester, Inc., but there was no change in personnel.

Warren S. Bellows, General Manager, Walden-Worcester

From the small beginning of a few types of tools, the history of the company shows many additions, among these such leaders as the original "Tomahawk," and the fourth connecting rod wrench for Ford cars. Probably most everyone has used a so-called single-loop tee handle wrench on demountable rims. This wrench was designed by Walden-Worcester and has been sold to rim companies since 1913. A more detailed resume of the history of the company would prove to the general public that the line as now sold is entirely of original Walden-Worcester design.

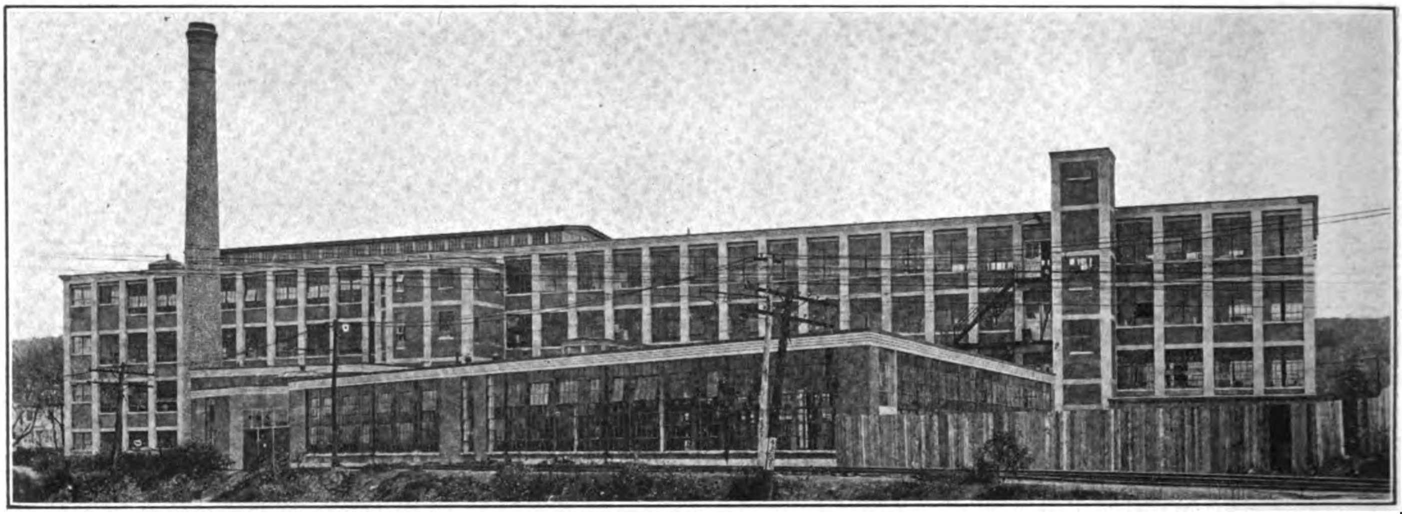
In 1919 the growth of the business was such that the concern was operating in 15 small buildings. It was therefore decided to build a large building and have the plant all under one roof. In September, 1919, ground was broken for building and completion of the structure promised Jan. 1, 1920. It was not, however, until October, 1920, that partial occupancy of the new building was possible.

The factory is particularly well situated, facing on a double boulevard 120 feet wide, serving as a main artery of travel between Boston and New York. Directly behind the plant the Boston & Albany tracks furnish a through western line connecting with the New York Central railroad. This assures a spur track being laid in the near future, drawing having already been approved.

The building has approximately 2½ acres of floor space, equal to one city block. The main building is 330 feet long and four stories high. It is made of slow burning mill type construction with concrete piers, brick walls, wood cross beams and floors. All floors are given ample light by the use of Lupton glass sash aided by mill white paint.

A one-story addition in the rear, running parallel to the main factory, is used for plating, finishing, heat treatment, garage, boilers and electric transformer room.

On the fourth floor of the main building the general offices of the plant are located. They are somewhat novel in arrangement, having the small offices of certain departments on each side of the building and through the center, a space of 14 by 100 feet, the general offices. These offices are used for such work as orders, invoices and clerical work, and are lighted from a monitor above, which



Rear View of Modern Factory of Walden-Worcester, Inc. This Four-Story Plant Contains Every Facility for the Efficient Manufacture of Socket Wrenches.

furnishes ventilation by automatically worked windows. This gives each person equal light and air.

In one end of the upper floor is located the restaurant, recreation room and kitchen. The latter has capacity to serve the employees of the factory.

The office is designed to take care of the company's growth for the next five years. It was planned that the manufacturing part of the business could be extended by lengthening the building.

There is located in one end of the building a fireproof tower 10 by 20 feet, separated from the main building by 14 inches of hollow tile. This arrangement gives a fireproof vault on each floor. On the fourth floor this is used as the active filing department, on the third for inactive files, on the second as an engineering department, and also for safe keeping of valuable tracings, and on the first to store maintainance supplies.

The third floor is occupied by the shipping and finished stock room. Finished stock is carried in steel racks, covering a space of 300 by 20 feet. Each rack is 19 feet long, having four shelves. The floors are divided into bays, each one numbered, which allows finished stock to be placed systematically in the same rotation as the orders are entered. Shipping more than 150 different types of wrenches, this method is necessary for proper handling of the orders.

Special mention should be made of the tremendous quantity of paper cartons necessary for boxing wrenches.

One million boxes were made last year by our special metal staying machines. The use of a metal edge box has greatly helped the strength of the boxes and improved the looks of the boxes on the jobbers' and dealers' shelves. Paper box material is carried in stock, flat, properly lithographed, which eliminates old fashioned methods of pasting on labels.

Orders are assembled on special trucks which are rolled directly to the packers.

Each case as completed is placed on a spiral gravity chute, which carries it to a covered loading platform on the ground floor or directly into freight cars. The loading platform permits two trucks to load at the same time. With the system now practised wrenches flow without interruption from finished stock bins to carriers.

On the second floor the most important part of the manufacturing is carried on. The equipment of this floor embodies ideas which have taken years to perfect. Special bending machines, socket assemblers, milling, drilling and working machinery, included with equipment, have been especially adapted for the manufacture of socket wrenches. This floor also carries the tool crib, which keeps special jigs and fixtures for drills and milling machines, as well as a very well equipped tool room to make jigs, fixtures and special tools.

Factory offices are located in one end of this floor, which include works manager and superintendent's office, drafting, cost department, time keeping and other departments. A large, airy, clean locker room, with all modern appliances for washing up takes up the remainder of the space on this floor. Each employee has an individual locker in which he keeps his clothes, lunch and other of his things that he may desire.

On the first floor is located the unfinished stock, receiving department, automatic screw machines, presses, rod cutters and other miscellaneous machinery.

Passenger elevators, freight elevators, electric controlled clocks and time recorders are included in the regular equipment of the plant. There is also a great deal of special equipment, such as box trucks, overhead trolley track and conveyor.

Running lengthwise of the building above the center aisle is a one-ton capacity overhead trolley track and hoists. Two methods are used in the factory to hold material, one a wheel box truck about two feet long by 18 inches wide by 18 inches deep and the other is small metal piling, or "tote" pans. Both trucks and pans are moved with help of trolley track and hoist.

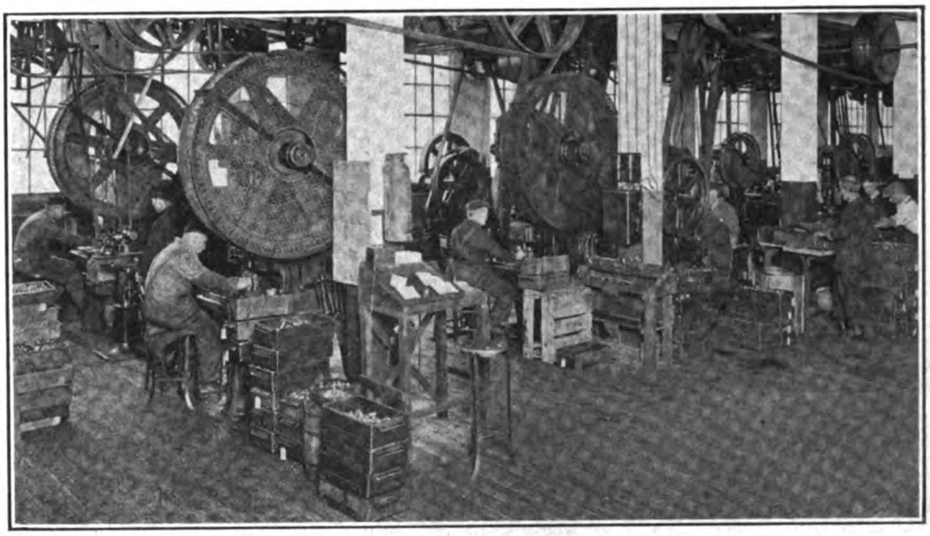
A special electric belt type conveyor carries tools to be finished from the second floor of factory through a water proof tunnel underground to the first floor of the rear building. Tools are then nickel plated and sent by conveyor underground and up to third floor of main building for shipment or stock.

A dumb waiter connects floors one, two and three with stock room, giving quick service to each floor.

Product.

Walden-Worcester's principle product

The Main Offices Are Ideally Arranged and Admit Ample Light and Air.



Power Press Room. Note the Screen-Like Arrangement, Which Prevents Accident to Operator.

consists of socket wrenches, although it includes valve grinders and a few stamped open end wrenches. The term socket wrench may not mean a great deal to most people, although every automobile owner who has changed a tire on cars equipped with demountable rims, knows that it is a socket wrench which he uses to remove the nuts which clamp the rim to the wheel. Walden-Worcester furnishes more than half the rim tools which are used for equipment on new cars. A brace socket wrench or tee handle socket wrench comes as equipment with almost every make of car, because it is the fastest tool which may be used to remove these many nuts. With some car owners the use for a socket wrench ends here, but many others, and all garage mechanics know that the application of socket wrenches to most all forms of assembly or disassembly work saves time and insures long life to the nut or bolt head.

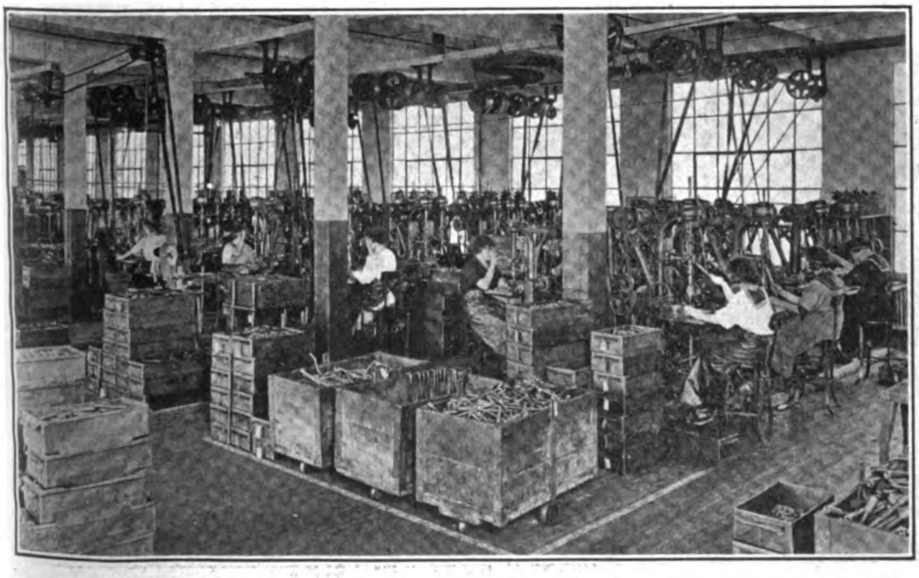
The automobile is the most popular example of modern compact machinery. In the building of compact machinery some parts are bound to be quite inaccessible, and whereas it would be impossible to use an ordinary adjustable, or open end wrench on many of these parts, the wire handled socket wrench may be used. This is true because the socket wrench grips the nut on every side so that the six thin walls of the socket replace the two heavy jaws of adjustable or open end wrenches; also because the wire handle may be bent into any desired shape and good leverage may be obtained, that would be impossible with any other type of wrench.

So it may be seen that socket wrenches have two great uses. First, to speed up work in accessible places by the use of brace socket wrenches or tee handled socket wrenches, and second, to reach the inaccessible nuts and bolts by special types of offset handles.

The first wire handled socket set which was offered to the automotive trade was that for the Ford car. This met with so great a demand that car sets were added to the line for the Overland, Buick and Dodge cars, then still later sets were added for the Chevrolet, Maxwell and the Fordson tractor. These sets were composed of from four to six tools. Although these particular tools were designed for use on these certain makes of cars, some of the tools were applicable to certain places on other makes of cars. Besides the automotive work, which has been the largest field with Walden-Worcester, they have made wrenches for companies manufacturing looms, steel sash, steel vaults, Pullman cars, automatic screw machines, air compressors, mining engines, etc.

How Wrenches Are Made.

It will probably be interesting to tell some of the operations through which the tools pass in the making. The 10-foot bars of steel are placed in Gridley automatic screw machines and are turned, drilled and cut off, coming out almost a finished socket except for the broaching. These screw machine parts pass from the automatic screw machines to the high powered presses, which broach or punch the hex or square opening, as well as the opposite end of the sockets to receive the handle, such as the tee and speed wrenches. The other type of sockets, such as used on the Tomahawk or double end offset wrenches, are drilled in the side to receive the handle.



Drill Press Room. Conveyors in Foreground Are Used to Carry Product to Different Departments.

Those sockets which are to be heat treated then go to the heat treating department under the direction of a metallurgist, being treated in one of the latest type of automatic movable floor furnaces. After heat treating these sockets are sent to the assembling department.

In the meantime the handles are prepared to receive the sockets as follows: The wire for the handles comes in the form of large coils, which necessitates that the wire should be run through a straightening and cutting machine in which the wire is cut into the proper lengths.

Next the rod is slabbed to receive the socket. It is then marked with the stamp of the manufacturer. These rods are then formed on powerful benders in the shape of speed wrenches, tee handle wrenches or whatever shape or form they are to take. Then the sockets are pressed on to these handles and securely fastened.

These tools are then conveyed by an automatic conveyor to the plating department. Here is installed the most complete plating equipment that can be obtained. This machine is one of five in the whole United States and having been the last one built has many qualities not found in the others. The cost of this particular installation was approximately $30,000, and it has a capacity of 40,000 tools a day.

The tools are automatically conveyed from one vat to another so that the wrenches receive successive coats of zinc, copper and nickel. The result is a finished product that presents a clean looking and most attractive nickel finish in keeping with the high character of the tools. These tools again go to the automatic conveyor, which carries them to the stock bins.

Stock Room and Shipping Department. Wrenches in Foreground Have Just Come from Nickeling Bath.

Sales.

Walden-Worcester sales can be divided into three classes: Manufacturers, jobbers and export.

Manufacturers' Sales.

Manufacturers' sales, although representing a small portion of the total volume, take a largely diversified class of industries. Manufacturers' business can be divided into three main groups: Assembly, equipment and service. By assembly is meant tools for assembling machines. By equipment is meant operator tools for adjustment of machines, or rim tools that go with an automobile. Under the heading of service work are tools used for repair work, generally sold through regular jobbers, although sometimes recommended by manufacturers.

The possibilities of tools for use as equipment are greater than the average conception. Such machines as screw machines, lathes, looms and others all need tools for minor adjustments. Manufacturer's equipment work is only in its infancy with this concern.

Jobbers' Sales.

The sale of standard wrenches to automotive and hardware jobbers in the country represents the volume of Walden-Worcester business. Selling approximately 750 jobbers, located in every state in the country, it is very easy to see the possibilities of this branch of sales work. The jobbing business covering the United States so thoroughly keeps fairly constant in volume, as it is not local in its character. This branch of business represents 80 per cent. of Walden-Worcester's total volume.

In order to carry out this work and get the best cooperation from wholesalers, the company has branch offices located in New York, San Francisco, Chicago and Winnipeg, and from these offices travel 14 salesmen, who call on the jobbers. The work of the salesmen is not only to sell wrenches, but to give the jobber service, see that he has the proper stock on his shelves, assist him in taking stock, and to work with his sales manager and advertising manager to see that the product is sold and the proper turnover is obtained.

Each one of these branch offices is supplied with copies of orders and invoices as sent out by the home office. The home office and the branch offices exchange copies of all correspondence so that each branch office has a complete file of the business in its territory. Besides regular salesmen the company travels missionary men whose duty it is to give information to dealers as to the various uses of Walden-Worcester wrenches and by explaining additional uses of tools, help to increase the sales for jobbers. These missionary men will also assist dealers in making up special window displays, suggestions of which they will have in the form of pictures of displays. This particular work is only of recent inception, but from results obtained so satisfactory that this feature has been planned on a much larger scale.

It is perhaps well at this point to call attention to one predominant feature of Walden-Worcester's sales policy. Each tool is guaranteed to give satisfactory service. All defective or imperfect tools are always replaced or repaired free of charge. The guarantee is broad enough so that there is no possibility for any misunderstanding.

Walden-Worcester's biggest distributing city is St. Louis, although cities of Chicago and San Francisco are the next in importance. Merely because they are distributing cities does not necessarily mean that the tools are sold there, for some of the large hardware and automotive equipment houses in these cities sell to all parts of the country.

Export Sales.

Walden-Worcester, Inc., almost from its very organization has been keenly alert to the possibilities and the advantages of the widest possible distribution of its products. It was but natural therefore that attention was early given to the opportunity for sales extension in America's oversea markets.

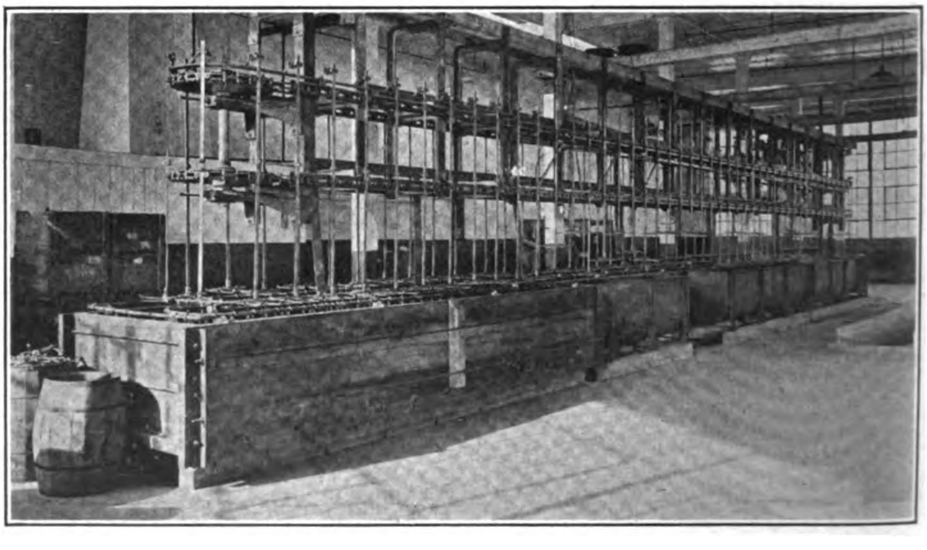
During the period of the world war these efforts were necessarily much restricted in many directions. Difficulties in securing sufficient supplies of raw materials, and the shortage of shipping space to most countries that were then good prospective markets, imposed a serious handicap and made it almost out of the question to carry out any general plan for the extension of foreign sales.

However, almost immediately after the signing of the armistice in November, 1918, steps were taken to organize an export department. The measure of all the principal oversea markets was taken and aggressive development started along the lines of a well defined, consistent, liberal export sales policy.

Wherever American automotive equipment or other mechanical equipment has been introduced—there one will also find a market for Walden-Worcester motor, mechanics', garage and engineers' hand tools.

As a result the volume of Walden-Worcester wrenches that now goes abroad represents quite an appreciable percentage of the company's total sales.

Last year shipments were made to over 40 different countries—the large volume going to the important markets of



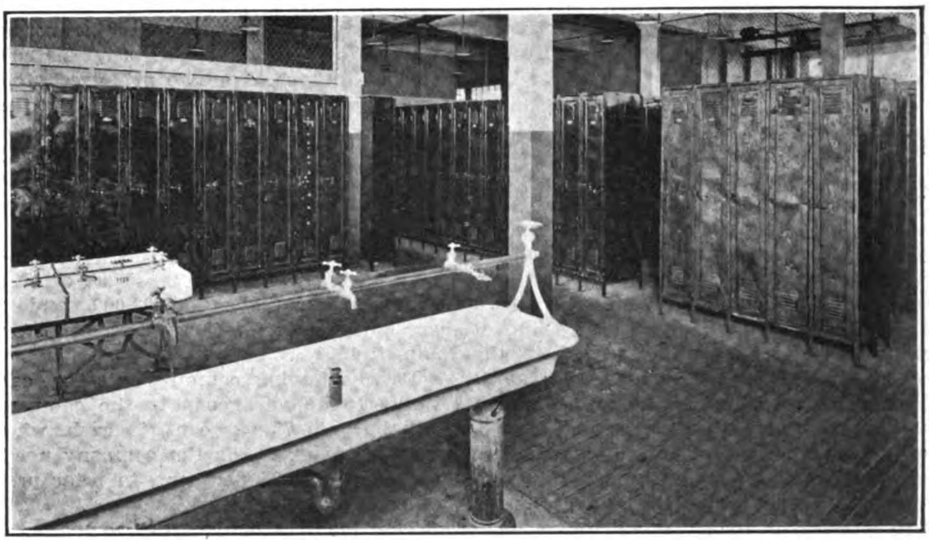
The Nickel Plating Bath Is of Modern Construction. It Does Work for Which 30 Men Were Formerly Required.

Scandinavia, New Zealand, Australia, South Africa, the West Indies and South American countries. Other smaller, but quite as important shipments went to many less frequently thought of territories, such as Siam, Algeria, Poland, Morocco, Arabia and others.

The Walden-Worcester idea of quality, service and fair treatment that has brought success in the domestic market has proven equally successful in the conquest of the more distant fields. It bids fair for a truly world wide distribution with the gradual return of business confidence now evident throughout the world.

Advertising and Promotion.

The Walden-Worcester display board has been a leader in advertising the wrenches and making sales for the dealer; a silent salesman that almost talks. The display board, six feet high by two feet wide, with black and goldenrod strippings on a metal panel, set off by the Walden-Worcester "Bull's Eye," holding approximately 100 tools suspended from hooks, has become a recognized fixture in 20,000 dealers' stores. The trade mark, a goldenrod and black bull's eye of Walden-Worcester, has been registered in the United States and approximately 50 foreign countries.



This Well Appointed Lavatory and Coat Room Is Greatly Appreciated by Employees.

The educational phase has been no small part of advertising propaganda and to this end a total of 50,000 booklets of 128 pages were distributed last year, showing use of wrenches on Ford cars, trucks and Fordson tractors. The Ford manual is a most complete instruction book and the illustrations mark a new departure in instruction books.

Educational work has become an established part of advertising and is the pioneer effort of the sales force to teach its potential customers what they should look for in wrench equipment.

Plan of Reorganization of Goodyear Stated to Be Agreed On.

IT IS reported on good authority that the various creditors interested in the financial rehabilitation of the Goodyear Tire & Rubber Co. have reached an agreement under which a plan of reorganization will be carried out. The proposed programme of procedure is said to involve the creation of a first mortgage bond and probably an issue of debenture bonds and first preferred stock.

It is also understood that new interests will be brought into the company to look after its financial readjustment and that several of the present officials may retire from active management.

A special meeting of the stockholders of the Goodyear Tire & Rubber Co. has been called by F. A. Seiberling, president, to act on plans for recapitalization and readjustment of the company's finances. The meeting will be held in Akron, O., on March 4.

In a letter addressed to the stockholders Mr. Seiberling said: "The plan for readjusting the debt and capitalization of the company has been approved by the board of directors and already many of the largest creditors and holders of a majority of common stock have indicated their assent to it.

"As will be seen from the statement of the company's indebtedness set forth in the plan, the position of the company is exceedingly precarious. Since the annual statement of Oct. 31, 1920, the company's indebtedness (including contingent liabilities most of which will have to be met) has increased to nearly $66,000,000.

"Notwithstanding the discouragements of the early months of the current fiscal year, it is expected that if the plan is consummated, operations of the recapitalized company for the remainder of the fiscal year will show a considerable margin of profit over all fixed charges, including contemplated sinking funds, and over dividends on prior preference stock."

Main Issue for Action by Stockholders.

The call for the March 4 meeting is also stated to set out the following eight main issues which will be submitted to the stockholders for action:

F. A. Sieberling, President, Goodyear Tire & Rubber Co.

Ratification of the reduction of the common stock of 1,000,000 shares of a present par value of $100 each to a new amount of common stock, not to exceed 1,500,000 shares, of no par value.

Approval of the reorganization of the company under the laws of Ohio regulating the formation and reorganizations of corporations with common stock without par value.

To authorize the creation, issue and sale of not to exceed $65,000,000 of bonds and debentures of the company, to mature in not more than 30 years, and to bear eight per cent. interest.

To authorize the mortgage of all the company's property, now owned or hereafter acquired, to secure the payment of the bonds and debentures.

To authorize, in connection with the sale or said bonds or debentures, the issue, sale or other disposal of all or any part of the prior preferred stock, management stock, preferred stock and common stock of the company.

To approve the appropriation and reservation, by the board of directors, of prior preferred, management, preferred or common stock of the company for any purpose.

To authorize the sale of the entire company and its assets to a person, association or corporation, organized or to be organized, under the laws of Ohio or of any other state.

To authorize and consent to any plan or agreement pertaining to the financing of the company or for the readjustment of its debt and capitalization.

The clause about the sale of the company means merely that, if the new financial plan drawn up by officials of the company, bankers and merchandise creditors is not practical under the laws of Ohio, according to legal advice given at the meeting, a new corporation will be organized under the laws of some other state, and its assets and property be turned over to that corporation.

Under the reorganization clause the stockholders of the company will be asked to approve the following plans for the issuance of new stock:

Prior preference stock of par value of $100 per share, to be issued in the amount directed by the stockholders. It will be entitled to receive dividends of eight per cent. yearly, cumulative before Jan. 1, before any dividends are paid on preferred, management or common stock and before the redemption of any preferred stock. It will be redeemable at the company's option at 110 per cent. of par value, with accrued dividends.

Upon any dissolution, if voluntary, it will be entitled to receive 110 per cent. of the par value, or, if involuntary, the par value—in either case, with accrued unpaid dividends, before any distribution of the assets to the preferred stock or the common stock, but entitled to no further participation in such distribution. Holders of such stock will vote as a class, subject to the prior right of the management stock to elect a majority of the board of directors.

To Pay Merchandise Creditors.

It is understood that the issue of prior preference will be $35,000,000, and to present merchandise creditors of before Jan. 1, 1921.

Parties having commitments or contracts to deliver goods to the company will be paid 75 per cent. in cash, when delivery is made, as the company needs material, and 25 per cent. in prior preference stock.

The financial plan of the company, as originally understood, calls for the issuance and sale of $25,000,000 worth of 20-year eight per cent. bonds, and for the issuance and sale of $25,000,000 worth of 10-year eight per cent. debentures, or notes.

Goodyear Increasing Production Schedule.

In this connection it is significant to note the report that the Goodyear plant at Akron has just gone on to a five-day-a-week production schedule, and that the output will be increased to 60,000 tires a week, the factory working eight hours a day. A few additional men have been put on, but increased production is obtained largely by employees working longer. This action is stated to be the first of a series of increases in production which, it is announced, will follow the completion of the refinancing plan.

CANADA CO. REPORTS INCREASED ASSETS.

Indications of a widening scope to its activities are revealed in the balance sheet of the Goodyear Tire & Rubber Co. of Canada, Ltd., for the year ended Sept. 30 last, which shows total assets amounting to $19,100,754. This is an increase of $8,208,354 over the assets reported at the end of the year preceding.

United States Mail Delivery Over 50 Per Cent. Motorized

According to the report of Postmaster-General Burleson for 1920, more motor vehicles are used in the delivery of the United States mails than ever before. In brief, he states that over 50 per cent. of the vehicles in the postal service are automobiles, government owned motor vehicle service has been established in 163 cities and 839 rural routes are using either cars or trucks.

"The growing use of the automobile," says the Burleson report, "for commercial purposes has made its impression on the handling of the mail in vehicles. Considerably more than 50 per cent. of the aggregate number of vehicles employed in the postal service are of the auto type, and the apparent tendency is toward the complete absorption of the service by mechanically driven equipment.

"The efficiency of the government owned motor vehicle service," says the report, "was demonstrated during the past winter and spring when unusual conditions developed in a number of the larger cities as the result of severe storms, strikes of express and railroad employees, and the action of express companies in placing embargoes on the acceptance of packages under a certain weight.

"The interruptions and failures in the rural and star route service which during the periods of bad weather continue to occur with too great frequency, are evidence that the successful operation of these services is dependent upon the character of the highways on which they are performed, and therefore the department is deeply concerned in the improvement of the highways not only because of the economy of the operation, but because it would permit the more rapid extension of the service to all possible rural patrons and insure to them the delivery and collection of their mail on expeditious, dependable and uninterrupted schedules.

Could Move More Food.

"Through such improvement of the highways and their use in the transportation of foodstuffs it would be possible to convey an average of not less than 1800 pounds a day per route, as compared with 24 pounds at present conveyed. It is only through the efficient use of improved highways that the postal service may perform adequate service to the people."

5500 Trucks from War Department.

One great addition to the equipment of the department during the past year was the receipt of 5500 trucks and 1071 motorcycles from the War Department. The trucks are being refitted for postal service and 1444 of them have already been put into active service.

"The introduction of motorcycles into the city delivery and collection service," says the report, "more extensively than heretofore, it is believed, marks an epoch of improvement in the vehicular facilities employed by the department at the numerous postoffices where the conditions appear to be favorable."

Individual postmen, as well as the department, believe the introduction of the automobile to be a great gain.

Among the answers to questionnaires sent to thousands of car owners by the National Automobile Chamber of Commerce were the replies of a number of postmen. Although the number answering in this class was too small to make the average of their figures a sure index of the experience of the entire class, yet this compilation suggests some of the possibilities of motor transport for the mail carrier, as follows:

Annual mileage	7434
Annual mileage in business	5880
Per cent. mileage in business	79%
Increase in business due to use of car	48%
Per cent. of mail carriers improving living conditions from use of car	33%

AJAX CO. DECIDES TO PASS DIVIDEND.

The directors of the Ajax Rubber Co., New York city, at the recent annual meeting voted to pass the quarterly dividend of one per cent. on the common stock. Three months ago the company reduced it from $1.50 to $1 a share, the higher rate having been paid since August of 1917. In 1920 the company paid $5.50 per share, as compared with $6 in both 1919 and 1918. This action on the part of the directors, according to reports, was influenced by the poor showing of 1920 earnings, the company having a deficit.

At the annual meeting of the stockholders the retiring directors were re-elected with the exception of Harold W. Stimpson, who declined re-election. Benjamin Briscoe was elected a director in his place. Horace de Lissar, chairman of the board of directors, following the dividend meeting is credited with the following statement in regard to passing the dividend:

"The decision was reached by the directors after a most careful survey of the situation. They concluded that because of the near approach to the spring demand for tires they felt that all resources should be conserved in order to finance business to meet the demand, which, because of the drop in production during the last several months, will, in their judgment, exceed any supply at present existing."

New England Section Ready for Big Business Revival

Indicated by Unprecedented Interest in Boston's Automobile Show

IT IS the consensus of opinion of those who are best qualified to judge that the New England section of the country was perhaps never more on the qui vive for the opening of the automobile season than at the present time. For dealers and buyers in this field have carefully followed the trend of the business awakening which was inaugurated at New York and promulgated throughout the West by the Chicago and other big exhibitions, and have gained inspiration from the optimistic cooperation of all the various branches that make up the mammoth automotive industry of the country.

Thus, when the doors of the Mechanics' building swing open on Saturday, March 12, for the inauguration of the big 19th annual Boston Automobile Show, there is no question that the banners which enthusiastically herald the return of normal big business will be caught up and triumphantly borne aloft by the representatives of the industry and trade in this influential eastern field.

The encouraging outlook is well expressed in the statement of General Manager Chester I. Campbell. "This is not the time to boast," he says, "but the extraordinary demand for space indicates that the entire motor industry is looking towards New England to give the first sign of returning prosperity. The dealers all over New England apparently have the same view, for hundreds of them have written in asking our organization to make hotel reservations for them. All of these signs indicate to me that "show week" in Boston is going to attract a big crowd."

An innovation this year will be a supplementary display of enclosed cars in the ball room of the Copley Plaza Hotel, under the same management. This is stated as indicative of the proportions that will be attained by this season's offerings of passenger cars, commercial motor vehicles and accessories, **when it is remembered that the mammoth Mechanics' building, which will house the main show, affords 105,000 square feet of exhibition floor space.**

Eighty-seven different makers of passenger cars, showing more than 350 distinct models, 57 manufacturers of trucks, with a probable showing of some 236 models, and 358 exhibits of accessories is a summary of the magnitude of this signal 1921 event. Eight cars new to the Boston show will be seen, the Wills-St. Claire, Dixie Flyer, Dorris, DuPont, Gardner, Hanson, Kelsey and Handley-Knight. The following makes of trucks are new to Boston show attendants: Facto, Lansden, Old Hickory, Rainier and Ajax.

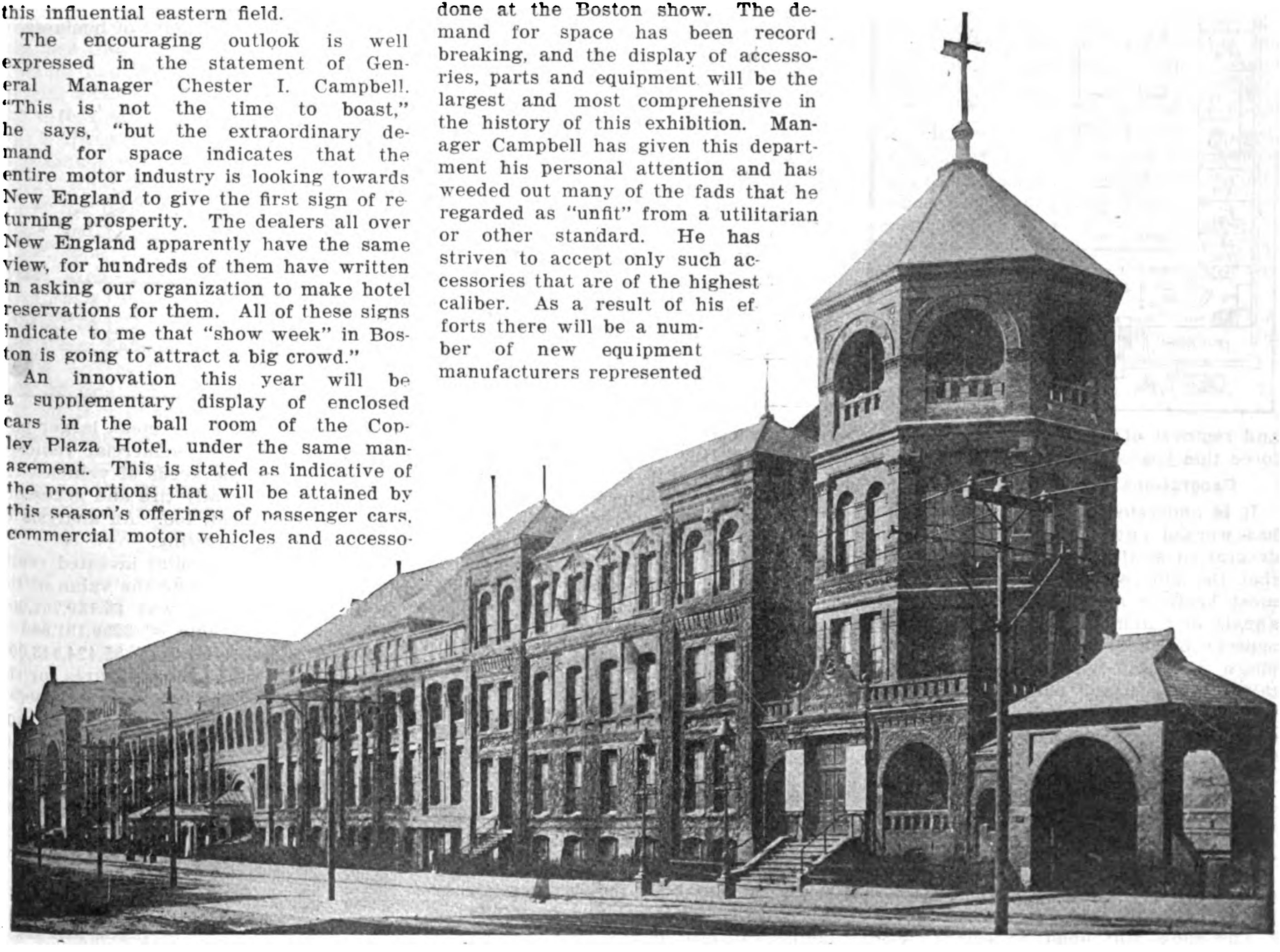
The accessory department has been somewhat of a problem to the management because of the extraordinarily large number of manufacturers and agents who have motor equipment which they wish to introduce to the New England public and realize that it can best be done at the Boston show. The demand for space has been record breaking, and the display of accessories, parts and equipment will be the largest and most comprehensive in the history of this exhibition. Manager Campbell has given this department his personal attention and has weeded out many of the fads that he regarded as "unfit" from a utilitarian or other standard. He has striven to accept only such accessories that are of the highest caliber. As a result of his efforts there will be a number of new equipment manufacturers represented **here for the first time. The great majority of the exhibitors in this department are said to be members of the Accessory Manufacturers' association.**

The location of the Mechanics' building on Huntington avenue is well known to thousands who have been following up these shows in the past and it is hardly necessary to call attention to the fact that the Copley-Plaza hotel on Copley square, where the overflow closed car show is to be staged, is within a few minutes' walk of the scene of the main exhibition.

Location of Exhibits.

The exhibits will be well classified this year as in the past and located according to classification in departments, as follows:

Department A comprises spaces 1 to 38, inclusive, and will be occupied by passenger cars only. Department B includes spaces 100 to 151, inclusive, and is also to be exclusively occupied by pas-



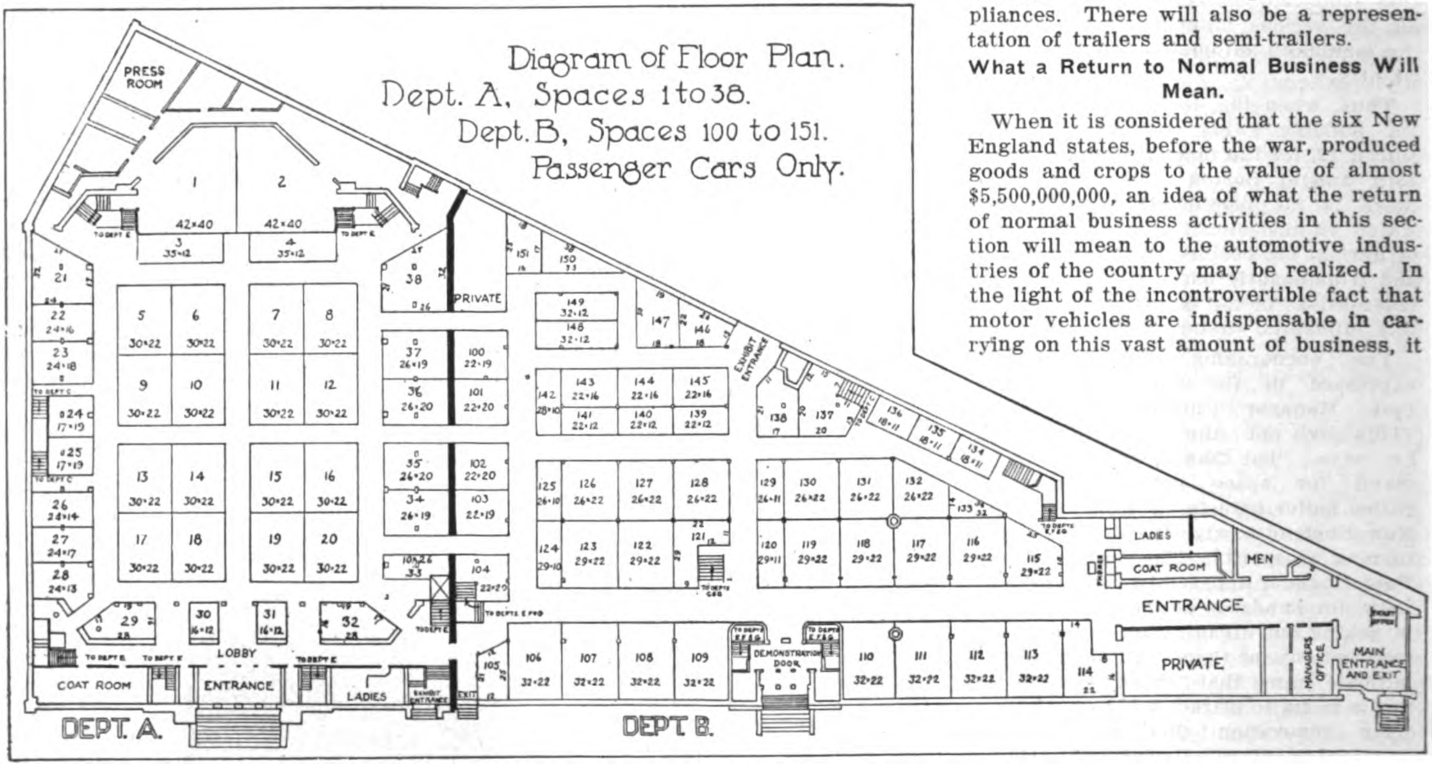
Huntington Avenue Front of Mechanics' Building Looking South, Where Boston Automobile Show Is Held.

senger cars. These are on the main floor of the building.

Departments C and D are on the basement floor. The former comprises spaces 200 to 271, inclusive, and is for the showing of commercial motor vehicles. The latter, spaces 300 to 436, inclusive, is for the exhibit of passenger cars, commercial vehicles, sundries and machinery.

Departments E, F and G are on the balcony floor. In E, which overlooks Department A, are spaces 400 to 450 inclusive and will contain exhibits of passenger cars only and accessories. Department F, spaces 500 to 564, inclusive, will house automobile accessory displays. Department G includes spaces 600 to 632 and 700 to 733 inclusive, and are for the exhibit of automobile accessories.

No second-hand or rebuilt car will be shown and the same rules in regard to sub-letting of spaces, signs, admission and removal of displays, etc., will be in force this year as heretofore.



Decorations and Other Features.

It is understood that the management has worked out an especially elaborate decorative setting of unique design and that the aim will be to make this the most brilliant affair of the kind in the annals of automobile showdom from all aspects, but at the same time the atmosphere of strict business will be maintained. The usual fine musical attractions may be expected in the various sections, and the social side will not be neglected, although no calendar of special days has as yet been announced.

The admission of exhibitors and employees will be on the double-check system, and jobbers' tickets will be issued under special arrangements. Regular single admission to the hall will be 75 cents, including war tax.

The show will open Saturday, March 12, at 2 p. m. and will be open every day thereafter, excepting Sunday, from 10 a. m. to 10:30 p. m., until and including Saturday, March 19.

This annual show is again for the 19th season under the competent management of Chester I. Campbell, and all the refinements and distinctively pleasing features that have characterized the Boston event in the past will be in evidence at this time.

The exhibition is held under the combined auspices of the Boston Automobile Dealers' and the Boston Commercial Motor Vehicle associations. The directors of the former are: J. W. Bowman, J. S. Donovan, C. E. Fay, J. H. Johnson, F. A. Hinchcliffe, G. B. Kimball, J. H. MacAlman, J. W. Maguire, R. B. Nettleton, C. P. Rockwell and F. E. Wing, with J. H. MacAlman as president and F. A. Hinchcliffe as treasurer.

The directors of the Commercial Vehicle association are as follows: P. S. Aultman, E. Day Baker, W. H. Baker, J. S. Hathaway, N. H. Halliday, J. H. MacAlman, J. W. Maguire, C. P. Rockwell, L. B. Sanders. The officers are: President, J. S. Hathaway; vice president, J. W. McGuire; treasurer, E. Day Baker.

Chester I. Campbell is secretary of both bodies.

A Buyer's Show.

This is expected to be pre-eminently a buyers' show, as the New England territory is probably as alive to the growing possibilities of the use of the motor vehicle, both pleasure and commercial, as any section of the country, and the big Boston show is always the opening impetus in the selling campaign.

The motor truck department will have an unusually large and varied display. Every kind of body for commercial purposes, with the latest and most efficient methods of loading and unloading will be shown. This will be housed in the basement of the Mechanics' building, as has been the custom in the past. It is stated that it will easily be the largest commercial car show of the year held anywhere. For instance, more than twice as many models are scheduled to be seen as were at the exclusive New York truck show.

Many of the trucks will be shown completely equipped with bodies, pneumatic tires and every necessary accessory. The special bodies will comprise many for farm use, including the convertible type, some of which are designed to serve eight different purposes on a single chassis. In addition to the gasoline models a number of electric trucks will be shown.

The fact that the New England section is continually becoming more and more aware of the utility and adaptability of motor driven farm equipment is demonstrated by the fact that considerable space will be devoted to the showing of tractors and other agricultural appliances. There will also be a representation of trailers and semi-trailers.

What a Return to Normal Business Will Mean.

When it is considered that the six New England states, before the war, produced goods and crops to the value of almost $5,500,000,000, an idea of what the return of normal business activities in this section will mean to the automotive industries of the country may be realized. In the light of the incontrovertible fact that motor vehicles are indispensable in carrying on this vast amount of business, it will be seen that it will mean larger purchases of cars and commercial vehicles, not to mention the needs of vehicles for recreation. Naturally tire and accessory dealers will benefit, too. An analysis of the figures is interesting.

Industrially the capital invested represents $3,909,809,000, and the value of the product turned out was $5,136,761,000. When the crop value of $298,191,000 is added it gives a total of $5,424,943,000.

That total is taken from figures for the year 1916. Of course the war speeded up a lot of production later and many new industries were added. Some of these will go out of existence. Others will return to their regular lines. They are making the readjustments now, and the conservative spirit of New England will keep them on their feet as going concerns.

Vehicles in New England.

At the present time there are regis-

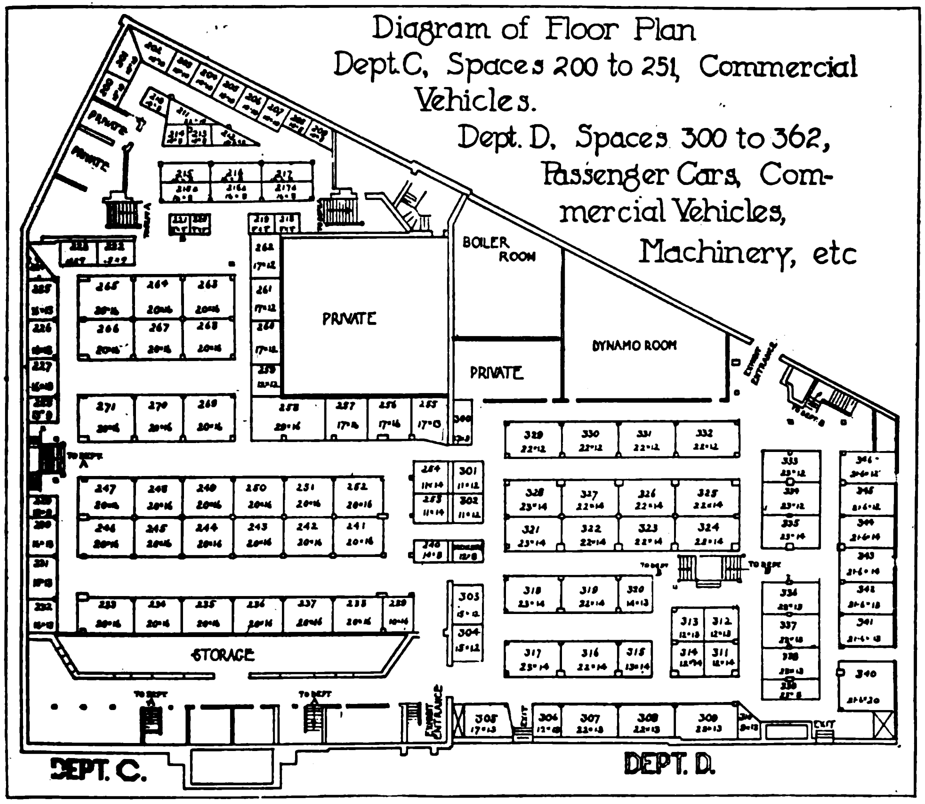


Diagram of Floor Plan
Dept. C, Spaces 200 to 251, Commercial Vehicles.
Dept. D, Spaces 300 to 362, Passenger Cars, Commercial Vehicles, Machinery, etc

tered in New England approximately 603,352 motor vehicles. They comprise 506,428 passenger cars and 96,924 commercial vehicles. That is not enough to reach a saturation point. Many will be scrapped this year.

Maine has 55,395 cars and 7512 commercial vehicles; New Hampshire, 30,240 and 4440, total 34,680; Vermont, not making a distinction, has 31,625 vehicles; Massachusetts, 253,245 cars and 51,386 trucks, total 304,631; Rhode Island, 40,800 of the former and 9575 of the latter, total 50,375; Connecticut, 95,123 and 24,011, total 119,134.

The New England total shows that more than 50 per cent. are owned in Massachusetts. That is natural, because this state leads the others industrially, and is second only to Maine in crops. Also its total population is some 50 per cent. of that of all New England.

Salesmanship and Cooperation Necessary.

It is recognized, however, that in order to secure the greatest measure of success in this field a real campaign of sales must be carried on. This is realized alike by manufacturer, distributor, dealer and salesman, and this campaign is not to be limited to any one period of the year, but should continue throughout the entire 12 months.

The days when people called and begged for cars are over forever. It was an unhealthy condition, but could not be foreseen or handled any other way than that adopted by the men in the industry. They have had the experience of the hungry months during the war, when there were few, if any, cars to sell, and this gave them an opportunity to get some effective business methods established. Therefore the readjustment period finds them prepared for what they are facing now.

Salesmen will be taught to study prospective lines for new customers and there are many prospects for cars in New England.

The matter of cooperation between the manufacturer and dealer is being given more consideration than ever before. The factory executives feel that they now have more time to give to problems arising from distribution.

They are not rushed with orders. Factory resumption is going on slowly. And the effects of the policy of manufacturer and dealer meeting each other half way to their mutual advantage, which was informally inaugurated at New York during show week, and more officially discussed at the conventions in Chicago, are beginning to be felt.

Definite ideas about production and distribution are being gained and disseminated on which can be based estimates for future business.

With the factory men cooperating with the distributors, and the latter with the dealers, there will be a better feeling all along the line. This does not mean that there has not been cooperation in the past.

However, there were times in the rush of work and the changing of executives that caused matters to arise that were not attended to as speedily as they might have been. With everyone selling vehicles and the demand greater than production, it was felt that the lack of cooperation did not amount to very much in the general results. But all this is changed now.

With this cooperation established on a firm basis it means that the buyer will be given adequate service.

Some of the Boston men prominent in the industry and trade are making renewed efforts toward carrying this matter of cooperation out in regard to the relations between distributor and dealer, employer and employee, with beneficial effects, and this will undoubtedly be the keynote of many of the conventions, conferences and other get-together events which contribute so largely in making Boston the Mecca of all New England and the eastern interests at this time.

Location of Exhibits.

By referring to the list of exhibitors on the following pages and locating the space number on the plan views given herewith, any desired concern or product may be readily found. It will be noted that the concern making the exhibit, which is usually the Boston distributing concern, is listed, but that the various makes of cars and trucks are also listed alphabetically so that it is possible to locate any desired vehicle display by referring to the trade name of the car alone.

The factory addresses of many of the principal makers of accessories and equipment are also included.

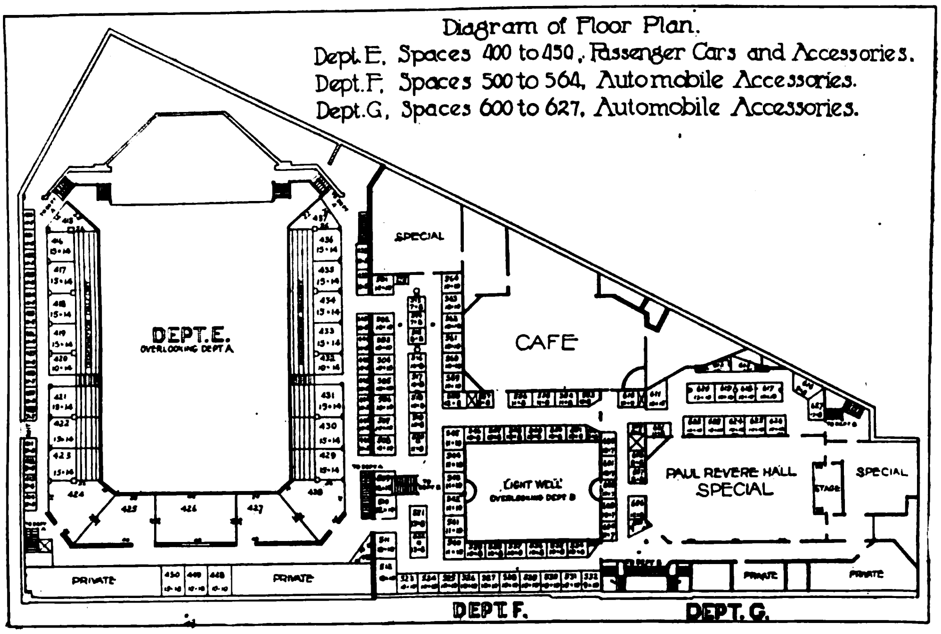


Diagram of Floor Plan.
Dept. E, Spaces 400 to 450, Passenger Cars and Accessories.
Dept. F, Spaces 500 to 564, Automobile Accessories.
Dept. G, Spaces 600 to 627, Automobile Accessories.

Partial List of Exhibitors at Boston Automobile Show

Space	Name	Address
505	Able Manufacturing Co	San Francisco, Cal.
33	Acker, Inc., Edward G	Boston
548-549	Acme Die Casting Corp	Brooklyn
205-209 Inc. & 212	Acme Truck	Boston
300	Ajax Motor Sales Co	Boston
300	Ajax Trucks	Boston
526	Alemite Lubricator Co. of N. E	Bridgeport
424	American Car	Boston
506-507	American Chain Co., Inc	Bridgeport
606	American Mutual Liability Insur. Co	Boston
405	American Storage Battery Co	Boston
146	Anthony & Co., F. P	Boston
522	Apco Manufacturing Co	Providence, R. I.
503	Apollo Magneto Corp	Kingston, N. Y.
605	Arrow Grip Mfg. Co	Glens Falls, N. Y.
412	Ashton-De Vere, Inc	Boston
340-341-342	Atlas Truck	Boston
134-135-136	Auburn Car	W. Somerville, Mass.
323-324-325-326	Autocar Sales and Service Co	Boston
323-324-325-326	Autocar Truck	Boston
605AA	Automatic Air Cushion Co., The	Boston
700	Automatic Safety Signal Co	Portland, Me.
602	Automobile Legal Association	Boston
620	Automobile Mutual Fire Ins. Co	Boston
621	Automobile Mutual Liability Ins. Co	Boston
517	Automotive Gear Works	Atlanta, Ga.
228AA-229AA	Babcock Sales Co	Boston
309-310	Baker Co., Inc., Day	Boston
336-337-338	Baker Motor Sales Co., Inc	Boston
	Bassick Mfg. Co., The	Chicago, Ill.
14-18	Beacon Motor Co., The	Boston
439	Bearings Specialty Co	Boston
22-23	Becker-Stutz Automobile Co	Boston
303-304	Beeman Garden Tractors	Boston
30-31	Biddle Car	Boston
524	Biflex Products Co	Waukegan, Ill.
608	Blanchard, H. H	Boston
704-705	Boston Auto Top Co	Boston
411	Boston Blacking Co	East Cambridge
140-144 Inc.	Boston Buick Co	Boston
139-145-307	Boston Oldsmobile Co	Boston
5-9	Bowman Co., J. W	Boston
24-25	Brewster Car	Boston
137	Brisco Car	Boston
243-250	Brisco Truck	Boston
531-532	Brooks-Skinner Co., Inc	Weymouth, Mass.
220-221-220AA-221AA	Buda Co., The	Harvey, Ill.
140-144 Inc.	Buick Car	Boston
435	Bunting Brass and Bronze Co, The	Toledo, O
601	Burditt & Williams Co	Boston
527	Burton-Rogers Co	Boston
232-233-234	Boston Federal Truck Co	Cambridge
2	Cadillac Automobile Co. of Boston	Boston
440	Cadillac Automobile Co. of Boston	Boston
2	Cadillac Car	Boston
3	Caldwell, Inc., Frederick J	Boston
614	Campbell Co., A. S	East Boston
544	Campbell Motors Corp	Boston
24-25	Canterbury, Inc., George W	Boston
719	Carleton Co., The	Boston
414	Carroll Mfg. Co	Arlington
611	Central Automobile Tire Co	Boston
117-118-132	Chalmers Car	Boston
502	Champion Ignition Co	Flint, Mich.
420	Champion Spark Plug Co	Toledo, O.
122A-123-124	Chandler Car	Boston
122A-123-124	Chandler Motors of N. E	Boston
115-116-308	Chevrolet Car	Boston
115-116-308	Chevrolet Motor Car of N. E	Boston
215-216-217-215A-216A-217A	Clark Equipment Co	Buchanan, Mich.
708	Carlisle-Ayer Co	N. Boston
303-304	Cletrac Tractors	Boston
122A-123-124	Cleveland Car	Boston
340-341-342	Clydesdale Truck	Boston
36-37	Cole Car	Boston
113	Columbia Car	Allston, Mass.
542-543	Connell Co., W. J	Boston
129-130-131	Connell & McKone Co	Boston
709	Copithorn Mfg. Co	Boston
500-501	Coward Auto Supply Co	Boston
415	Crew-Levick Co	Cambridge, Mass.
333	C-T Electric Truck	S. Boston
329	Cunningham Hearse and Ambulance	Boston
4	Cunningham Car	Boston
4-329	Cunningham Son & Co., James	Boston
703	Curtis Pneumatic Machinery Co	St. Louis, Mo.
5-9	Daniels Car	Boston
410	Davis Chemical Mfg. Co	Brockton, Mass.
630	Davis-Lyon Storage Battery Co	Lynn, Mass.
631	Davis-Watson Mfg. Co	Nashua, N. H
409	De-Lite Mfg. Co	Dorchester, Mass.
560	Derf Mfg. Co., Inc., The	New York
417	Detroit Pressed Steel Co	Detroit, Mich.
413	Dickerson, C. A	Chicago, Ill
732-733	Dixie Flyer Car	Boston
108-109	Dodge Brothers Car	Boston
301-302	Dodge Brothers Truck	Boston
111-112	Donovan Motor Car Co	Boston
30-31	Dorris Car	Boston
138	Dort Car	Boston
515	Double Seal Ring Co	Chicago, Ill.
702	Duby, John F	Mattapan, Mass.
148-149	Dunbar-Sanders, Inc	Boston
201-202	Duplex Truck	Boston
428	Dupont Car	Boston
134-135-136	Dutton Motor Co., F. A	W. Somerville, Mass.
445-446	Dyer Co., The	Cambridge, Mass.
717	Eagle Oil & Supply Co	Boston
333	Eastern Electric Vehicle Co	S. Boston
726	Economy Timer Co	Norwalk, Conn.
628	Eggleston Supply Co	Boston
147	Elcar Car	Boston
546-547	Electric Storage Bat. Co., The	Philadelphia
125-126-127B	Essex Car	Boston
339	Facto Motor Truck	Springfield, Mass.
339	Facto Truck	Springfield, Mass.
29	Falk-Baker Co	Boston
117-118-132-229-230-231	Fay-Allen Co., C. E	Boston
232-234 Inc.	Federal Trucks	Cambridge, Mass.
426A	Fiat Car	Boston
528	Flentje, Ernst	Cambridge, Mass.
447	Flexlume Sign Co	Buffalo, N. Y.
231-732-733	Flynn Motor Sales Co	Boston
100-101	Ford Car	Cambridge, Mass.
100-101-305	Ford Motor Co	Cambridge, Mass.
305	Ford Truck	Cambridge, Mass.
406	Franklin, M	Boston
7-11	Franklin Car	Boston
7-11	Franklin Motor Car Co	Boston
616-617	Gardner Car	Boston
318-319-320	G. M. C. Truck	Boston
545	Giant Grip Mfg. Co	Oshkosh, Wis.
600	Gill Piston Ring Co	Boston
426B	Grant Car	Boston
711	Greb Co., Inc., The	Boston
540	Greene & Swett Co	Boston
725	Greist Mfg. Co., The	New Haven, Conn.
343	Guaranty Motors Co	Cambridge, Mass.
434	Guaranty Truck	Cambridge, Mass.
30-31	Guertin-De Rochemont Co	Boston
632	Hall Motor Co	Boston
728-729	Hanson Car	Boston
13-17	Hares Motors of N. E	Boston
401	Harnett Lubricating Co	Boston
201-202	Harper-Libby Co., Inc	Boston
441	Harriman Co., The J. P	Boston
26-27-28	Hart Co., A. T	Boston
508	Hartford Inc., Edward V	New York
418	Hassler, Inc., Robert H	Indianapolis, Ind.
38	Haynes Car	Boston
26-27-28	H. C. S. Car	Boston
125-126-127B	Henley-Kimball Co	Boston
150	Hennigan, Inc., Walter B	Boston
108-109-301-302	Henshaw Motor Co	Boston
121-122B	Hinchcliffe Motor Co	Boston
442-443	Hillman Auto Supply Mfg. Co	Boston
340-341-342-728-729	Holland System, Inc., Trading Corp	Boston
618	Holmes Car	Boston
618	Holmes Motors, Inc	Boston
710	Houdaille Shock Absorber Co	E. Cambridge
444	Howe & Co	Boston
125-126-127B	Hudson Car	Boston
632	Hupmobile Car	Boston
235-236	International Harvester Co. of America	Somerville, Mass.
235-236	International Truck	Somerville, Mass.
554-555	Jackson Electric Co	Boston
427-603	Jackman-Jameson Motor Co	Boston
	Jefferson Forge Products Co., The	Detroit, Mich.
344	Johnson, Arthur G	Cambridge, Mass.
121-122B	Jordan Car	Boston
303-304	"J. T." Tractor	Boston
346AA	Johnson, Henry L	Boston
437AA	"Kant-Rust" Products Corp	New York
330-331-332	Kelly-Springfield Motor Truck Co	Boston
330-331-332	Kelly-Springfield Truck	Boston
425B	Kelsey Car	Boston
425B	Kelsey Motor Co	Boston
504	Kelso Mfg. Co	Trenton, N. J.

Space	Name	Address
147	King Car	Boston
147	King Motors, Inc	Boston
269-270-271	Kress & Son, O. F	Lawrence, Mass.
718	Kwix Co	N Boston
105-106-107	La Fayette Car	Boston
205-209 Inc. & 212	Lally & Sons Co., Eugene F	Boston
407	La-Lo Chemical Co	Providence, R I.
408	Lambert Trublpruf Tire Co	Boston
309-310	Lansden Truck	Boston
707	Larco Wrench Mfg. Co	Chicago, Ill.
253-254	Lebon-Kidd Co., The	Boston
616-617	Leghorn, G. M	Boston
400	Lewis Tool Mfg. Co	Boston
34-35	Lexington Automobile Co	Boston
34-35	Lexington Car	Boston
616-617	Liberty Car	Boston
321-322-327-328-119-120	Linscott Motor Co	Boston
13-17	Locomobile Car	Boston
428	Lovejoy Mfg. Co	Boston
550-551-552	Luthy Storage Battery Co	New York
15-19	MacAlman Co., J. H	Boston
306	MacBride & Co., Inc., George W	Boston
256-257-258-259	Mack Motor Truck Co	Cambridge, Mass.
256-257-258-259	Mack Truck	Cambridge, Mass.
16-20 & 263 to 268 Inc.	Maguire Co., J. W	Boston
448-449	Maibohm Car	Boston
539	Malay Rubber Co., The	Cleveland, O.
612	Malton Specialty Co	Boston
448-449	Mann Motor Car Co	Boston
434	Marko, Paul M. & Co., Inc	Brooklyn
8-12	Marmon Car	Boston
426B	Martin Brackett Co	Boston
222-222AA-223	Martin-Parry Corp	Boston
712	Marvel Carburetor Sales Co. of N. E.	Boston
214	Masden Mfg. Co	Boston
345-346	Maxim Motor Co	Middleboro, Mass.
345-346	Maxim Truck	Middleboro, Mass.
117-118-132	Maxwell Car	Boston
229-230	Maxwell Truck	Boston
146	McFarlan Car	Boston
510	McQuay-Norris Mfg. Co	St. Louis, Mo.
13-17	Mercer Car	Boston
2AA	Middlesex Motor Car Co	Boston
706	Miles Piston Ring Co	Boston
512-523	Mills Cabinet Co	Racine, Wis.
402-403	Minard Co	Framingham, Mass.
114	Mitchell Car	Boston
114	Mitchell-Lucas Motor Co	Boston
2AA	Monroe Car	Boston
610A	Montello, V	Medford, Mass.
615	Moon Car	Boston
416	Moreton Corp., Walter H	Boston
102-103	Morse Co., Alfred Cutler	Boston
724	Morse, L. J	Springfield, Mass.
557	Mosler & Co., A. R	Mt. Vernon, N. Y.
538	Motor Accessories, Inc., John & Arthur	Boston
536	Motor Parts Co	Boston
516	Motor Vehicle Publishing Co	New York
269-270-271	Municipal Truck	Lawrence, Mass.
105-106-107	Nash Car	Boston
315-316-317	Nash Truck	Boston
26-27-28	National Car	Boston
224-225	Netco Truck	Fitchburg, Mass.
228	New Britain Mch. Co., The	New Britain, Conn.
228	New Britain Tractor	New Britain, Conn.
424	New England Amer. Motor Car Corp.	Boston
224-225	New England Truck Co	Fitchburg, Mass.
137-243-250	New England Velie Co	Boston
511	New Era Spring and Specialty Co.,	South Grand Rapids, Mich.
437	New York Lubricating Oil Co	Boston
436	No-Leak-O Piston Ring Co	Baltimore, Md.
33	Noma Car	Boston
318-319-320	Noyes-Buick Co	Boston
619	Nutter Electric Equipment Co	Boston
148-149	Oakland Car	Boston
231	Old Hickory Truck	Boston
139-145-307	Oldsmobile Car	Boston
309-310	Oneida Truck	Boston
129-130-131	Overland Car	Boston
1-241-242 251-252	Packard Motor Car Co. of Boston	Boston
1	Packard Car	Boston
241-242-251-252	Packard Truck	Boston
127A-128	Paige Car	Boston
127A-128	Paige-Detroit Co. of N. E	Boston
609	Parker, Earl K	Boston
14-18	Peerless Car	Boston
541	Perrine Co	Boston
306	Phenix Truck	Boston
16-20	Pierce-Arrow Car	Boston
263-268 Inc.	Pierce-Arrow Truck	Boston
730-731	Premier Car	Boston
607	Pressure Proof Piston Ring Co	Boston
243-250	Rainier Truck	Boston
32	R & V Motors of N. E	Boston
32	R & V Knight Car	Boston
104	Rauch Lang Car	Boston
428	Reed Motor Car Co	Boston
119-120	Reo Car	Boston
321-322-327-328	Reo Truck	Boston
253-254	Republic Truck	Boston
626	Rimtco Lubricator Co., Inc	Boston
102-103	Roamer Car	Boston
509	Robe Rail Sales Corp	New York
105-106-107-315-316-317	Rockwell, Inc., C. P	Boston
104	Rommelfanger, N	Boston
113	Ross, Inc., R. R	Allston, Mass.
38	Russell Co., W. L	Boston
229-230-231	Sanford Truck	Boston
720-721-722	Sargent & Ham Co	Boston
29	Saxon Car	Boston
420	Schrader's Son, Inc., A	Brooklyn
151	Scripps Booth Car	Boston
151	Scripps Booth Motor Car Co	Boston
336-337-338	Selden Truck	Cambridge, Mass.
240	Sewell Cushion Wheel Co	Boston
36-37	Smith & Sons Co., Bryant G	Boston
303-304	Sowers Tractor and Implement Co	Boston
334-335	Springfield Commercial Body Co	Cambridge
110	Standard Car	Boston
431	Standard Oil Co. of N. Y. (N. E. Dept.),	Boston
110	Standard Steel Motor Car Co	Boston
525	Standard Thermometer Co	Boston
21	Stanley Car	Newton, Mass.
610	Stanley Co., Inc., John T	New York
21	Stanley Motor Carriage Co	Newton, Mass.
15-19	Stearns-Knight Car	Boston
340AA	Steel Products Equipment Co	Boston
150	Stephens Car	Boston
237-238-239	Sterling Motor Truck Co. of N. E	Boston
237-238-239	Sterling Truck	Boston
24-25	Stevens-Duryea Car	Boston
311-314 Inc.	Stewart Automobile Corp	Boston
311-314 Inc.	Stewart Truck	Boston
111-112	Studebaker Car	Boston
22-23	Stutz Car	Boston
513-514	Sunderman Corp	Newburgh, N. Y.
3	Templar Car	Boston
422	Texas Co., The	Boston
556	Tide Water Oil Sales Corp	Boston
563-564	Tonneau Shield Co., Inc	New York
226-227	Traffic Truck	Boston
226-227	Traffic Truck Sales Corp	Boston
518-519	Trexler Co	Philadelphia
615	Triangle Motors Co	Boston
315-316-317	Troy Trailer	Boston
426A	Turin Motors, Inc	Boston
344	Ultimate Truck	Cambridge, Mass.
537	Underhay Oil Co	Boston
218-219	U. S. Air Compressor Co	Cleveland, O.
627	U-Sav-Your Mfg. Co	Warren, Mass.
128	Utterback-Gleason Co	Boston
432-433	Vacuum Oil Co	New York
137	Velie Car	Boston
243-250	Velie Truck	Boston
423	Vulcan Motor Axle Corp	Detroit, Mich.
260-261-262	Walker Electric Truck	Boston
260-261-262	Walker Vehicle Co	Boston
624	Ward's Sons Co., Edgar T	Boston
425A	Waterman, George H	Boston
529-530	Weaver Mfg. Co	Springfield, Ill.
730-731	Wells Motor Co	Boston
427	Westcott Car	Boston
521	Westinghouse Air Spring Co., The	Boston
561-562	Westinghouse Union Bat. Co	Swissvale, Pa
429	White & Bagley Co., The	Worcester, Mass
244-249 Inc.	The White Co	Boston
244-249 Inc.	The White Truck	Boston
629	Whittredge Portable Steel Bldgs. Co.	Boston
723	Wight, Austin J	Boston
558	Willard Storage Bat. Co., The	Cleveland, O.
129-130-131	Willys-Knight Car	Boston
534-535	Wilson Co., John V	Boston
553	Wilson, K. R	Buffalo, N. Y.
8-12	Wing Co., F. E	Boston
625	Winsor & Son, Alfred	Boston
6-10	Winton Car	Boston
6-10	Winton Co., The	Boston
421	Wire Wheel Corp. of America	Buffalo, N. Y.
727	Wire Wheel Service, Inc	Boston
404	Wright "Name-On" Robe Co.	Waterville, Me.

Accessory Interests Share in Business Revival Manifest at Chicago Show

IN THE innumerable pages that might be written concerning the salutary influence that the big national shows have exerted on the revival and stimulation of the automotive industries, the part that the accessory and equipment dealers and manufacturers have played should by no means be overlooked. These interests have nobly rallied to the support of the motor vehicle makers and trade throughout the exigencies of the business situation, and this spirit of cooperation was even more markedly in evidence at the Chicago than at the initial event in New York.

At the close of the New York show all eyes were turned towards Chicago with the feeling that at that time a closer estimate of the business for the coming year could be made. As a consequence, all the various automotive interests were more strongly in evidence than ever before. Material manufacturers were there in force and foundry, forge shop and mill representatives were lined up with the car manufacturers and dealers. The idea was to get at the status of the industry as well as to take actual orders. This resulted in the possibility of obtaining a more tangible indication of the manufacturing situation in the country as a whole than before since the present business complications started. And it is thus now conservatively estimated that the car manufacturing schedule of the principal concerns of the country will for the next three months average 60 per cent. of that for the same period of 1920, and that the total production should reach 1,300,000 cars for the present year. This is without taking into consideration some five of the larger manufacturers, who have internal complications in the way of the reorganization of finances or personnel to adjust or, because of a period of forced production, have an unusual large stock of cars in their distributors' hands.

COMPARISON OF CHICAGO AND NEW YORK SHOWS.

NUMBER OF EXHIBITORS.

	Chicago	N. Y.
Gasoline Cars	77	83
Electrics	3	3
Accessories	195	221
Total	275	307

NUMBER OF CARS EXHIBITED.

Gasoline	271	334
Electric	6	7
Steam	1	1
Stripped Chassis	27	38
Four-Wheel Brake	0	1
Total	305	381

BODY STYLES, OPEN CARS.

Roadsters, 2-3 Pas	35	40
Touring, 4-5 Pas	79	91
Touring, 6-7 Pas	30	32
Total	144	163

BODY STYLES, CLOSED CARS.

Coupes, 2-3 Pas	38	23
Sedans, 4-5 Pas	60	80
Others, 6-7 Pas	29	27
Total	127	130

GASOLINE ENGINE TYPES.

Four-Cylinder	71	80
Six-Cylinder	166	213
Eight-Cylinder	27	31
Twelve-Cylinder	2	3
Air-Cooled	7	7
Water-Cooled	269	325
Tappet-Valve	271	321
Sleeve-Valve	10	12
Revolving Disc Valve	0	1
Valve-in-Head	77	119
L-Head	168	180
T-Head	12	29

WHEEL STYLES.

Wire	52	70
Disc	49	56
Artillery	165	215

Show Exceeded Former Records.

This year the Chicago show exceeded its record in several respects. It has always been pre-eminently a business show, but this year there has been an unusual determination manifested in every branch of the industry represented. There was much constructive work all along the line, as everyone was disposed to get business no matter how hard it might be necessary to fight for it, and it was felt that the opening guns must be fired in the dealers' sales rooms.

While the actual retail sales were only about two-thirds of what they were a year ago, the big attendance and unusual number of live prospects which were developed justified this determined spirit of cooperation, as well as the feeling of optimism which was transmitted, together with the majority of the exhibits, from the earlier New York event. There was an unprecedented volume of selling a year ago, but conditions then were widely different from what they are today. This year the attitude of the buying public is manifestly changed. It presents a clientele of an investigating turn of mind which is not buying haphazardly, but wants to be shown and needs to be convinced.

Although weather conditions were unfavorable, the paid attendance was 18 or 20 per cent. better than last year, and after the first day practically all admissions were paid. The booths were so crowded during the middle days of the week that the selling organizations were forced to postpone all discussions of any length for continuation in the sales room later on. And those in attendance were not as a whole prompted by mere idle curiosity, but were conscientious in their interest and were essentially made up of car owners, present or prospective.

In estimating that the list of prospects is some 50 per cent. larger than last year, only those are considered who indicated their interest in the cars to the extent of leaving their names and addresses.

Decorations Most Lavish.

The most lavish decorations in the 21 years of history of the Chicago automobile show converted the vast exposition buildings into bowers of colorful beauty; 250 art glass shades, suspended from the lofty ceilings, cast a soft glow on the $100,000,000 display of automobile creations. The various makes of cars were divided off by high pillared sections, crowned with vases of rare flowers.

Cameos along the gallery fronts depicted the evolution of transportation, from the ancient days of the cave man to the modern sight seeing buses.

More than 200 manufactures and dealers of accessories, devices and articles lending additional comfort, utility and economy to driving had displays in the galleries and basements.

Judged from an engineering and manufacturing standpoint, it may be said that no new cars appeared at the Chicago show. The three cars shown which are new to the general public, are all assembled products, incorporating units with which the industry is familiar. These new cars are the Winther Six put out by the manufacturers of the Winther truck, the Ambassador, which is a product of Shaw of Yellow Taxi fame, and the third is the Sterling Knight, of which the initial product was exhibited at the salon and for which there are as yet no factory or manufacturing plans. The car is the design of Engineer Sterling, formerly of the B. F. Stearns Co.

DEALER'S CONTRACT DISCUSSED.

One of the principal features of the various conventions and get-together meetings that were, as usual, held during Show Week, was the annual meeting of the National Automobile Dealers' Association, in the course of which was discussed the much-mooted question of contract relations with manufacturers.

This discussion was prefaced by a letter to Manager Harry G. Moock of the N. A. D. A. from C. W. Nash of the Nash Motors Co., in which he set forth his ideas of dealer-factory relations. Following this Robert J. Schmunk, vice president and general sales manager of the Peerless Motor Car Co., appeared in person before the association and outlined his ideas as to what the attitude of the factory toward the dealer should be. Following these messages from leading manufacturers, the meeting was thrown open for discussion, terminating in the authorization of a committee and the invitation to the manufacturers to cooperate.

With the entire trade and industry made aware of all the facts in the case, it is believed the matter will work itself out almost automatically.

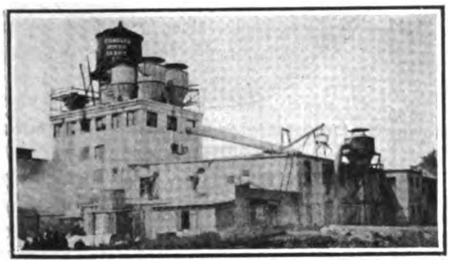
Multibestos—A Brake Lining

STORY OF A NEW ENGLAND ORGANIZATION AND A PRODUCT WHICH FOR 20 YEARS HAS SUCCESSFULLY MET EVERY FORWARD STRIDE AND KEPT ABREAST OF AUTOMOTIVE PROGRESS.

(By S. G. SWIFT.)

IT DOES not seem extravagant to state that few among the many drivers of the 8,500,000 motor vehicles registered in the United States ever give more than a passing thought to the exhaustive tests, and years of research and experiment, that were necessary to produce the efficient brake linings which now make it possible for them to operate their cars with safety to passenger and pedestrian.

Much attention has been paid to the development of the mechanical features of the automobile and truck, and nearly every car owner can give an abstract review of the principles of the power plant, but there are few who know anything about the construction of the all important brake lining. It does its work well, and is accepted for what it accomplishes, but what it is, or how it has been evolved the average person does not know.



Front View of Dust Collecting System.

The traffic officer, with a wave of his white-gloved hand, halts the speeding car, and the skilled driver grinds on his brakes and knows from experience that they will hold, though neither he nor the policeman has ever stopped to analyze the reason for the never failing grip that, like a giant hand, quickly brings the machine to a standstill.

But the story of the stiff, black band of rough material is interesting and belongs in the mental library of the educated owner and driver of automobiles and trucks.

In the infancy of the automotive industry which at the present time uses a yearly total of 60,000,000 feet of brake lining—car builders equipped their machines with brakes of the metal to metal type. This practise was universal, chiefly because no satisfactory facing was then known.

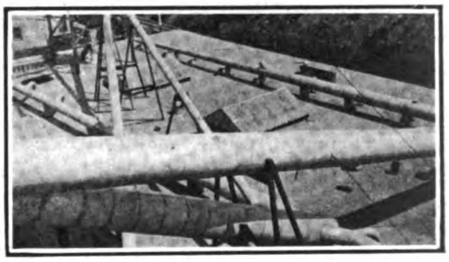
Stoughton Bell, President

Fabric First Used for Facing in 1900.

At the beginning of the 20th century automobile brakes were faced with fabric of different kinds, and leather was also employed. These methods, however, were not satisfactory, as the substance wore quickly and failed to clamp the brake drums satisfactorily. It also became charred and brittle through the heat engendered by the application of the brakes, and when saturated with oil and gasoline was rapidly cut by the sand and dust that sifted onto the surfaces.

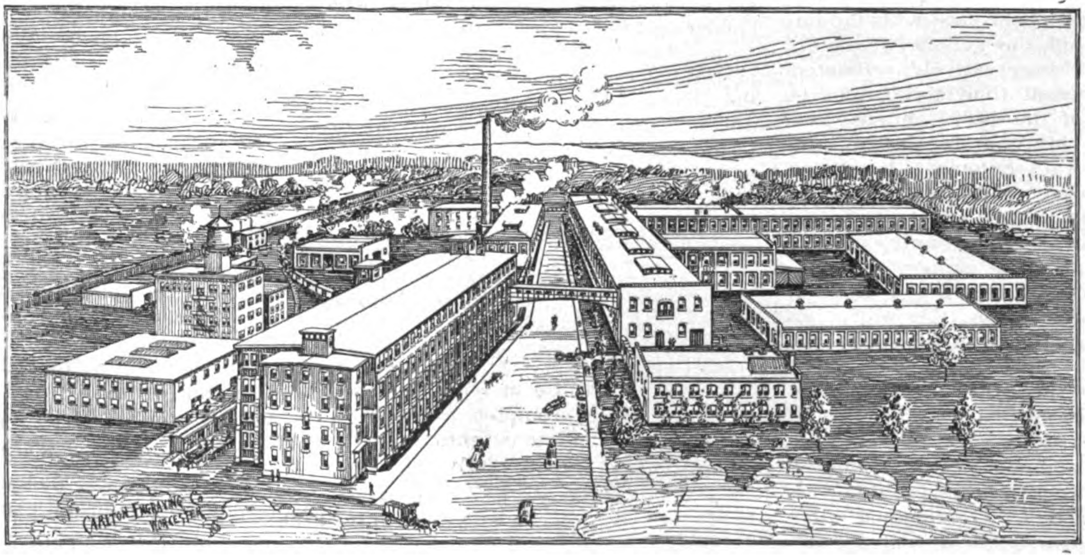
As the speed, power and weight of the motor vehicle became greater it was seen that cotton or leather compounds would not do at all, and the industry sought a friction material that would adequately meet its requirements. Engineers tried various compounds and combinations without success, until it was finally discovered that asbestos offered the solution to the perplexing problem.

This mineral has exceedingly great heat resistance, which is the vital principle of construction in obtaining a satisfactory brake lining. The real problem, however, lay in adapting it to the purpose in hand. In its original state it was difficult to utilize it as it was found that it readily disintegrated under pressure, and had decided tendencies to glaze and wear unevenly.



Rear View of Dust Collecting System.

Among those who experimented with the problem of adapting asbestos for brake linings were the engineers of the Multiple Woven Hose and Rubber Co. now incorporated



Modern Plant at Walpole, Mass., Where Multibestos, a World Known Product, Is Manufactured.

under the name of Multibestos Co., which in its plant at Worcester, Mass., was engaged in the manufacture of solid multiple fire hose fabrics and solid cotton belting.

Company Specially Qualified for the Work.

This company was especially well qualified to undertake work along the lines of development proposed, as its equipment included weaving and treating machinery, and among its personnel of executives were men thoroughly versed in the construction and adaption of special machinery.

After the experiment the engineers employed by the company successfully worked out the practical solution of making asbestos suitable for brake linings by weaving it on special looms, in combination with brass strands, and they also compounded special formulae for treating the fabric.

Thomas J. Daley, Secretary.

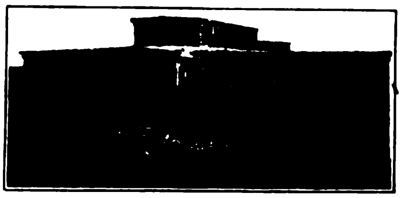
As a result it began the construction of Multibestos, a brake lining that is said to be standard equipment for more than 60 per cent. of all cars manufactured in the United States. The demand for the material has fully kept pace with the immense growth of the automobile industry, and it is conservatively estimated that at the present time Multibestos is sold by most of the 40,000 garages and supply houses in America, and is supplied as renewal equipment by 25,000 repair shops when specified.

The product also enjoys a healthy sale in foreign countries, where the demand is proportionally as great as it is in the United States. Exports during the war were unusually large, and even at the present low rate of foreign exchange the company still does business with European markets.

The basic reason for the success with which the product has been acclaimed, is partly suggested in the name. Multibestos is a coined trade-name, the first half of which implies that the fabric is of multiple, or many, weaves, while the last half suggests the asbestos from which it is made. By multiple weave is meant the solid weave by which every thread is tightly bound in a solid mass, having no loose plies to break under the stress of suddenly applied brakes. This manner of weaving makes one piece of the band, and does not depend on "stuffers," the trade expression for layers of loose thread placed between outer plies, for the sole purpose of making the material appear thicker than its weave warrants.

Photo by Bachrach.

E. O. Christiansen, Treasurer and General Manager.



The Cradle of Multibestos. Worcester Factory 1910.

Features of Multibestos.

In Multibestos the different thicknesses are obtained wholly by the number of solid weaves of the fabric, which makes an interlocking weave of asbestos yarn. The trade generally gives Multibestos the credit of being the pioneer in the asbestos brake lining field, and certain it is that the company was the first to manufacture real asbestos yarn for the purpose.

MULTIBESTOS REG.U.S.PAT.OFF.

The Business End of the Brake.

At the outset the manufacture of brake lining was merely a small part of the business done by the company, whereas today this class of product constitutes more than 95 per cent. of all manufacture. Inasmuch as the automotive industry was in its infancy at the time the company started making Multibestos, it was not thought that the product would ever assume any very large proportions, but as the automobile became more universally used the company was forced by circumstances to keep making a larger and still larger output, and in 1913, having entirely outgrown the Worcester plant, an entirely new factory was erected at Framingham and the business was removed to that location. The new building had 50,000 feet of floor space and was thoroughly modern, being adequately equipped to handle all business that might come, in the opinion of the executives.

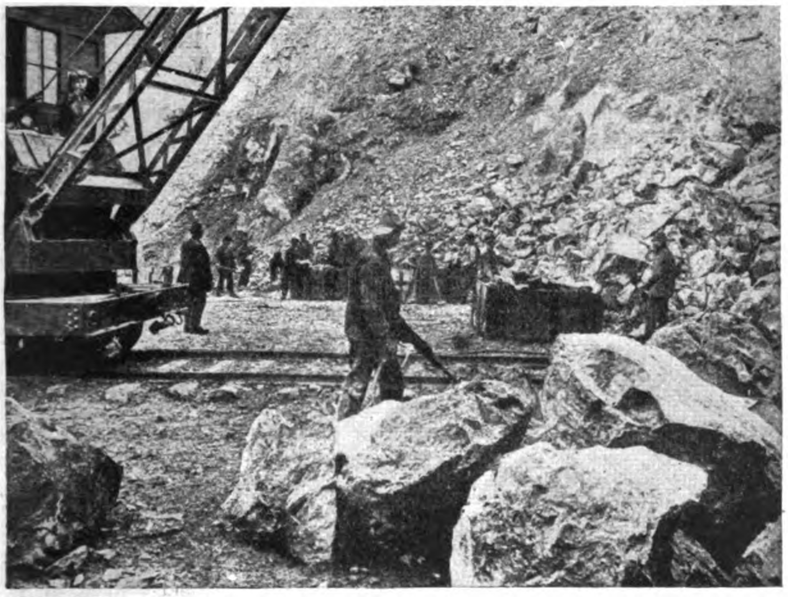
John C. Donnelly, Sales and Advertising Manager.

But the sojourn at the new plant was of short duration. The business of supplying the world with Multibestos required still larger and better facilities for manufacture, and there came a time when it was imperative that another factory be obtained. With this decision began the third and latest chapter in the story of Multibestos.

The Plant at Walpole.

While considering the addition of new buildings at Framingham sufficient to triple the capacity of the factory, it was learned that at Walpole, Mass., about 15 miles away, was a highly organized and comparatively new plant, peculiarly suited to the manufacture of brake lining and mechanical rubber goods, the company at that time manufacturing a line of the latter product.

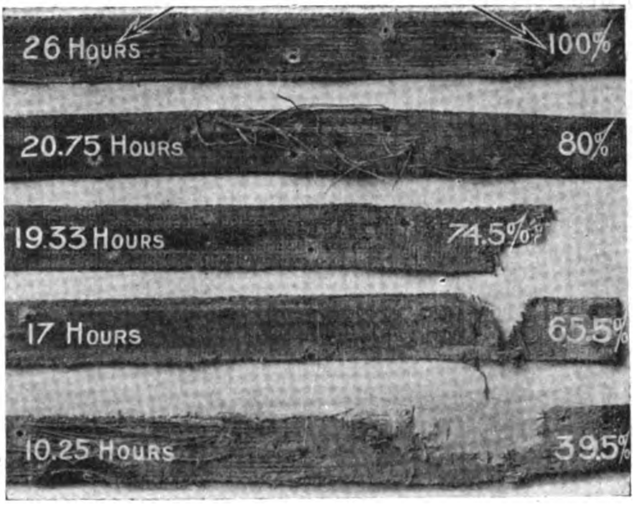
This plant, comprising 175,000 feet of floor space, and including 75 acres of land available for future expansion, had been developed for the Walpole Tire and Rubber Co., which had ceased opera-



Typical Asbestos Mine, Thetford, Province of Quebec.

tions. Recognizing the opportunity the company purchased the property, and abandoned the idea of enlarging the Framingham plant, as sorely needed production could be started at the Walpole plant immediately, which would not have been possible had the proposed additions been built at Framingham.

The present Multibestos factory, ideally suited for the purpose in hand when purchased, has been further improved, and today contains the finest possible labor saving equipment that could be devised by engineers who have been allied with the different stages of manufacturing improvement for more than 20 years. The plant is ideally located in a town renowned for its skilled labor, and has unusual shipping facilities, being adjacent to two railroads, one of which runs within a few feet of the property.



Engineers' Report, Showing Strength of Various Kinds of Brake Lining.

Processes in the Manufacture of Multibestos.

The Multibestos company is one of the few manufacturers of brake and clutch linings owning and controlling every process of manufacture. Every operation is performed in its own factory, even to the making of the asbestos yarn.

The process by which brake linings are manufactured is very interesting. The asbestos rock used by this company is especially mined and comes from a small area at Thetford, in the province of Quebec. It is first crushed between heavy rollers, after which it is carefully screened to free it from grit and foreign substances. The cleaned stock automatically passes into a small room at the rear of the screening department, and is then blown through a large pipe to the second floor, where the carding machines are located.

The carding equipment, which does much to metamorphose the rock into the yielding fabric, is of standard design, and is similar to that used in the cotton and woolen industries. Briefly, this carding of the fibers consists in their being passed through rapidly revolving rollers with wire teeth, which causes them all to lie in the same direction, after which they are spun into the soft yarn known as "roving."

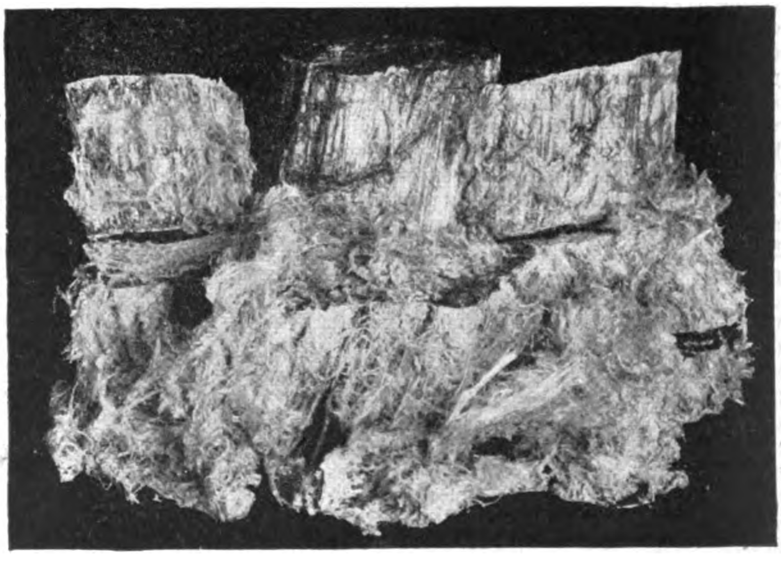
This loosely spun yarn, having little about it to remind one of the rock from which it was made, now goes to a mule spinning frame, where it is twisted into stronger yarn. The next operation is that of combining the asbestos yarn with brass wire. This is done by means of special machinery, and gives added tensile strength which assures a firm bond for holding in place by riveting.

The finished yarn is next woven. This part of the manufacture is done by means of heavy, narrow fabric looms, which are so made as to admit of the weaving of a number of belts or strips at the same time. Weaving is the critical period of brake lining manufacture. Inexperienced, or careless operators can weave the fabric in a manner that will absolutely spoil it for use. With this understood, the company guards against it by playing safe. They allow none but specially trained workers to attend to this part of the manufacture, and the value of this is seen in the small amount of rejected material found by the inspectors, who so carefully watch each step in the manufacture of Multibestos.

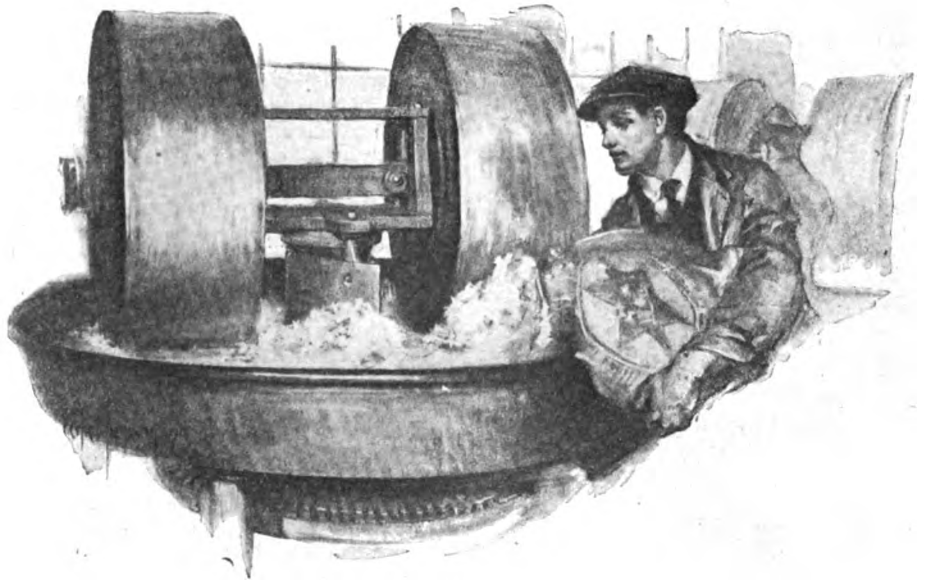
An idea of the flexibility of these looms and their capacity can be gathered from a study of the various dimensions of the fabric turned out. As Multibestos is used as brake and clutch linings in every kind of motor vehicle, including airplanes, and is also extensively used in the manufacture of certain units connected with heavy hauling, it follows that a wide variety of sizes is necessary.

These various sizes are gained by having the looms so made as to be adjustable, and materials may be woven on them varying in thickness from ⅛ to ¾ inches, and by ¾ to 20 inches, cross measurement. This variation is obtained solely by increasing the number of threads, and not by artificial padding or stuffing. In other words, the inside of a piece of Multibestos, if exposed with a hack saw will be found to be made of the same material as the outer surfaces, which fact has much to do with its wearing qualities.

One of the manufacturing economies that the makers of Multibestos employ in obtaining quantity production is the method of feeding the yarn to the looms



The Crude Asbestos Closely Resembles Vegetable Fiber.



Heavy Rollers Separate the Asbestos Fibers.

from "beams" or huge metal spools. These spools hold very large quantities of yarn, and naturally save time in weaving as the operators do not have to stop to "thread up" so often.

Multibestos Is Treated with Chemical Bath.

As the fabric is woven it is automatically wound onto reels for convenience in handling, and is then sent to the treating department, where it is immersed in a special chemical compound which permeates every fiber and makes the fabric impervious to heat, dust, water, oil and grease. At this point the processes of making brake linings and clutch linings differ somewhat.

The reels of fabric are placed on revolving axles and fed into the baths, that which is intended for brake linings going into one solution, while the clutch linings are dipped into another. After a long treatment in the impregnating bath, the rolls of fabric are placed in the drier, which is directly behind the baths.

Calendering and Stamping of Trade Mark One Operation.

From this department the fabric is fed through gravity elevators to the calender and stock departments on the ground floor. This process, which consists of pressing the fabric between heavy steel rollers, is coupled with a stamping device, which stencils the name "Multibestos" on the material and also stencils white marks at lengths of every foot. These marks not only identify the material as Multibestos, but are also a great help to the dealer in dispensing the product.

From the time Multibestos, as raw material, is received at the factory until the finished fabric is packed for shipment, it is constantly subjected to rigid inspections. While being fed into the treating compound every inch of the material is reinspected, as it unrolls before the watchful eyes of the inspectors. Other men watch it just as closely as it comes from the elevators to the calendering department, and the men in charge of the calendering and stenciling process again inspect it. The final inspection of all comes when the finished product is sent to the stock room, where the clerks inspect each individual roll to see that the markings and trade-mark have been properly recorded.

As a result of these many inspections there is very little low grade Multibestos that has to be thrown out, and this is not marked as seconds, nor is it sold under another name. It is simply thrown on the refuse pile, as the rigid policy of the company does not pass anything but standard products to its many customers. Multibestos, as a trade name, has become known as synonymous with quality, and the executives of this modern business do not intend that the name shall ever be placed in jeopardy by the use of inferior products.

High Quality of Multibestos Assured by Constant Tests.

The unvarying quality of Multibestos, in-built as the result of basic experimental tests, is kept at a continuous high standard by laboratory tests of a special nature. These tests are most exhaustive and show the manner in which the lining stands up under actual road tests. An illustration of one of the test boards is shown, which gives an idea of their thoroughness.

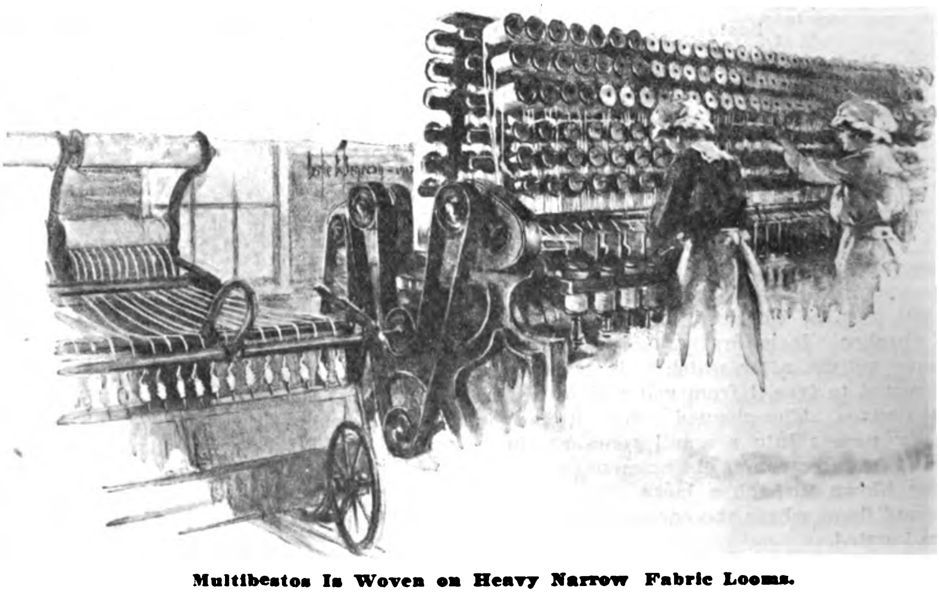
In this department, which is equipped with specially designed apparatus, experiments are made to determine the coefficient of friction, the pressure required to determine the resisting motion of contacting surfaces, speed, temperature, chatter and all other factors that can determine the wearing qualities of the materials. One part of the apparatus is designed to determine the result of applying the brakes on an automobile running at varying speeds, and another makes competitive tests of different makes of brake linings manufactured by other companies.

All of these results are charted on a revolving drum and furnish a constant study to the engineers of the company. It would seem that Multibestos has been developed to the highest degree of efficiency, and yet the management spends many thousands of dollars annually in trying to discover new processes, or to evolve new machinery that will benefit the users of brake lining.

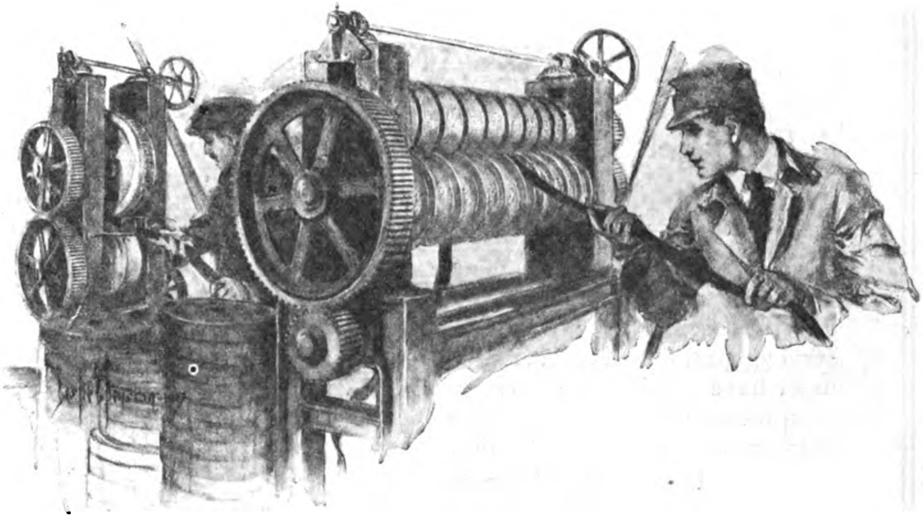
The Multibestos company also manufactures disc and cone clutch linings, transmission linings for Ford cars and brake blocks and shoes for heavy hoisting machinery.

President Stoughton Bell, to whose untiring efforts the company's success is mainly due, has well defined ideas on the subject of selling and has surrounded himself with officials who believe as he does.

In setting forth the principles of the company Mr. Bell in a recent interview said, "Multibestos and the company behind it stand for quality and service. Quality of organization, quality of men and quality of product. Service like charity, begins at home. We must render first, one to another, man to man and department to department. Only then can we serve our customers and the public. Quality and service are built on honesty and frankness. As we are sincere and honest one with another, so shall we be with those with whom we do



Multibestos Is Woven on Heavy Narrow Fabric Looms.



Calendering the Finished Product and Stamping Trade Mark.

business. The policy of the company is based on definite honesty standards. These standards are now and must always be in advance of past achievements, but our aims must not be so high that they cannot be attained within the time and under the conditions set for their accomplishment."

As a matter of fact the entire policy of the company may be summed up in Mr. Bell's New Year's greeting to the trade. This message was sent in the form of an illuminated card, and embodies principles that would be useful in any business. The text of the message is as follows:

"We are committed to work toward a standard product of sufficiently high excellence to be a source of pride to us, and the means of creating an impelling demand for our customers. A standard of price that will show a fair return on the investment and expense involved, yet not so high as to hamper the sale of our products and with the best return to the customer for the money he invests. A standard of workmanship and individual effort which shall command the respect of our fellow workers and the business of others. A standard of action, of courtesy and manner which shall gain for us the hearty welcome extended to friends. A standard of work to be done or quota to be reached which shall spur us to extra effort. A standard of working conditions which shall be fair to all and not a burden either to the individual or to the organization. In working toward these goals let us not forget that quality and service are not limited to them alone, or to the big things. They take even more account of the smaller acts—of the little things done in a generous way. Striving to hold always to these standards with the spirit of true cooperation towards one another and those outside we will hold and strengthen the dominant position that we have reached in our field."

The phenomenal growth of the Multibestos company is accounted for by its policy of fair dealing. There is no doubt but what any other product, given equal merit, would show similar growth under the same policies pursued by the company, and no one hesitates to give due credit to its efficient personnel of executives, which is as follows: President, Stoughton Bell; treasurer and general manager, E. O. Christiansen; assistant treasurer, C. W. Bunker; secretary, T. J. Daley; sales and advertising manager, J. C. Donnelly; superintendent, T. H. Bateson; purchasing agent, J. Posternock.

A list of the cars and trucks, tractors, axles and motorcycles equipped originally with Multibestos was recently compiled and given to the trade. It follows:

Passenger Cars.

Beggs, Biddle, Briscoe, Chandler, Cleveland, Columbia, Commonwealth, Crow-Elkhart, Cunningham, Daniels, Detroit-Electric, Dixie, Dodge Bros., Dorris, Hanson, Haynes, Hupmobile, Jones, Jordan, Liberty, Maibohm, Marmon, Maxwell, McFarlan Six, McLaughlin, Milburn Electric, Mitchell, Moore, Noma, Olympian, Owen-Magnetic, Pan-American, Piedmont, Pierce-Arrow, Re Vere, Saxon, Seneca, Shaw, Simplex, Standard, Stanley, Studebaker, Texan, Velie, Westcott.

Trucks.

Acason, Ace, Acme, All Power, American La France, Armleder, Atco, Atterbury, Available, Beaver, Brockway, Buffalo, Capitol, Clydesdale, Collier, Concord, Conestoga, Day-Elder, Dearborn, Dependable, Detroit, Diamond T, Dodge Bros., Dorris, Dort, Fageol, Federal, Ford, Gabriel, Garford, GMC, Giant, H. R. L., Hahn, Hall, Hendrickson, Hewitt-Ludlow, Huffman, Independent, Jackson, Kalamazoo, Kelly-Springfield, Kissel Freighter, Kleiber, Lippard-Stewart, Luedinghaus, Maccar, Mack, Master, Maxwell, Menges, Menominee, Mutual, National, Netco, Norwalk, O-K, Oneida, Packard, Parker, Patriot, Pierce-Arrow, Rainier, Selden, Seneca, Service, Signal, Standard, Standard Oil Co. of Ohio, Sterling, Studebaker, Sullivan, Super, Texan, Tiffin, Tower, Twin City, Velie, Watson, Wilcox Trux.

Tractors.

Avery, Bailor, Boring, Chase, Dauch, Emerson-Brantingham, G-O, Hart-Parr, Illinois Super Drive, Indiana, Liberty, Massey-Harris, Moline-Universal, Monarch, National, Parrett, Samson, Waterloo Boy.

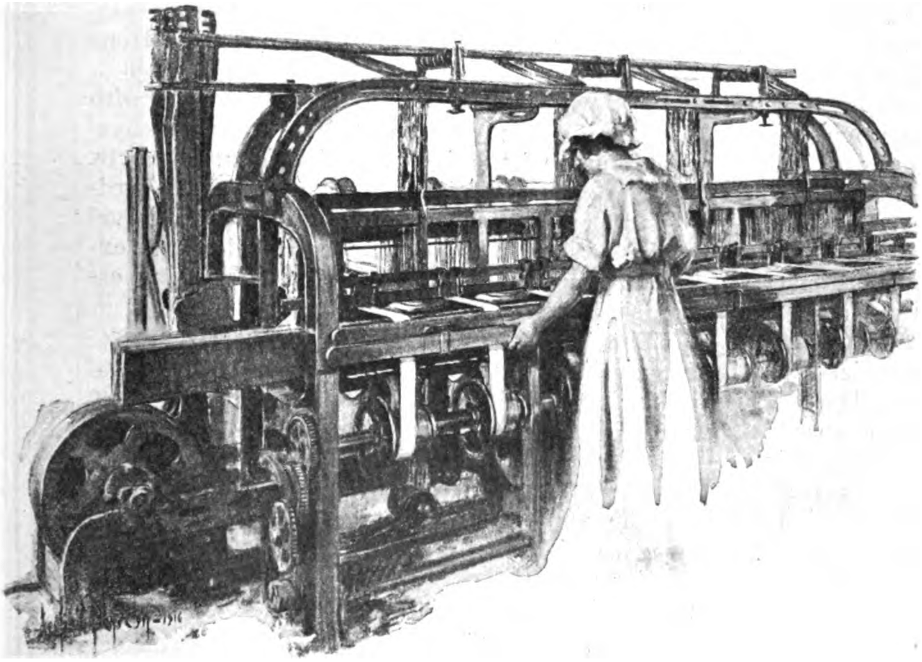
Axles.

Eaton, Peru, Salisbury, Spacke. Standard, Timken-Detroit, Vulcan, Wisconsin.

Motorcycles.

Excelsior, Harley-Davidson.

Multibestos, like many another automotive product, is not sold direct to the dealer, but is handled through jobbers. The company has branch offices and salesrooms in Chicago, New York, Kansas City and Chattanooga, and its salesmen cover every state in the Union. The company is an extensive user of advertising, and gets out many sales helps for dealers' distribution, in the form of pamphlets and booklets, but the product is as much a staple as the shoes one wears, and because of its high quality needs no elaborate selling campaign. All of which means that it has stood the test and has not been found wanting.



Twisting and Spinning the Crude Asbestos Fibre.

TRUCK AND CAR SERVICE STATION

A Fire-Proof Single Story Structure Equipped with Every Facility, with Foundation on Which Additional Stories Can Be Built If Needed.

IN THE accompanying plan an endeavor has been made to illustrate how closely related are the garage or storage department and the service station. A service station to be ideal must have facility that is essential for serving its customers efficiently. It must be designed so that economical administration is practical.

Dimensions of the Building.

The building shown measures 100 by 100 feet and is designed to face on a main street. It is a one-story type, the entire structure being devoted exclusively to the handling of automobiles, their accessories and repairs. The general appearance of the exterior or front should add greatly to any locality and improve the valuation of surrounding property.

Directly on centre and in the front of the building is located an office for the transaction of general business. Access may be had to this office from the garage proper located at the rear, or directly from the street. Adjoining the office at the left is the wash stand, this space being less valuable than any other owing to its proximity to the large door. Oil tanks and greases will also be found at this place; their accessibility to the transient trade being a point to be considered.

Large Repair Department Provided.

The general repair department is directly at the rear, with work benches and pits for working underneath large vehicles. Tool closets are provided at the left wall of repair shop where valuable tools may be kept under lock and key at all times when not in use. Adjoining the repair shop is the machine shop, the heart of the service station, a place where parts may be repaired, or if necessary made, which should have a complete equipment of machine and hand tools.

Just in front of the repair department is situated the storage area for trucks and cars, which is 14 feet in the clear from the bottom of the beams to the floor level. In size it is approximately 30 by 100 feet, with the exception of a small space occupied by the office. This space is fully lighted and ventilated by two huge skylights as shown, measuring 16 feet by 22 feet in size. They are constructed of galvanized metal on a steel frame with ribbed wire glass. The few columns that have been used are so spaced as to minimize inside manoeuvering of the vehicles for positions in line.

A boiler room is reached by a flight of stairs leading from the toilet and wash room, it occupying the area beneath the stock room and toilet. Provision has been made in the washroom to meet the requirements of shop of this size with adequate equipment for all purposes. The stockroom is amply large to carry all the parts necessary for a first class shop and access is had to it from both shop and garage proper.

Slow Burning Mill Construction.

The construction planned for is the slow burning mill type, which will be found extremely satisfactory for buildings where there is more or less danger from fire hazard.

The foundation would be of concrete sufficient in size and depth to carry all loads placed upon it. Provision for future expansion can be made at the beginning or laying of the foundation at a very small cost over the original figure, which can be made sufficient in size to carry two or three future stories.

The super-structure is comprised of brick with terra cotta trimmings. As there are numerous kinds of brick and some of which may be more easily obtainable than others in different localities, no statement is made of just what the size or color of these may be, but that a brick of a hard nature be used is recommended, as the harder the brick the smaller the percentage of absorption of water, and recommendation is with the object of minimizing dampness that might result from the use of inferior products.

General Details of Finish.

Terra cotta of a glazed or dull finish may be used, or concrete stone may be substituted in its place. Granolithic floors are provided and drained as shown, laid on a bed of five-inch concrete, the finished floor being one inch in thickness, composed of a mixture of one part cement and one part sand.

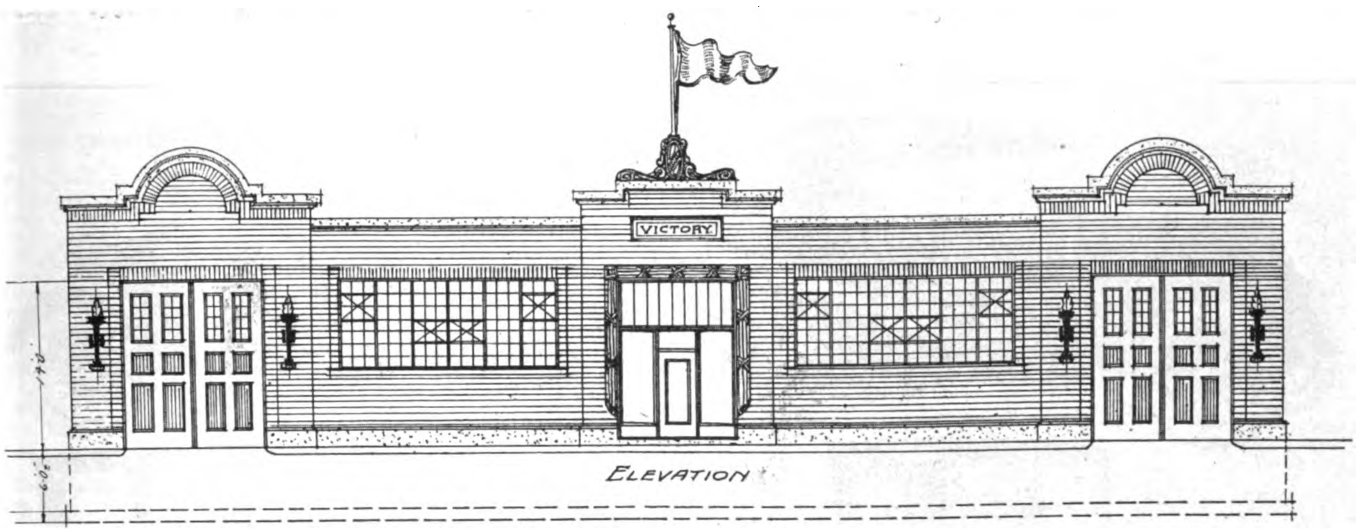
The windows are of the metal sash type with wire glass, complying with the underwriter's specifications and the fire laws of different districts.

The roof is of plank supported by steel girders and wood purlins. A five-ply tar and gravel roof is advised, this having been found to give excellent results in many large manufacturing establishments.

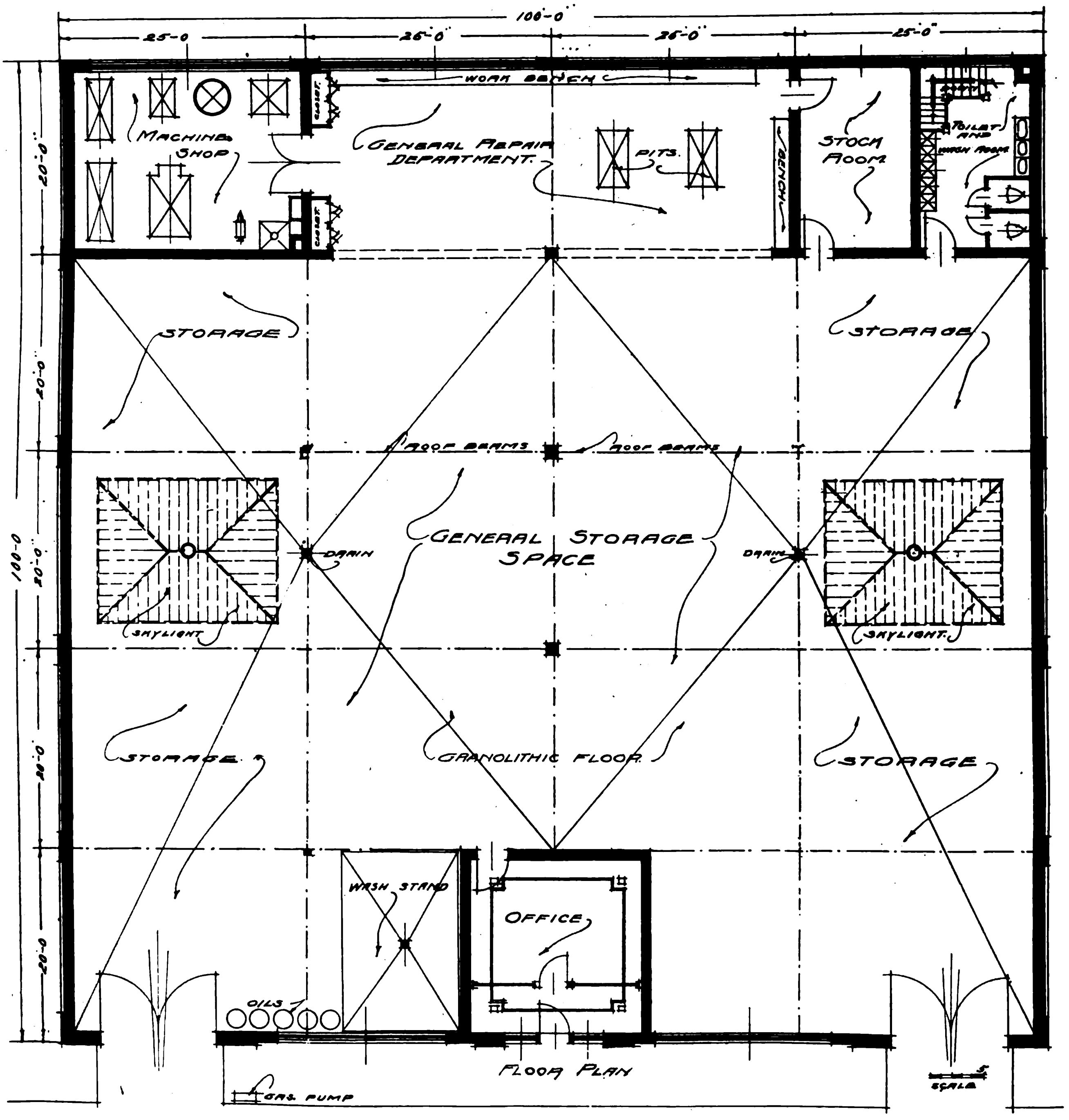
The drainage of the roof should be given careful consideration, the roof sloping one-quarter of an inch to the front. Lead flashing should be used throughout. For heating, steam with wall radiation is advised, using the pipe system or regular radiators if the owner so desires.

The approximate cost of a building of this type would be about $15,000.

For any further details regarding this structure write to the Architectural Department of this publication.


VICTORY
17-0
6-0

ELEVATION


100-0
25-0
25-0
25-0
25-0
WORK BENCH
CLOSET
CLOSET
MACHINE SHOP
GENERAL REPAIR DEPARTMENT
PITS
BENCH
STOCK ROOM
TOILET AND WASH ROOM
STORAGE
STORAGE
ROOF BEAMS
ROOF BEAMS
GENERAL STORAGE SPACE
DRAIN
DRAIN
SKYLIGHT
SKYLIGHT.
STORAGE
GRANOLITHIC FLOOR
STORAGE
WASH STAND
OFFICE
OILS
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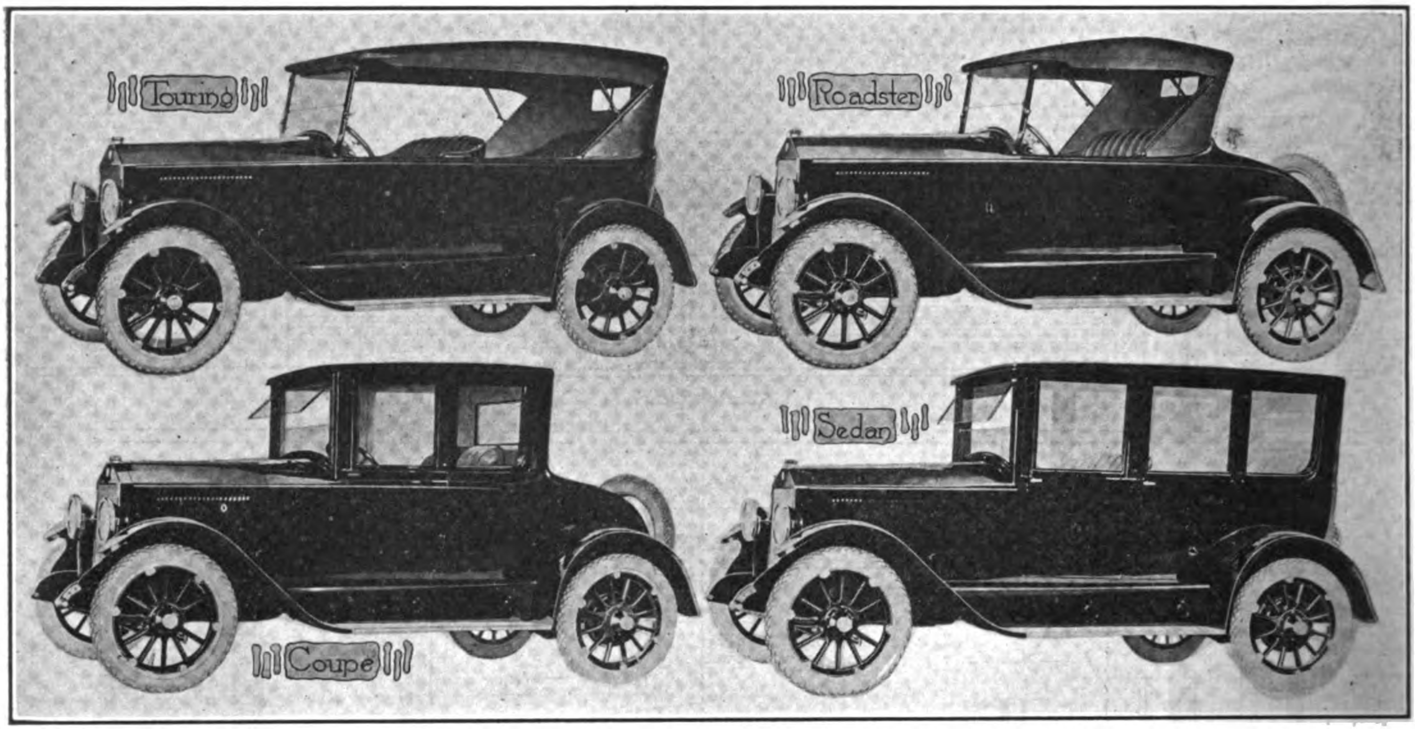
5
SCALE

FLOOR PLAN

New Models of 1921 Cars, Trucks and



New Models of Dort Cars, Made by the Dort Motor Car Co., Flint, Mich., First Seen at This Season's National Shows.

SPECIFICATIONS OF NEW DORT MODELS.

Engine—Four-cylinder, L-head, Lycoming, en bloc; 3½ by 5, S. A. E. rating, 19.60 horsepower.

Lubrication—Pump and splash.

Cooling—Thermo-syphon.

Carburetor—Carter improved side outlet.

Fuel Supply—Stewart vacuum, 13-gallon rear tank.

Ignition—Connecticut battery.

Starting and Lighting—Westinghouse; Bendix drive.

Transmission and Clutch—Selective, three speeds forward, one reverse, in unit with motor; leather faced cone clutch.

Brakes—Emergency, internal expanding, hand lever; service, external contracting, pedal.

Wheels—Artillery, Timken roller bearings; demountable rims. **Tires**—Goodyear, 31 by 4, non-skid.

Wheelbase—108 inches.

Finish—Dort green; chassis and fenders enamelled black; hood and radiator same color as body.

Equipment—One-man top, side curtains open with doors; double adjustable windshield; electric horn; Stewart speedometer; silver finished dome lights in enclosed models; standard tool kit in bag, with jack, tire pump and tire repair outfit.

Price—Five-passenger touring, $1215; roadster, $1215; sedan, $1995; coupe, $1865.

PAIGE 6-66 SERIES.

Engine—Six-cylinder, L-head, Continental, 3¾ by 5, S. A. E. rating, 33.75 horsepower.

Lubrication—Pump and splash.

Cooling—Centrifugal water pump.

Carburetor—Rayfield.

Fuel Supply—Stewart vacuum; 23-gallon rear tank.

Ignition—Atwater Kent.

Starting and Lighting—Gray & Davis separate generator.

Battery—Willard, six-volt.

Drive—Hotchkiss.

Transmission and Clutch—Conventional, three speeds forward and reverse, special Paige transmission lock; Borg & Beck 12-inch, three-plate dry clutch.

Brakes—Two sets working on steel drums; brake drums two-inch face.

Wheels—Artillery. **Tires**—Firestone cord, 33 by 4½.

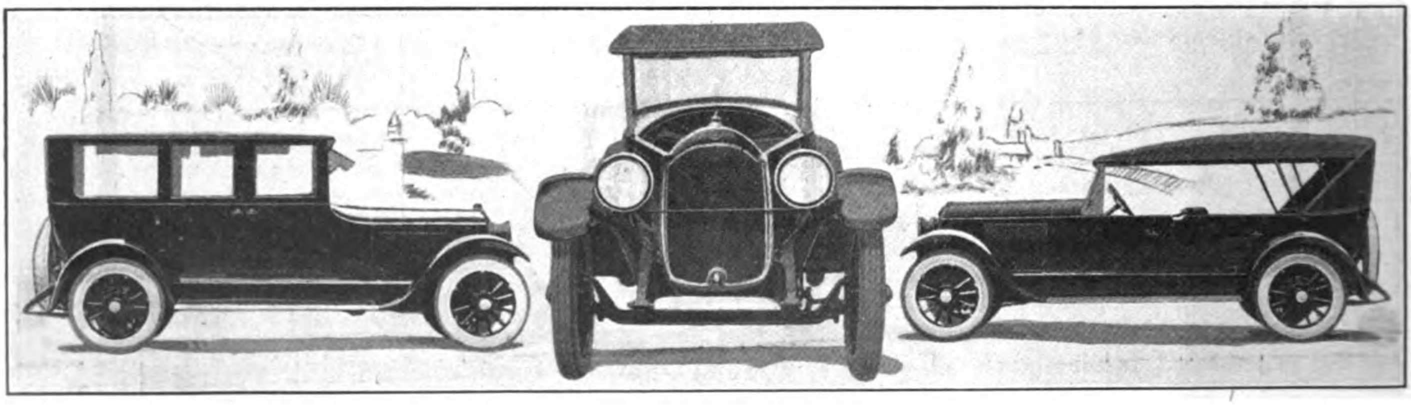
Wheelbase—131 inches inches; standard tread, 56 inches.

Finish—Paige blue with black leather upholstery on open models; alternative for four-passenger Larchmont, moleskin gray body with deep pencil grained genuine leather upholstery; sedan, brown broadcloth.

Bodies—Four and seven-passenger open and seven-passenger sedan.

Equipment—Three-piece, front-vision windshield, triangular side wings; tonneau light has cord with spring reel for use as trouble light; sedan model has vanity case, smoking set and windows fitted with mechanical lifts; dome, dash and rear quarter reading and step light at right rear door; cowl ventilator for front seats and heater in tonneau floor; headlights have Macbeth lenses. All other usual equipment.

Price—Seven-passenger touring, $2795; sport, $2895; seven-passenger sedan, $3650.

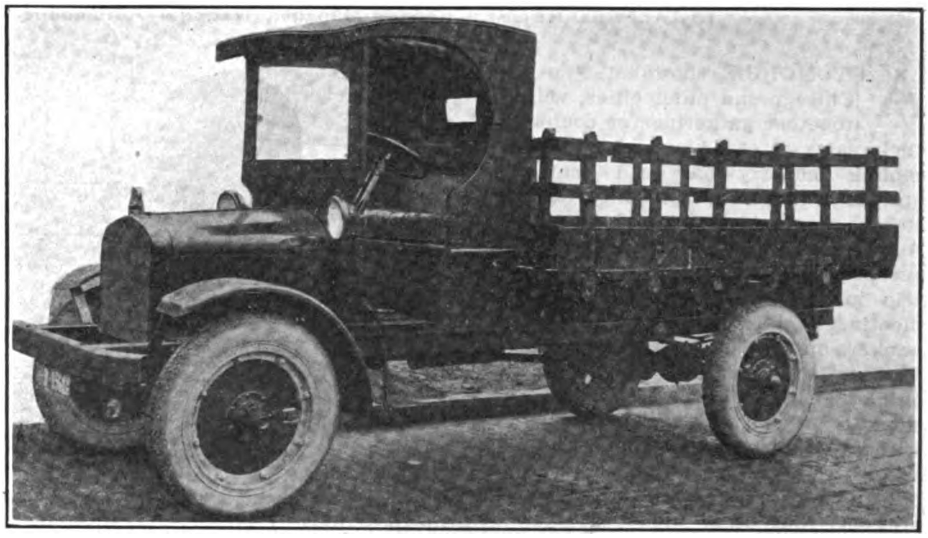


Typical Models of New Large Six Series of Paige Cars, Manufactured by Paige-Detroit Motor Car Co., Detroit.

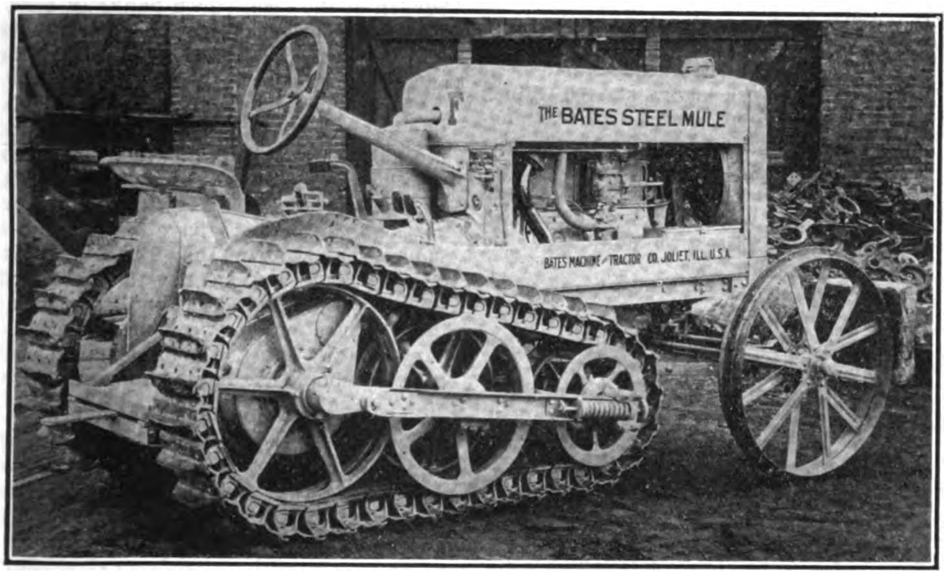
Tractors Now Being Offered to Trade

CYCLONE MODEL "A," 1½-TON TRUCK.

Engine—Herschell-Spillman unit type.
Cylinders—Cast en bloc.
Bore—3½ inches.
Stroke—Five inches.
Horsepower—35 at 1800 revolutions a minute.
Cooling—Thermo-syphon.
Carburetor—Schebler.
Starting and Lighting System—Westinghouse.
Steering Gear—Ross.
Clutch—Dry disc, multiple type.
Transmission—Warner selective, three speeds forward, one reverse.
Rear Axle—Torbensen internal gear type.
Wheelbase—136 inches.
Tread—56 inches.



Cyclone 1½-Ton Truck, Made by Cyclone Starter & Truck Co., Greenfield, S. C.



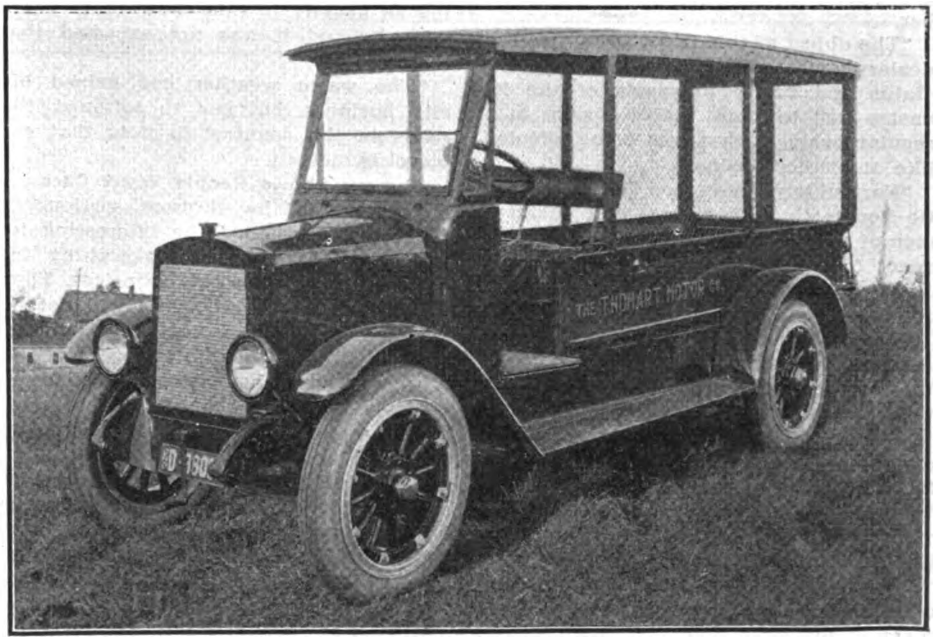
Bates Model F Crawler, Made by Bates Machine & Tractor Co., Joliet, Ill.

BATES STEEL MULE, MODEL "F."

Engine—Bates-Midwest.
Cylinders—Cast en bloc.
Bore—4¼ inches.
Stroke—Six inches.
Speed—800 revolutions a minute.
Horsepower—Draw bar, 18; belt, 25.
Lubrication—Force.
Cooling—Pump.
Carburetor—Bates.
Ignition—Splitdorf high-tension.
Clutch—Friction.
Transmission—Bates.
Final Drive—Crawlers.
Rear Axle—Bates, Timken bearings.
Length Over All—108 inches.
Width Over All—61½ inches.

AKRON ONE-TON MULTI-TRUCK.

Engine—Hinkley.
Cylinders—Cast en bloc.
Bore—Four inches.
Stroke—5½ inches.
Horsepower—S. A. E. rating, 25.6.
Cooling—Water pump.
Carburetor—Stromberg.
Starting and Lighting—Westinghouse.
Steering—Jacox.
Clutch—Dry disc, multiple type.
Transmission—Warner selective, three speeds forward, one reverse.
Rear Axle—Spiral bevel.
Wheelbase—133½ inches.
Tread—56 inches.



Akron Multi-Truck, Made by Thomart Motor Co., Akron, O.

Shows Took Automotive Industry Off Dead Center

(By ALFRED REEVES, General Manager, National Automobile Chamber of Commerce.)

AUTOMOBILE shows at New York, Chicago and other cities, with get-together gatherings of dealers and their sales forces, have taken the automobile industry off dead center and started it forward, according to Alfred Reeves, general manager of the National Automobile Chamber of Commerce, who recently returned from a three weeks' trip in the West, where he addressed meetings of dealers, manufacturers and bankers in Wisconsin, Illinois, Missouri, Iowa and Nebraska. He reports encouraging signs of returning business, which should continue for a number of months, with an appreciation that, after the spring trade, future progress in automobile industry will depend largely on the progress that other industries make in returning to normal.

Information gathered on this trip, coupled with reports from other sections of the country presented to the directors of the National Automobile Chamber of Commerce at their Chicago meeting, indicated that the best trade in cars and trucks at present is along the Atlantic and Pacific coast. It is somewhat spotty in other parts of the country.

New York, Pennsylvania, California, Ohio, Illinois and Wisconsin seem to show the best sales, while the poorest sections appear to be through the South, particularly Texas, in the Dakotas and in Iowa and Nebraska, although with a general upward turn everywhere.

"As in 1917, 1914 and 1919, the automobile shows have marked the return of buying in this country and a change of spirit not alone in our own industry, but among business men generally," said Mr. Reeves. "In those sections that have had the benefit of an automobile show the trade has started on an upward trend that is decidedly helpful in view of the small business of November and December.

"The object of this trip was to give the dealers and their bankers the present status and future prospects of the industry and to show that we were in a regular business that was being affected like any other business.

"Fortunately, there has been very little bombastic talk of late and business men of the country have a wholesome respect for the manner in which our industry is adjusting itself to the changed conditions.

"After addressing them on the subject of their industry at these meetings, I answered questions for an hour or more. You may be sure some highly interesting questions were asked and answered. To make it easy for the dealers to obtain facts, they had only to ask questions from their seats or they could send the questions on slips of paper. It gave us a fine contact with the dealers, to learn their problems and to have them appreciate the problems which the manufacturer is solving.

"While some manufacturers have grievances against dealers and some dealers have grievances against manufacturers, the whole spirit seems to be that closer cooperation will help to solve the difficulties of a year when trade is slower than usual.

New York Show the Start.

"The New York show started things off in good fashion, although the attendance was some 10 or 12 per cent. short of last year. Shows at Cleveland, Milwaukee and other places, however, were far beyond last year in attendance, showing continued interest in motor cars by the general public.

"Chicago made new records for attendance, Saturday showing a 20 per per cent. increase, and Monday 10 per cent., both days exceeding the first and second days of the New York show. Tuesday the increase was 12 per cent and Wednesday the paid attendance was 23½ per cent. better than last year, it being the largest day in the history of Chicago shows.

"Retail sales at Chicago and in other show cities were highly satisfactory. Because of tight money among the small town banks the dealers were not ordering as heavily in this show as in years gone by and it was not expected that they would.

"The warm weather has helped big city business, but has so softened the roads in the country districts that car travel is difficult.

Survey Shows People Want Cars.

"Surveys in the different sections of the country supplied the interesting information that buyers are waiting for lower prices or more stable prices. They want to be sure that prices will not be changed within the next few months. Almost all say they intend to buy another car and when asked the kind invariably mention a car of higher prices than the one they are using.

"Trade on the Atlantic coast and on the Pacific coast seems to be in the best shape. Wisconsin is doing well because her dairy products bring cash every day. Constantly improving trade is reported from Ohio and Illinois. Poor trade is reported from the South, especially Texas and from sections of Nebraska, Iowa and the Dakotas.

"We find dealers with their houses in order and in the right spirit for a spring sales campaign. They have some grievances against the manufacturers, just as the manufacturers occasionally have grievances against the dealers. That there is a fine spirit of cooperation, however, is evidenced by the acceptance by the directors of the National Automobile Chamber of Commerce of the suggestion by the National Automobile Dealers' Association for a conference of committees to review trade conditions to see what can be done in a cooperative way that will be mutually helpful.

Bankers Doing Their Share.

"Our meetings with the bankers showed that the big city banks are doing their share in carrying the distributors and big dealers. Because of the heavy burden of the small town banks in carrying the crops of the farmers, they have not been able to do much to help the small town dealers.

"Everywhere we find a high appreciation of the need for the motor car and the substantial basis on which the automobile business has been built. Our investigation shows that with a few exceptions the bankers have cared for our industry as well as they have other industries and they are not to be blamed for resenting the occasional statement that because one or two banks speak disparagingly of the automobile business, all bankers should be put in the same class.

Everyone Planning for a Normal Year.

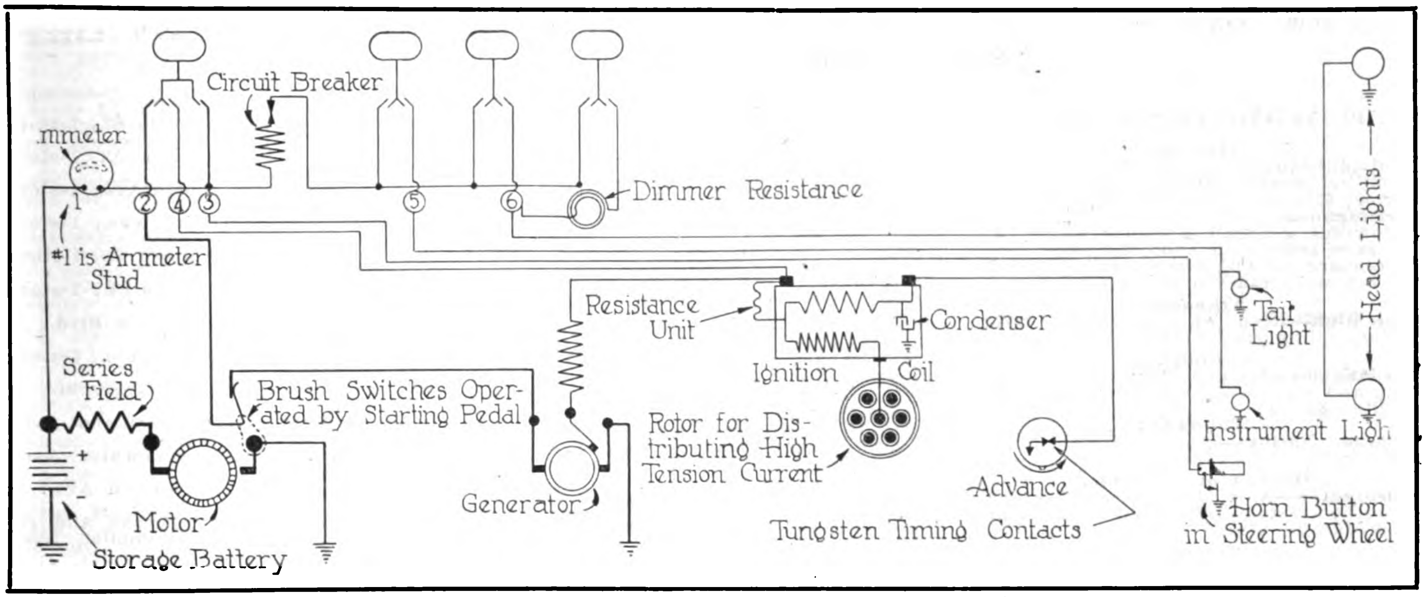
"On this three weeks' trip we found that the hysteria in the industry has passed and that the manufacturers and dealers are putting their houses in order and are preparing for a conservative, normal year with intensive sales effort as the high keynote.

"In connection with trucks, we found the dealers somewhat discouraged with present conditions. A slowing down in business has materially decreased the demand, while the open weather has permitted the railroads to carry all the freight offered. In fact, the railroads now report 300,000 idle freight cars.

"Bankers and the far-seeing dealers know that the truck business has a fine future which depends somewhat on how soon we have renewed business activity and how soon the programme for our much needed building operations gets under way. The railroads, too, will buy trucks for short haul work, which spells brighter days for motor trucks, of which we have less than a million in use."

In conclusion Mr. Reeves said: "We find the dealers and bankers supporting the manufacturers' plan, which calls for 1921 to be a year of conservatism, with a vigorous sales campaign as the keynote and with the feeling that it will be better at the end of the year for a factory to find its product 10 per cent. oversold rather than 10 per cent. undersold."

Monthly Wiring Diagram, No. 13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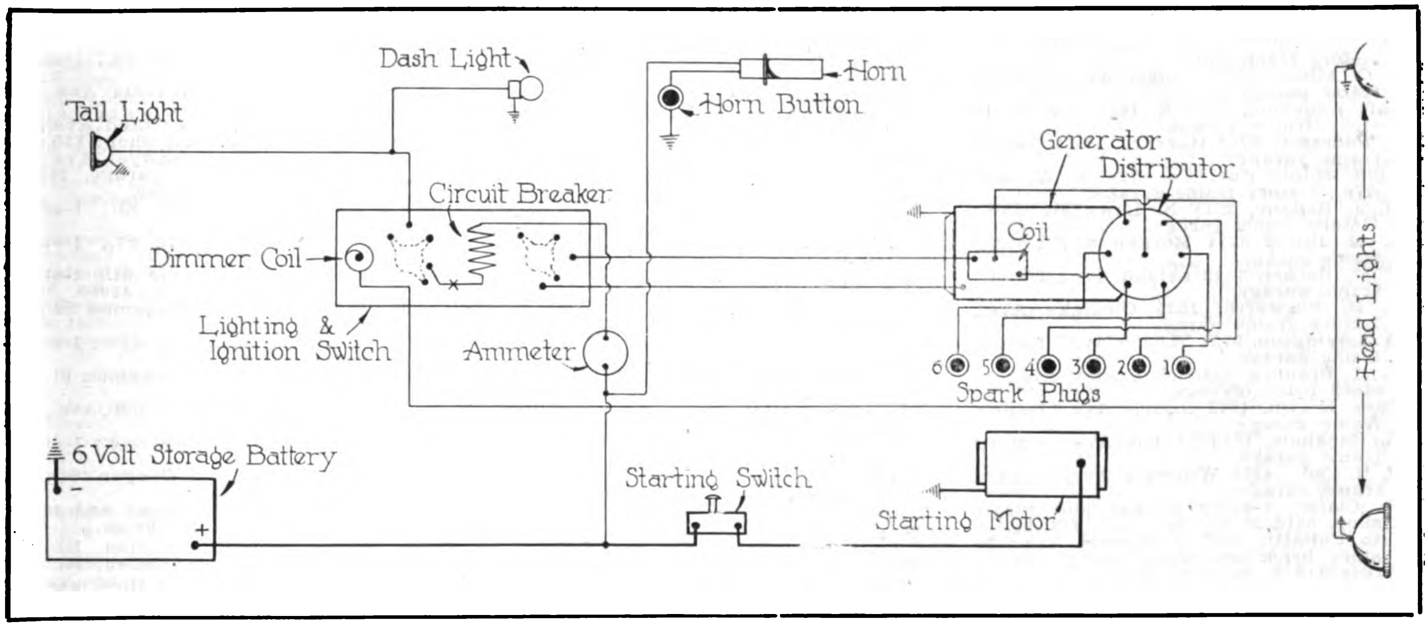
Series Field
Brush Switches Operated by Starting Pedal
Rotor for Distributing High Tension Current
Generator
+
Motor
Storage Battery
Advance
Tungsten Timing Contacts
Tail Light
Head Lights
Instrument Ligh
Horn Button in Steering Wheel

Moon 1916 Model 6-30 and 6-44 Delco System, Single Unit.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Generator
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Spark Plugs
Head Lights
6 Volt Storage Battery
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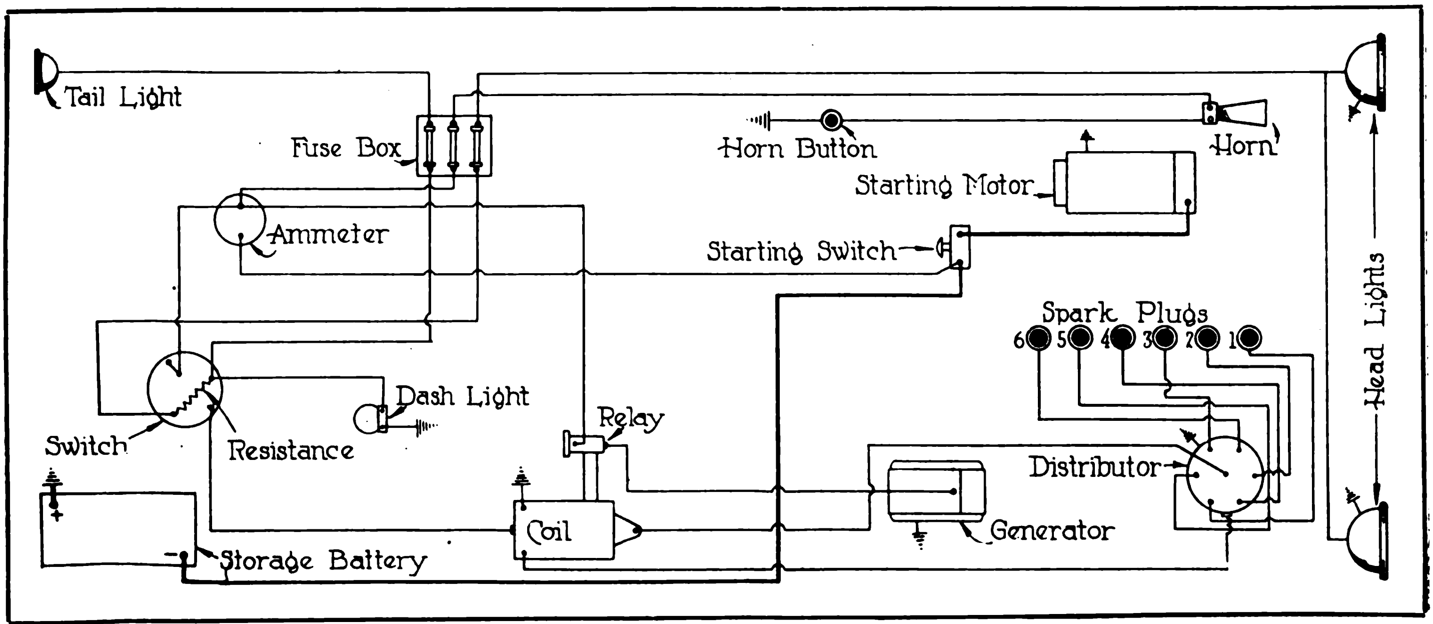
Starting Switch
Starting Motor

Moon 1917-1918 Model 6-43 Delco System, Single Unit.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Fuse Box
Horn Button
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Starting Motor
Ammeter
Starting Switch
Spark Plugs
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2
1
Head Lights
Dash Light
Relay
Switch
Resistance
Distributor
+
Coil
Generator
-
Storage Battery

Moon 1919 Victory Model, Wagner Two-Unit System.

RECORD OF BUILDING OPERATIONS FOR FEBRUARY

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Alabama.

Anniston—Automatic Specialty Co.,; 2-story reinforced concrete auto building, 50x150; $200,000.

Birmingham:
- Fowlkes, Johnson & Jones; 1-story garage and repair shop; $20,000.
- Standard Oil Co.; 1-story filling station, 6th Ave. and 7th St.; $6000.

Arkansas.

Pine Bluff—Reed Oil Corp., Tulsa, Okla.; 1-story filling station; $15,000.

California.

Los Angeles—Morgan Adams; 1-story garage and service station, 8th and Alvarado Sts.; $40,000.

Colorado.

Colorado Springs—Antlers Hotel Co.; 1-story garage and repair shop.

District of Columbia.

Washington—A. S. J. Atchison, 3801 McComb St.; 2-story reinforced concrete and brick garage. 81x108.

Illinois.

Alede—Standard Oil Co.; 1-story brick public oil filling station; $9000.

Bushnell—B. P. & E. Co.; 1-story garage. 80x40.

Chicago:
- Jno. H. Albretch, 5329 N. Irving Ave.; 1-story frame garage.
- J. C. Allen, 7530 Calumet Ave.; 1-story frame garage.
- Carl Anderson, 3329 N. Irving Ave.; 1-story frame garage.
- T. Anderson, 8753 Harvard Ave.; 1-story frame garage.
- Apex Motor Fuel Co., 720 S. Wabash Ave.; 1-story frame garage.
- M. J. Bellany, 2118 N. Lawndale Ave.; 1-story frame garage.
- A. M. Billie, 5234 Morgan St.; 1-story frame garage.
- C. F. Blocher, 1822 Leland Ave.; 1-story frame garage.
- C. M. Bosworth, 1525 Glenlake Ave.; 1-story frame garage.
- W. Boyington, 5751 Wilson Ave.; 1-story frame garage.
- T. H. Braunes, 3620 N. Oakley Ave.; 1-story frame garage.
- Thos. Brown, 4643 Prairie Ave.; 1-story frame garage.
- M. Buckholz, 1516 Thorne Ave.; 1-story frame garage.
- H. H. Cady. 4834 Winthrop Ave.; 8-story frame garage.
- V. Clark; 2-story garage and repair shop, 6816-20 N. Clark St.; $16,000.
- Vito Callatti, 4415 S. Sawyer Ave.; 2-story brick and stone garage, 29x35, rear 415 S. Sawyer Ave.
- Chas. A. Cowley, 1028 N. Parkside Ave.; 1-story frame garage.
- Jas. H. Devitt, 2248 N. Lowell Ave.; 1-story brick garage.
- James Doody, 818 W. 34th St.; 1-story garage and repair shop, 3121-27 S. Halsted St.; $30,000.
- L. W. Elwell, 6024 Kimbark Ave.; 1-story frame garage.
- Matilda Emlon, 938 Leland Ave.; 1-story frame garage.
- M. Evanson, 1161 Eddy St.; 1-story frame garage.
- C. Fahlberg, 6325 S. Whipple St.; 1-story frame garage.
- August Fick, 3640 N. Seeley Ave.; 1-story frame garage.
- John Foley, 1450 Highland Ave.; 1-story frame garage.
- E. W. Forst 4407 Dover St.; 1-story frame garage.
- B. F. Fowler, 6740 Bosworth Ave.; 1-story frame garage.
- Emil Frank; 1-story garage, at 5164 S. Wabash Ave.
- H. Freeman, 3943 W. Chicago Ave.; 1-story frame garage.
- H. A. Gebhardt, 3632 N. Tripp Ave.; 1-story frame garage.
- W. F. Greenwald, 4043 N. Parkside Ave.; 1-story frame garage.
- Wm. Hacker, 3915 Crawford Ave.; 1-story frame garage.
- C. Hall, 1928 Summerdale Ave.; 1-story frame garage.
- V. A. Hellstrom, 25 N. Dearborn St.; 1-story frame garage and repair shop; $55,000.
- H. J. Hillegards, 311 W. 110th St.; 1-story frame garage.
- John M. Hoffman, 3709 Ogden Ave.; 1-story frame garage.
- Holtren Seelye & Co.; 1-story brick garage and repair shop, 1128-29 Rosemont Ave.; $30,000.
- J. S. Hundley, 3132 Vernon Ave.; 1-story frame garage.
- Walter Ingstrup, 2755 Armitage Ave.; 1-story brick garage.
- International Harvester Co., 606 S. Michigan Ave.; 1-story garage and service station; $45,000.
- John Jacoby; 1-story garage, 514-26 Devon Ave.; $60,000.
- Mrs. T. Jokes, 5229 S. Turner Ave.: 1-story frame garage.
- M. Johnson, 410 W. 56th St.; 1-story frame garage.
- Dr. W. T. Kalisz, 1309 N. California Ave.; 1-story frame garage.
- J. G. Keidle, 7335 Clyde Ave.; 1-story brick garage.
- W. Kindell, 7346 Clyde Ave.; 1-story frame garage.
- Jos. Kraus, 4316 Archer Ave.; 1-story frame garage.
- Oscar Landis, 1603 S. Ridgeway Ave.; 1-story frame garage.
- T. A. Langan, 57 W. 72nd St.; 1-story frame garage.
- Jos. T. Lanton, 6511 S. Artesian Ave.; 1-story stucco garage.
- Lucco Larocca, 11,600 S. Michigan Ave.: 1-story garage and repair shop; $40,000.
- H. J. Lehmann, 9626 Vanderpool Ave.; 1-story frame garage.
- A. Levany, 5204 Grace St.; 1-story frame garage.
- Frank Liddle, 2-story brick garage, 2-18 E. Garfield Blvd.; $150,000.
- J. McCullough, care Active Realty Agency, 416 S. Western Ave.; 1-story brick public garage and accessory shop, 80x156, 2517-21 W. Van Buren St.; $40,000.
- McKeown Transportation Co.; 1-story garage and repair shop, W. 59th and Bishop Sts.; $125,000.
- F. B. Mackie, 4256 W. 63rd St.; 1-story frame garage.
- Frank Mansolf, 7309 S. Morgan St.; 1-story frame garage.
- John B. Marolowski, 1922 N. Karlow Ave.; 1-story tile garage.
- Chas. Meier, 6231 N. Paulina St.: 1-story frame garage.
- Jacob Mengel, 14 35 S. Kostner Ave.: 1-story frame garage.
- C. H. Miller, 2209 W. 35th St.; 1-story frame garage.
- Wm. Miller, 325 Giddings St.; 1-story brick garage.
- Wm. R. Miller, 3846 N. Hamilton Ave.; 1-story frame garage.
- Jos. Mitsch, 1831 Berwyn Ave.; 1-story frame garage.
- C. A. Morehouse, 1032 Vernon Ave.; 1-story brick garage.
- C. A. Moulton, 6949 Eberhardt Ave.; 1-story frame garage.
- H. F. Mueller, 1705 N. Keystone Ave.; 1-story frame garage.
- E. G. Mumford, 4002 W. Adams St.; 1-story frame garage.
- National Auto Tire Co., 1005 Irving Park Blvd.; 1-story garage and tire shop, 22x70, Broadway and Montrose St.; $15,000.
- A. N. Nelson, 6183 Norwood Park Ave. 1-story frame garage.
- E. Nelson, 1056 N. Mansfield Ave.; 1-story frame garage.
- Adam Nichols, 1829 Berwyn Ave.; 1-story brick garage.
- A. E. Norman, 1754 Granville Ave.; 1-story frame garage.
- A. G. Olson, 4115 N. Maplewood Ave.; 1-story frame garage.
- Wm. H. Otto, 5000 Windsor Ave.; 1-story brick garage.
- K. Owens, 6609 Knox Ave.; 1-story frame garage.
- Parmalee Transfer Co., 202 S. Clark St.; 1-story brick garage. W. Monroe St. and Racine Aves.; $100,000.
- Wm. Pauly, 4859 Patterson Ave.; 1-story frame garage.
- B. L. Phillips, 1203 Willemac Ave.; 1-story frame garage.
- S. Pozzie, 524 E. 115th St.; 1-story frame garage.
- A. L. Rasmussen, 6622 St. Lawrence Ave.; 1-story frame garage.
- Andrew Ream, 4305 Augusta St.; 1-story frame garage.
- A. Rerson, 3425 Medill Ave.; 1-story brick garage.
- P. F. Reynolds, 327 Belden Ave.; 1-story garage; $2000.
- J. Rezink, 2245 Farragut Ave.; 1-story frame garage.
- Wm. Ricks, 6400 S. Whipple St.; 1-story frame garage.
- A. Ritchter, 6928 S. Lincoln St.; 1-story frame garage.
- A. Rooney, 5218 Washington Blvd.; 1-story frame garage.
- Henry Rose, 513 W. North Ave.; 2-story frame garage.
- W. H. Sanders, 1722 W. 101st St.; 1-story frame garage.
- Philip Scherer, 4754 N. Ashland Ave.; 1-story frame garage.
- Oscar Schmidt, 1457 Edgewater Ave.; 1-story brick garage.
- F. W. Schroeder, 1722 Walden Ave.; 1-story frame garage.
- A. Schumann; 1-story garage and repair shop, 4507-9 Magnolia Ave.; Ave.; $35,000.
- Chas. Shaw, 1318 Lunt Ave.; 1-story brick garage.
- Wm. Spannenberg, 5142 Hutchinson St.; 1-story frame garage.
- Geo. Spreiner, 5943 Wood St.; 1-story frame garage.
- Emil Stumm, 113 Clarkson St.; 1-story frame garage.
- M. Syversen, 1912 S. Kedvale Ave.; 1-story frame garage.
- Leonard Thompson, 3813 Grand Ave.; 1-story garage and repair shop; $30,000.
- J. J. Tuzynski, 2650 N. Sawyer Ave.; 1-story brick and stone garage, 24x57, 250 N. Sawyer Ave.; $7000.
- M. Warner, 3848 Byron St.; 1-story frame garage.
- J. Weinstein, 3350 Polk St.; 1-story brick garage.
- P. J. Weweke, 930 Argyle St.; 1-story garage, 925-30 Argyle St.; $3000.
- A. H. Whistler, 232 S. Sangamon St.; 1-story frame garage.
- W. B. Wilmot, 4213 Gladys Ave.; 1-story frame garage.
- F. W. Winnell, 8327 S. Sangamon St.; 1-story frame garage.
- F. A. Wood, 5407 Greenwood Ave.; 1-story frame garage.
- P. H. Woodruff, 7025 Yale Ave.; 1-story frame garage.
- W. Workman, 7219 S. Morgan St.; 1-story frame garage.
- Jas. F. Wray; 1-story garage and service station, 5137-41 Broadway.

Herrin—Motor Sales Co., Marion, Ill.; 1-story brick public garage, 60x110; $50,000.

Lincoln—Standard Oil Co.; 1-story garage and filling station, Pulaski and McLean Sts.

Peoria—Peoria Auto Parts Co.; 1-story brick public garage, 30x100; $120,000.

Rock Island—Chas. Brady; 1-story garage, 3rd Ave. and 23rd St.; $100,000.

Wilmette—Marble Furniture Storage Co.; 1-story garage; $85,000.

Winnetka—M. J. Sullivan; 1-story garage and service station, 882 Pine St.

Indiana.

Indianapolis:
- Duesenberg Automobile Motor Co.; 2 buildings on W. Washington St.; $45,000 and $80,000.
- Standard Oil Co., Davidson and Loid Sts.; 1-story filling station, New York and Alabama Sts.; $4500.

Knightstown—Brock Oil Products Co., Anderson, Ind.; 1-story garage and filling station.

Mishawaka—R. W. Gayler; 1-story garage and repair shop, Mishawaka Ave. and Main St.

Shoals—Frank Gilkison and Curt Johnson; 1-story garage and repair shop; northeast corner High St. and Railroad.

Iowa.

Boone—Cedar Rapids Oil Co.; 1-story garage and repair shop.

Cedar Rapids—T. R. Warriner, Dow's block; 1-story garage and accessory shop, 1st St. and 2nd Ave.; $20,000.

Keokuk—Aero Oil Co.; 1-story service and filling station.

Manson—Consumers' Service Station Co.; 1-story service station.

Washington—Ralph Schultz; 1-story garage and service station, N. Iowa Ave. and E. 3rd St.; $35,000.

Kansas.

Eldorado—J. W. McClure; 1-story brick and stone trim garage, 68x146; $40,000.

Topeka—Southern Bell Telephone Co.; 1-story garage and service station.

Kentucky.

Corbin—O. G. Catson, Barbonsville, Ky.; 3-story brick garage, 60x115.

Owensboro—R. E. Rogers; 1-story garage and service station, Frederica St.

Louisiana.

New Orleans—Southern Yacht Club; garage for sheltering 300 to 500 cars.

Maryland.

Baltimore:
- National Building & Supply Co., 210 N. Garrison, La.; one-story brick garage, 160x25; $5000.
- Sherwood Bros. Co.; 1-story gasoline service station, 1907-15 N. Charles St.
- S. Randolph Vincenti; 1-story garage and repair shop, 3-7 N. Paca St.; $60,000.

Frederick—Star Motor Co.; 1-story brick garage, 93x375x190.

Massachusetts.

Boston—Thos. H. Connolly, 110 Bower St.; 1-story brick public garage, 120x144, 2566 Washington St.; $70,000.

Michigan.

Birch Run—W. R. Hadsall; 1-story garage and repair shop; $40,000.

Detroit:
- G. J. Buckley, 5195 Loraine Ave.; 1-story garage, 40x80; 480,000.
- Clarence A. Day, 72 Buhl Bldg.; 1-story garage and repair shop; $15,000.
- T. Goodfellow, 517 5th St.; 2-story brick garage, 5th and Marcy Sts., 70x80; $30,000.
- Fred M. Montflor, 115 Windsor St.; 1-story brick and stone garage, 50x160; $15,000.

Highland Park—Pollmer & Ropes, 45 Stale St., Detroit, Mich.; 1-story brick garage and show room, 60x126, southeast corner Victor Ave. and Brush St.; $50,000.

Imlay City—Standard Oil Co.; 1-story filling station, Almont and 4th Sts.

Minnesota.

Borup—Northwestern Oil Co.; 1-story garage and filling station.

Fairbault—Foss Motor Co.; 2-story brick and concrete block garage; $50,000.

Hampton—Standard Oil Co.; 1-story filling station.

Minneapolis:
- S. M. Cameron, 4817 Clinton Ave., S.; 1-story cement and frame garage.
- Frank Danzinger, 3039 S. 40th Ave.; 1-story frame garage.
- Harry Sobelman, 822 S. 17th Ave.; 1-story frame garage.
- C. S. White, 5215 S. 43rd Ave.; 1-story frame garage.

Missouri.

Clinton—Terrel Tire & Rubber Co., 1512 McGee St., Kansas City, Mo.; 2-story tire plant.

Jackson—Thos. Harris; 1-story public garage and repair shop; $45,000.

Joplin—A. L. McKinney, 201 S. Netta St.; 1-story garage and accessory shop, 3rd and Connell Ave.

Kansas City:
- G. M. Baltis, 3801 Wabash St.; 1-story garage and repair shop.
- E. Harvey, 238 Lathrop Bldg.; 1-story garage, 33rd and Guilham Sts.
- Midland Realty Co., 309 Reliance Bldg.; 1-story garage and repair shop 3234 Frost Ave.

St. Joseph—Frank D. Becker; 1-story garage and filling station, 4th and Rosine Sts.

St. Louis:
- Fred Schmidt, 5912 Enright St.; 1-story brick garage, 50x75, 5961 Delmar St.; $18,000.
- Vesper-Buick Automobile Co.; 1-story service station, 100x120. rear wing, 50x210; install automobile machinery; $75,000.

Nebraska.

Lincoln—Lew Polsky 116 P St.: 1-story brick and tile garage, 27x136, 1730 O St.; $10,000.

New Hampshire.

Exeter—A. E. McReel; 2-story brick public garage, 104x40.

Littleton—H. H. Downing; 2-story fireproof public garage, 60x100; $30,000.

New Jersey.

Asbury Park—Andy Lustbaum, Long Branch, N. J.; 1-story garage and supply station, 3rd Ave. and Main St.

East Orange:
- Isaac Blum & Co., 512 18th Ave., Newark, N. J.; 1-story brick and stone trim public garage, 57x222, 100-2 Main St.; $25,000.
- F. & H. Construction Co., 128 Market St., Newark, N. J.; 1-story brick and stone trim public garage, 55x164; $26,000.

Newark—Newark Construction & Investment Co.; 1-story brick and stone trim public garage, 100x100, 274 S. Orange Ave.

Passaic—Philip Simon, People's Bank Bldg.; 1-story brick public garage, 10x80; $18,000.

New York.

Albany:
- Chas. A. Eaton, 62 S. Ferry St.; 1-story brick garage, 50x30, 60 S. Ferry St.; $5000.
- John Fauth, 179 Broad St.; 1-story brick garage, 22x50, 183-85 Broad St.; $6500.

Brooklyn:
- A. & D. S. Realty Corp., 1165 Eastern Parkway; 1-story brick garage, 94x100; $40,000.
- Bay 23rd St. Construction Co., Inc., 181 Bay 17th St.; 1-story brick garage, 27x100, Classen Ave. and 73rd St.; $15,000.
- Brooklyn City R. R., 85 Clinton St.; 1-story brick garage, 100x240; $60,000.
- David Esenberg, 2002 Douglas St.; 1-story brick garage, 49x115, S. E. Cor. Troy Ave. and Pacific St.; $15,000.
- Empire Tinware Co., 33 S. 5th Ave.; 4-story garage, 27x97; $45,000.
- Dominick Gaimare, 35 Roebling St.; 1-story brick garage, S. E. Cor. 11th and Roebling Sts.; $14,000.
- Jos. Gervousky, 690 Broadway; 1-story brick garage, 75x100; $25,000.
- Rich. Hinsch, 257 Euclid Ave.; 1-story brick garage, 45x153; $20,000.
- S. Katz, 392 Bushwick Ave.; 1-story brick garage, 100x135; $35,000.
- Kings Land Co., Inc.; 1260 Broadway; 1-story brick garage, 60x100; $35,000.
- Parkside Improvement Corp., 305 Broadway; 1-story brick garage, 100x125; $5000.
- Harry Procacci; 1-story brick garage, 51x68, northeast cor. 19th St. and 3rd Ave.; $16,000.
- R. Ragonetto, 97 Bay 38th St.; 1-story brick garage, 30x100; $8500.
- A. Reinelling, 1010 Liberty Ave.; 1-story brick garage, 35x175; $8000.
- Rothfield & Weinstein, 271 S. First St.; 1-story brick garage, 100x100, 133 Hope St.; $30,000.
- Shore Road Bldg. Co., 1802 Ave. A.; 1-story brick garage, 125x131; $75,000. Also 1-story brick garage, 40x140; $40,000.
- Webster Bldg. Corp., 390 Saratoga Ave.: 1-story brick garage, 150x200; $75,000.

Jamaica—Anna Hoerning, 2394 Jamaica Ave.; 1-story brick public garage and show room, 155x100; $30,000.

Lawrence—P. Meschere & Son; 1-story brick and concrete block auto painting and machine shop, 51x120; $15,000.

New Hartford—H. Williams, Devereaux Bldg., Utica, N. Y.; 2-story brick and hollow tile public garage, 60x100; $25,000.

New Rochelle—J. G. Patton; 1-story brick and concrete garage, 17x164, Hilltop and Chauncey Ave.; $9000.

New York:
- Samuel Agel, 126 Reid Ave.; 1-story garage and repair shop ;$25,000.
- A. Appel, 27 Cedar St.; 2-story brick garage, 150x195 Park Ave. and E. 168th St.; $350,000.
- Broadway and 126th St. Corp., 126th St. and Broadway; 2-story brick and concrete garage, 100x150, N. E. cor. Broadway and 126th St.; $150,000.
- Edel Realty Co., 1901 Walton Ave.; 1-story brick public garage, 50x82; $85,000.
- John J. Fox, 1908 Bathgate Ave.; 1-story brick and stone commercial garage, 68x108, S. E. cor. 178th and Park Ave.; $60,000.
- Alex. Goodfriend, care L. A. Sheinart, 194 Bowery Ave.; 1-storp brick garage, 60x118, 402-4 E. 122nd St.; $15,000.
- Johnson Estate, 30 E. 42nd St.; 2-story brick garage, 80x92x70, 21-27 E. 2nd St.; $60,000.
- John Kerby, 4187 Park Ave.; 1-story brick and stone commercial garage, 63x100, southeast cor. 178th St. and Park Ave.; $60,000.
- Sam Loewy, 1967 Amsterdam Ave : 1-story brick garage 50x25, 467 W. 157th St.; $8000.
- M. G. W. Realty Co., 277 Broadway; 2-story brick garage, 98x100, N. E. cor. First Ave. and 30th St.; $50,000.
- New York Historical Society, 170 Central Park, W.; 1-story garage, 100x92, 406-12 E. 62nd St ; $25,000 Lessee, Lippman Schumacker, 1126 First Ave.
- Laura T. Philman, 2045 Ryer Ave.; 1-story brick public garage; $70,000.
- Saml. Rubin, 1060 Findlay Ave.; 1-story brick public garage, 65x100; $18,000.
- John E. Sheehy, 256 Broadway; 1-story brick and terra cotta garage, 100x100, N. E. cor. S. Blvd. and 172 2nd St.; $35,000.
- Bertram Smith, 2527 Hughes Ave.; 1-story brick and terra cotta trim public garage, 150x200, N. E. cor. Ditmars St. and City Island Ave.; $45,000.

Poughkeepsie—Thos. Mullen, 33 Lent St.; 1-story public garage, 80x96, Main and Church Sts.; $20,000.

Queens—Morris Goetz, 126 Herkimer St. Brooklyn; 2-story auto school and show room, 30x213, Hoffman Blvd. and Hillside Ave.; $75,000.

White Plains—Brown's Buick Service, 18 Martine Ave.; 2-story brick and stone garage and show room 114x175, S. E. cor. Martine Ave. and Lexington St.

North Carolina.

Charlotte:
- Standard Oil Co.; 2-story garage and repair shop; $125,000.
- O. J. Theis; 1-story garage and repair shop, N. Tryon and E. 8th Sts.

Greensboro—R. K. Motor Co.; 1-story garage.

Kings Mountain—J. L. Julian; 1-story filling station.

Ohio.

Cincinnati—Automatic Garage Co.; 16-story auto bldg.; $800,000.

Cleveland:
- Creswell Realty Co.; 11-story garage and accessory shop, E. 12th St.; $800,000.
- Archie Horwitz 302 Society for Savings Bldg.; 1-story brick commercial garage 90x104; $15,000.
- Jos. Laronge, Williamson Bldg.; 1-story garage and repair shop.
- New Center Garage Co., 12,205 St. Clair Ave.; 1-story brick and terra cotta trim garage, 55x150, 16,205 St. Clair Ave.; $25,000.
- Hugh O'Neil; 1-story brick garage and repair shop, 1544 Oregon Ave.; $30,000.
- M. Weinberg, 7807 Cedar Ave.; 1-story brick commercial garage, 36x60; $12,000.

Dayton—Gerkens Oil Co., 419 Arcade; 1-story filling station, Five Oakes and Forest Ave.; $7000.

Toledo:
- Landman Griffith Co., 1402 Madison Ave.; 2-story brick sales room and service station, 100x332, Adams and Warren Sts.; $150,000.
- Toledo Auto Parts Co., 1310-12 Cherry St.; 1-story sales room and workshop; $20,000.

Youngstown—Isaly Dairy Co., 1-story fireproof garage and repair shop, 1033 Mahoning Ave.; $60,000.

Oklahoma.

Blackwell—H. C. Terriman, 2-story brick filling station, 44x20.

Enid—W. B. Weller; 1-story garage and repair shop, 250 W. Pine St.; $2000.

Oklahoma City—
- T. C. Huff, care G. A. Nichols, Inc., S. W. National Bank Bldg.; 1-story garage and repair shop, 7th and Philips Sts.; $25,000.
- J. R. McCoy, Ardmore, Okla ; 1-story sales and service station, 50x140, 415 W. 4th St.

Oregon.

Portland:
- East Side Mill & Lumber Co.; 1-story garage and repair shop, E. 7th St. and Umatilla Ave.; $19,000.
- White Co., automobile bldg., including display and sales room and service station, Flint and Hancock Sts.; $60,000.

Pennsylvania.

Abbottstown—Walter J. Cromer, 2-story public garage and repair shop, 35x150; $10,000.

Beaver Falls—Jesse E. Metcalf, New Brighton, Pa.; 2-story brick community garage, 40x48; $9000.

Doylestown—A. O. Martin; 1-story stone, hollow tile and stucco garage, 42x34; $15,000.

Hollidaysburg—E. H. Brua, 319 Allegheny Ct.; 2-story brick commercial garage, 60x128.

Laceyville—A. L. Vanderwert & Son; 1-story frame public garage, 30x50.

Lewiston—Keystone Motor Co.; 2-story garage and repair shop.

Mt. Joy—W. B. Rohrer; 1-story concrete block and stucco public garage, 50x200.

Philadelphia—A. Sokolowski, 2560 E. Allegheny Ave.; 1-story garage and repair shop, 8161-65 Almont St.; $6000.

Scranton—S. M. Snook, 1014 Green Ridge St ; 1-story brick public garage, 20x70; $6000.

Tamaqua—Rich. Dudley; 2-story brick public garage, 60x100; $30,000.

Rhode Island.

Providence—Leon E. Danforth, 76 Dorrance St.; 1-story show room and garage, Broad and Byfield Sts.; $45,000.

Texas.

Colorado—O. Lambeth; 1-story filling station, 2nd and Pine Sts.; $5000.

Houston—Humble Oil & Refining Co.; 1-story garage, including machine shop. wood working shop, trim shop and paint room; $10,000.

Virginia.

Norfolk—Philip B. Moser, Law Bldg.; 2-story brick garage, 55x95; $8500.

Washington.

Tacoma—Theodore Specht; 1-story garage and repair shop, 1131 Tacoma Ave.

Wisconsin.

Chippewa Falls—Union Auto Co.; 1-story service station, 18 Grand Ave.

Ladysmith—R. J. Clark, Coloma, Wis.; 1-story brick garage, 60x100; $20,000.

La Crosse—Nash Auto Co.; 1-story garage and repair shop, 6th and Main Sts.

Oshkosh—Robt. Lutz, 1270 Knapp St.; 1-story garage and repair shop; $2.000.

Peshtogi—United Consumers' Corp.; 1-story concrete filling station; $5000.

Plum City—M. M. Smith; 1-story brick and tile garage; $8000.

CONTRACTS AWARDED.

Connecticut.

Bridgeport:

- Benj. Blair, 2851 Fairfield Ave.; 1-story public garage, 36x80; $4500.
- D. Schine & Son, 728 Union Ave.; 1-story public garage, 92x96, for Alds & D'Agostino, 96 Tom Thumb St.; $25,000. Also addition, 57x85, to public garage, 6-7 State St. for Eli Lipshitz, 125 Oak St.; $7000.

Hartford—Salavatore Lambardo & Co., 7 Nelson St.; 1-story public garage, 36x66, 203 Front St., for Paul and Anna Buffins; $10,000.

Maryland.

Baltimore:

- D. H. Jenkins, 2870 Jasper St.; 1-story garage, 51x68, for Harry Markwitz, 1825 El Cambria St.
- J. J. O'Connor, Knickerbocker Bldg.; 1-story gasoline service station, 16x24, for Adams Depuert's Garage, 2810 Pennsylvania Ave.

Frederick—Lloyd C. Culler, Pythian Castle Bldg.; 1-story garage and repair shop, 28x60, for Nicodemus Ice Cream Co.; $5000.

Illinois.

Chicago:

- S. Anderson, 4333 N. Sawyer Ave.; 1-story frame garage.
- E. N. Arnold, 8824 Morgan St.; 1-story frame garage.
- Edward Benson, 1515 Norwood St.; 1-story frame garage.
- P. E. Broderson. 2914 W. North Ave.; 1-story frame garage.
- John P. Businger, 1259 Hood Ave.; 1-story frame garage.
- Leon Carteux, 1240 Lunt Ave.; 1-story brick garage.
- Mrs. Margaret Casey, 4538 N. Spaulding Ave.; 1-story brick garage:
- Chicago Tube Mfg. Co., 1501 W. 15th St.; 1-story frame garage.
- Robert Christiansen, 4527 N. Winchester Ave.; 1-story brick garage.
- L. A. Cohen, 3606 Hourney St.; 1-story frame garage.
- W. V. Conley, 1322 Norwood St.; 1-story frame garage.
- H. Dahl, 4919 N. Albany Ave.; 1-story brick garage.
- Dakof Construction Co., 1439 Fullerton Ave.; 1-story garage, 21x22, 3619 N. Oakley Blvd., for William Gruninger. 3619 N. Oakley Blvd.; $3000.
- H. J. Dix, 6636 University Ave.; 1-story frame garage.
- John T. Dolan. 319 E. 95th St.; 1-story brick garage.
- Thomas Donavan, 5245 Montrose Ave.; 1-story brick garage.
- Clarence E. Doty, 4320 N. Lincoln St.; 1-story frame garage.
- W. C. Dressler, 1504 Olive Ave.; 1-story brick garage.
- Geo. W. Edwards, 1629 N. Minard Ave.; 1-story frame garage
- E. E. Ferguson, 6542 S. Mozart St,; 1-story frame garage.
- Rich. B. Finn, 610 E. 35th St.; 1-story brick garage.
- M. Galler, 1903 S. Ridgeway Ave.; 1-story brick garage.
- F. Gehm, 2215 Belmont Ave.; 1-story frame garage.
- A. L. Gillett, 4041 N. Sawyer Ave.; 1-story frame garage.
- Harry Gillis, 2132 Eastwood Ave.; 1-story frame garage.
- J. E. Gordon, 2329 Washington St.; 1-story frame garage.
- C. F. Grady, 7159 Oglesby Ave.; 1-story brick garage.
- A. F. Guke, 6915 Michigan Ave.; 1-story frame garage.
- E. G. Hatch, 425 Barry Ave.; 1-story brick garage.
- A. A. Haigh, 9075 S. Hoyne Ave.; 1-story brick garage.
- Fred Hatch, 3353 Belle Plaine Ave.; 1-story frame garage.
- D. D. Hepburne, 6321 S. Fairfield Ave.; 1-story frame garage.
- August Herbst, 4045 Greenview Ave.; 1-story brick garage.
- E. B. Jacobs, 6110 Kenwood Ave.; 1-story brick garage.
- A. Johnson. 4647 Belle Plaine Ave.; 1-story frame garage.
- Jas. Kissner, 6017 Dakin St.; 1-story frame garage.
- Mrs. Kurbell, 1038 Mozart St.; 1-story brick garage.
- Paul Lawrence, 11.121 Edbrook Ave.; 1-story frame garage.
- Samuel Lieberman, 3134 Colorado Ave.; 1-story concrete garage.
- F. W. Lippert, 7401 Langley Ave.; 1-story brick garage.
- Paul Loberg. 3723 Palmer St.; 1-story frame garage.
- A. Loseman, 2752 S. Springfield Ave.; 1-story frame garage.
- N. Loziler, 3644 Maple St.; 1-story frame garage.
- R. Mayer, 1740 School St.; 1-story frame garage.
- E. L. Murnahan, 1330 N. Ridgeway Ave.; 1-story frame garage.
- Wm. Murray, 5531 N. Ridgeway Ave.; 1-story frame garage.
- M. O'Meara, 5318 W. Congress St.; 1-story frame garage.
- A. C. Peterson, 4256 Grace St.; 1-story frame garage.
- Alice B. Porter, 5946 S. Marshfield Ave : 1-story frame garage.
- Geo. P. Powers, 6529 Langley Ave.; 1-story frame garage.
- John Quinn, 1229 Addison St.; 1-story frame garage.
- Reidenouer & Erickson, 535 E. 47th St.; 1-story garage, 37x99, 1522 Wabash Ave., for E. Loughi, care E. J. Ohrenstein, 30 E. Ontario St.
- Jos. P. Reiley. 918 N. Laramie Ave.; 1-story frame garage.
- John Rush, 4304 N. Sawyer Ave.; 1-story frame garage.
- Chas. Schinder, 7711 Burnham Ave.; 1-story frame garage.
- Geo. Schmidt, 2223 N. Kedvale Ave.; 1-story frame garage.
- J. W. Schneider, 6445 Forchester Ave.; 1-story brick garage.
- Frank C. Schultz, 3135 Flourney St.; 1-story frame garage.
- J. C. Sharp, 6914 Ridge Ave.; 1-story frame garage.
- Thos. L. Slater, 648 Leamington Ave.; 1-story frame garage.
- Mrs. J. Smith. 4907 N. Winchester Ave.; 1-story frame garage.
- R. M. Sowersby, 7837 Vernon Ave.; 1-story frame garage.
- J. B. Stives, 2249 Leland Ave.; 1-story frame garage.
- N. Stone, 1511 N. Fairfield Ave.; 1-story frame garage.
- V. Stone, 2943 Leland Ave.; 1-story frame garage.
- J. Sturn, 5549 Glenwood Ave.; 1-story frame garage.
- Fred Thara, 5237 Justine St.; 1-story frame garage.
- C. K. Madderen, 355 W. 112th St.; 1-story cement garage.
- Gilbert Moran. 4621 Malden St.; 1-story brick garage.
- Alfred Vernon, 8744 Indiana Ave.; 1-story frame garage.
- Jacob Walters, 6500 S. Ashland Ave.; 1-story frame garage.
- H. Wangenberg, 11,340 Stewart Ave.; 1-story frame garage.
- H. M. White, 6136 Winthrop Ave.; 1-story frame garage.

Illinois.

Evanston—Geo. King & Son, 1028 Wesley Ave.; 1-story garge, for Michael Przybleki, 1213 Ashland Ave.; $18.000.

Oak Park—West Side Oakland Sales Co.: 1-story garage and service station, East Ave. and Madison St.

Maryland.

Baltimore—Price Construction Co., Maryland Trust Bldg.; remodel show rooms and service station. Charles and 20th Sts., for A. Robinson White, 2 E. Lexington St.

Massachusetts.

Boston—M. W. Ryan, 2 Central Sq., Cambridge, Mass.; 1-story public garage, 33x113, 459 E. First St., for Sampson & Coleman, 10 Hawley place; $15,000.

E. Boston—Martin W. Ryan, 2 Central Sq.; 1-story garage, 32x115, 495 1st St., for Sampson & Coleman, 10 Hawley Pl.

New Bedford—Morris and A. I. Rudsik, 40 Court St., Boston; 1-story sales room and service station, for Motor Sales Co.. 614 Pleasant St.; $100,000.

Springfield—Cordner & Montague, 373 Bay St.; 2-story public garage, 110x170, for Thomas C. Cordner, 373 Bay St.

Michigan.

Detroit—H. Greenblatt, 100 Leicester Ct.; 1-story garage, 50x100, for Oscar L. Buler, 760 Chene St.; $14,000.

Missouri.

St. Louis—C. D. Doll, 1510 Highland Ave.: 1-story garage, 35x80, 1405 Cedar St., for Hirch Bros.; 14th and Grayson Sts.; $8500.

New Jersey.

Harrison—Jas. J. Dunn, 289 Maple St., Kearny. N. J.; 1-story garage, 50x100, for Worthington Pump and Machine Co.; $10,000.

New York.

Long Island City:

- Carrucci & Wolpert, 186 Ramsen St., Brooklyn; 1-story garage, 70x100, for Cross & Brown, 18 E. 41st St.; $40,000.
- Interstate Land Holding Co., 44 Wall St., New York; 1-story garage, 70x100; $25,000.

New York:

- I. Langner, 700 Trinity Ave.; 1-story commercial garage, 24x110, for estate of Geo. F. Johnson, 30 E. 42nd St., $30,000.
- Schroder & Koppee, 250 Madison Ave.; 2-story storage garage, 100x100, 841-49 10th Ave., for Ria Construction Co., 291 Broadway; $70,000.

Ohio.

Cleveland:

- Louis Cavanna, 2202 E. 58th St.; 1-story brick garage and repair shop, 40x80, 35th and Orange Sts.
- Craig Curtis Co., Cook Bldg.; 3-story auto service and sales room, 77x250, 8807 Broadway, for Cataract Motor Sales Co., 8817 Broadway; $100,000.
- S. Papp, 2038 W. 28th St.; 1-story brick garage and repair shop, 48x72, 1926 W. 24th St.; $10,000.

Pennsylvania.

Du Bois—Hopfer & Sons; 1-story brick sales garage, 50x75; $10,000.

Gettysburg—Jas. A. Weikert; 1-story public garage, 60x1 0, for Peckman & Ott; $25,000.

Lancaster—Walter C. Zook, 24 S. W. End Ave.; 2-story public garage and machine shop, 52x86, 36 Chestnut St., for Batdorf Sales & Servce Co.

Philadelphia:

- Antonio Alessio; 2-story garage, 16x27, 2467 Martha St.; $1800.
- Jacob Bender; 1-story garage, 48x113, 409-13 Moore St., for Hyman Goldman; $13,000.
- Claude L. Davis; 1-story garage, 15x15, 5720 Cherry St.; $3000.
- Thos. L. Drummond; 1-story garage, 20x50; $5000.
- Geo. H. Evans; 1-story garage, 10x24, 1500 N. 17th St., for Wm. Hagedom; $1100.
- H. J. Hanna Co.; 1-story garage, 122.2x30.2, S. E. cor. 58th St. and Woodland Ave.; $11,000.
- Edward Holland; 3 1-story garages, 19x56, with wing, 36x80, $9000; 19x29. with wing, 18x80, $3600; 19x38. with wing, 29x89; north side Sansom, west 15th St.; $4900.
- Saml. Jarinsky; 1-story garage, rear 2020 Arch St., for Geo. Hynes.
- E. Johnson & Sons; 1-story garage, 27.6x14, 16x44, 36x16, rear 2609-11 Federal St.; $3000.
- G. Kaplan; 1-story garage, 60x100, 620 Spruce St.; $12,000.
- L. Kaplan; 2-story garage, 22x60.4, 710 De Lancey St.; $1500.
- N. Littman; 1-story garage, 36x47 and 18x14, 421-23 Gaskill St.; $5000.
- Frank Mark; 1-story garage, 80x16, N. W. cor. Somerset and Lambert Sts.; $2500.
- Wm. A. Patterson; 1-story garage, 22x112, rear 4633-41 Spruce St.; $8200.
- Giovanni Scalla; 1-story garage, 17x38, 1009 Kater St.; $1200.
- Harry Snyder; 1-story garage, 17x38, 4213 Frankfort Ave.; $2400.
- Frank I. Wintz; 1-story garage, 13.6x13.8, rear 1337 Parrish St., for Dr. Lambert Ott; $360.

Rhode Island.

Providence—Gilbane Bldg. Co., 96 Harris Ave.; 1-story public garage and service station, 100x100; $40,000.

West Virginia.

Martinsburg—R. R. Filler Co.; 2-story garage and show room, 99x53, for Stephen Bowers.

Wisconsin.

Sturgeon Bay—Edward Olsen; 1-story garage, 40x100. for J. C. Dana Co.; $10,000.

ACTIVITIES IN GARAGE AND REPAIR SHOP FIELD

Happenings of the Month Briefly Noted and Classified by States and Towns—New Places of Business Opened, Sales and Transfers.

Alabama.

Andalusia—Darling Motor Co. open garage.

Arkansas.

Bentonville—Doke Motor Co. will rebuild burned building.

Little Rock:
- Carl and Bernard Guenter will remodel building for drive in station and install complete vulcanizing plant.
- Showmaker Garage opened at Markham and Center Sts.

Marianna—Motor Car Co. will rebuild burned garage.

Ozark—Anderson Russell will open garage and filling station.

Florida.

Jacksonville—O. P. Woodcock will open garage and repair shop.

Sanford—Cook Auto Co. will open garage on Park Ave.

Georgia.

Thompson—R. E. Perry will rebuild garage.

Illinois.

Anna—H. C. Harthine opened garage and service station, 128 30 W. Davis St.

Astoria—S. H. Mansfield opened garage and repair shop, Birches Bldg.

Beardstown—F. W. Meyers will open garage and repair shop, 4th and Bay Sts.

Bloomington—John A. Beck Co. will open garage and repair shop.

Blue Island—Habien Bros. opened garage.

Bolivia—Graham Bros. will open garage and accessory shop.

Cambridge—Arthur Crawford sold auto business to Dr. McMullen.

Canton—Anderson opened garage and vulcanizing shop.

Carterville—L. C. Bayless opened garage S. Division St.

Cary—Frisch Bros. purchased Newbold Garage.

Chillicothe—Nelson Brownfield leased Crown Garage and Repair Shop.

Decutur—Percy W. Gebhart opened garage and service station, 1063 Water St.

De Kalb—Harold Bean opened garage and repair shop.

Des Plaines—Chas. Angebauer installed complete vulcanizing equipment in garage and repair shop, 223 W. Park Ave.

Dixon—Guy Weistead opened storage battery and service station, 83 Peoria Ave.

Effingham—Lane Motor Sales Co. will open garage and repair shop.

Elorado:
- Cummins Motor Car Co. will open garage and sales room, 4th and Railroad Sts.
- Johnson Meyers will open garage and repair shop, Oregon St.

Evanston—Detroit Electric Car Co. of Illinois purchased Fashion service station Clark St. and Benson Ave.

Galesburg—E. F. Byram opened garage and service station, 143 E. Ferris St.

Henderson—Shaver White will open garage and accessory shop.

Jacksonville:
- S. W. Babb opened garage and repair shop.
- Bergon Motor Co. leased repair shop to Eugene Caldwell.

Leaf River—Geo. G. Meyers will open garage and accessory shop.

Lewistown—Geo. Staton will open garage and repair shop, S. Main St.

Marengo—Glemm York opened garage and vulcanizing shop.

Minonk—Jos. E. Carrithers opened garage and vulcanizing shop, Fort Bldg.

Murphysboro—J. A. Barth will build 1-story brick side addition to public garage, 52x80; $20,000.

Nauvoo—John Dusenberry opened garage and service station.

Oak Park:
- Buick Motor Co. opened sales room and service station, Euclid and Madison Sts.
- Metropolitan Motors Co. opened garage and sales room. Madison and Harlem Sts.

Ottawa—H. Ward Conde will enlarge garage and repair shop.

Paris—Carl Farnham opened garage and repair shop.

Penfield—John Schoom converted St. Lawrence hall into garage and repair shop.

Peoria:
- Saml. Marcus and Wm. Stark took over Wearwell Tire & Accessory Co.
- Smith Briston opened garage and repair shop, 103 Ellis St.

Pontiac—W. H. Kimball sold interest in Bradley Kimball Garage and Repair Shop to Barry D. Nolan.

Riverdale—Interstate Battery Service Co. opened garage and service station. 17,046 Michigan Ave.

Rochelle:
- Graves Holmes sold auto business and building to D. W. Kelly & Co.; $33,750.
- Russel Hamaker purchased interest in Rochelle Battery Electric Co.

Rock Island—Robt. P. Galbraith converted Empire Theater building, 1907-15 4th Ave., into garage and repair shop.

Savanna—Earl Ritchie and Earl Ritnour opened garage and repair shop, Quincy St.

Saybrook—Carl Struebing opened new garage.

Springfield—Owen Campbell and Cleveland Saluson opened garage and repair shop, 500 S. 11th St.

Spring Valley—J. V. Frail opened garage and repair shop, Dakota St.

Strausburg—Swigert Service Co. will open garage and repair shop.

Sullivan:
- Leslie Atchison opened Vesta Battery service station in Weidner & Shirley Garage Bldg., Jebberson St.
- Carl Wolf Garage and Repair Shop enlarged.

Sycamore—Edward Maker and John Ryan opened garage and service station, 119 N. Maple St.

Tuscola—Frank Koogler opened branch garage and repair shop.

Washington—E. E. Habecker opened garage and repair shop.

Waukegan—Barrett & Burgett will open garage and repair shop, Ash St. and Grand Ave.

Williamsfield—Moon Motor Co. converted electric light building into garage and sales station.

Windsor—Rose Price opened garage and repair shop under management of Harold L. Cathin.

Indiana.

Anderson:
- Acme Garage and Auto Wash Co. opened garage and repair shop, 621 Meridian St.
- J. Richardson purchased Simmons Moneyhun Garage and Repair Shop, E. 9th St.

Auburn—Wm. Kessler will open garage and accessory shop.

Batesville—Batesville Auto Co. will open garage and repair shop.

Bloomington:
- W. P. Dill will open garage, tire and service station, E. 3rd St.
- Miltenberger & Sampson purchased Hayes Chestnut Garage and Accessory Shop, College Ave. and 4th St.

Brazil:
- C. M. Wilson purchased Service Garage Co.
- L. W. Winn & Son opened garage and repair shop, N. Franklin St.

Columbus—G. Griffith sold Cut Price Tire Store, 4th St., to J. K. Redmond.

Corydon—Saffer & Kirkham will open garage and service station, Market St.

Danville—Danville Motor Co. moved into new quarters in County Fair Bldg., Main St.

Darlington—Wm. C. Painter opened garage and repair shop. Franklin St.

Elkhart—Edward A. Fisher opened garage and repair shop, 117-19 E. Franklin St.

Franklin—Snow Cloverdale opened garage and repair shop.

Gary—Walter M. Newkirk opened garage and repair shop, 27 W. 15th Ave.

Goshen:
- W. V. La Rue & Sons opened garage and repair shop.
- S. F. Thomas opened repair shop in Harwood Machine Shop, 220 N. 7th St.

Greensburg:
- A. F. Brockelmier and Elmer Jones opened garage and sales room.
- Jos. M. Tucker converted livery stable on W. Main St. into garage and repair shop.

Huntington—Challenge Tire Co., Market and Warren Sets., closed out business.

Kokomo—Filling Station Corp. opened at Washington St. and Markland Ave.

Ladaga—E. Aldwell opened garage and accessory shop.

Lebanon—Albert Miller & Son sold garage and repair shop to G. W. Patterson.

Ligonier—Fred Kiester opened garage and service station.

Marion—Geo. Dunn and J. L. Geary will open sales agency and service station, 104 Washington St.

Monticello—B. & H. Auto Sales Co. opened garage.

Mt. Etna—Martin Bros. opened garage and accessory shop.

Muncie—Dunn Motor Co. opened garage and service station, Shoemaker Bldg., Main St.

New Albany—National Garage & Repair Shop opened, 216-20 E. Market St.

New Castle—Stanley Automobile Co. opened sales room and garage, Dovery Bldg., N. Jefferson St.

Paoli—West Side Auto Co. opened garage and accessory shop, W. Main St.

Rosedale—Wood & Miller opened garage and accessory shop, Main and Middle Sts.

Shelbyville—Market-Meyers' Garage, E. Washington St., changed hands.

Terre Haute—Quarry Grossman opened garage and repair shop. 18-20 Ninth St.

Iowa.

Burlington:
- Sheagren Hunt Garage and Repair Shop opened on Washington St.
- Stang Service Station moved to 209 N. 5th St.

Cedar Rapids—Geo. B. Shaler will open garage and service station, 2986 1st St.

Centerville—A. H. White will open garage and service station, E. Elm St.

Charles City—A. T. Cates opened garage and repair shop, Wentland Bldg.

Chelsea—Jos. Vavra will open garage and repair shop.

Davenport—Jos. Earl opened tire and vulcanizing shop, 105 W. 4th St.

Des Moines:
- Guaranty Sales Co. opened garage repair shop and accessory store, 1194 Grand Ave.
- Thomas & Biddle sold Whiteway Garage. 917 W. Grand Ave., to H. O. Corcoran.

Dows—Snyder Kayser Co. will open garage and accessory shop.

Marengo—Cecil Dillon opened garage and service station.

Nashur—Carl F. Patterson sold garage and service station to L. E. Harrison.

Osage—Geo. Birum moved into new garage and repair shop.

Reimbeck—Holck Motor Co. opened garage and repair shop, Blackhawk and Grundy Sts.

Sioux City—Wm. Clulow will open garage and service station, 11th and Douglas Sts.

Waverly—Guy Carpenter converted Central hotel into garage and repair shop.

Woodward—G. J. Novack opened garage and repair shop.

Kansas.

Emporia—A. W. Smith opened garage and accessory shop, 13 E. 6th St.

London—Williams Motor Co. opened garage and supply shop, Main St.

Parson—Foster Fordyce sold tire repair shop to Roy Sherwin.

Pittsburg—While & Woody will open garage and supply shop, E. 3rd St.

Kentucky.

Bowling Green—Bowling Green Garage will rebuild burned building.

Henderson—Young Garage rebuild burned building.

Hickman—C. H. Pate and Austin Voorhees opened garage and accessory shop.

Lexington:
- C. N. Manning and Geo. K. Granves will open garage and repair shop.
- Bruce Pieratt and Wm. Doyle opened garage and repair shop, 573 W. Main St.

Louisville:
- B. F. Jarboe, 406 S. 8th St., will open garage and supply station.
- Louisville Motors Co. opened garage and service station, 12th and Broadway.

Owensboro—Young's Garage will rebuild burned building.

Smithfield—Ross & Brown opened garage and accessory shop.

Louisiana.

Houma—Daigles Garage will rebuild burned buildings.

New Orleans—Gulf Motor Co. opened service station, 1521 Polymuia St.

Maryland.

Lauree—Midway City Garage and Public Service Station will rebuild garage, Baltimore and Washington Blvd.

Sandy Springs—Jacob W. Bird will rebuild burned garage.

Michigan.

Alma—Johnson & Thompson opened garage and repair shop.

Byron Center—Holleman Detveerd Auto Co. will open garage and accessory shop.

Capac—L. L. Wheeler will open garage and repair shop.

Coleman—Renner Bros. sold garage and service station to D. P. Burke.

Escanaba—Cloverland Oil Co. moved gasoline service station to Bloom Bros.' Garage, 1623 Ludington St.

Grand Rapids—C. B. K. Electric Service Co. opened garage and service station, 215 Division Ave.

Howell—Alger Soule and Richard O'Brien opened garage and repair shop, old M. E. Church building, W. Grand River St.

Kalamazoo—Howard J. Cooper opened garage, Main and Park Sts.

Manistee—Thompson Auto Co. opened garage and repair shop.

Mt. Clemens—Priehs Bros. opened garage and sales room, Macomb St.

Niles—Improvements to Stover Auto Sales Garage; H. A. Milburne, Mgr.

Pontiac—A. T. Miller Auto Supply Co. opened garage and filling station, Oakland Ave. and Saginaw St.

Watervliet—McKenney Auto Service Co. opened garage and service station.

Wolverine—Mack Storage Battery Co. opened garage and service station, 293 E. Jefferson Ave.

Minnesota.

Pine City—Paul W. Perkins will build brick addition to public garage, 48x60; $25,000.

White Bear Lake—J. W. Landrigan opened garage and repair shop, White Bear Ave.

Columbus—City Garage owned by W. G. Davis and Joe I. Cook will rebuild burned building.

Missouri.

Jefferson City—Heisinger Bros. sold garage and repair shop, E. Main St., to Bellman Bros.

Kansas City—Midland Garage will rebuild burned building, 3230 Troost Ave.

Kansas City—10th Garage and Sales Co. will open public garage and repair shop. 10th and Wyandotte Sts.

Louisiana—Jos. A. McCune & Son opened garage and repair shop, t7h and Georgia Sts.

Montgomery:
W. H. Blake will rebuild burned garage.
Hanson Smith will rebuild burned sales building.

St. Louis—Compton Heights Garage will build rear addition, 45x100, to building. 1810 Michigan Ave.; $20,000.

Montana.

Columbus—Henry Snyder sold garage and repair shop to Everett Bryant.

New York.

New York:
Wm. Lowe, 587 E. 181st St., will make alterations to 2-story garage, N. W. cor. 70th and Exterior Sts.
F. H. J. Walker, E. 61st St., will make alterations to two-story brick garage, 130-34 Chrystie St.

North Carolina.

Ayden—Midway Garage will rebuild burned garage.

Goldsboro:
Southern Motor Co. will rebuild burned garage.
Farrington & White will open department for manufacturing parts, etc.; will also install foundry equipment.

High Point—High Point Motor Co. will rebuild burned auto plant.

La Grange—L. F. Davis will rebuild burned garage.

Ohio.

Cincinnati—Chas. Schiear Motor Car Co., 9th and Sycamore Sts., will convert brewery into garage and service station; $200,000.

Cleveland—Eller Motor Co. opened garage and service station, Euclid Ave. and E. 70th St.

Columbus—Cole Motor Sales Co., 630 N. High St., will open garage and sales room, E. Broad St.

Hamilton—Warren H. Wilkinson will open garage and service station, 115-23 S. Front St.

Lakewood—Lakewood Auto Sales Co. will open garage and accessory shop, 17,518 Detroit Ave.

Newark—Clyde Bowman sold garage and repair shop to W. B. Winn.

Portsmouth—New Method Vulcanizing Co. moved into new quarters, 921 Chillicothe St.

Van Wert—Excel Tire & Rubber Co., Wadsworth, opened branch repair shop.

Oklahoma.

Holdenville—City Garage will rebuild burned garage; S. E. Stewart, owner.

Pennsylvania.

Homestead—J. F. Scott & Co., 500 Second Ave. will rebuild burned garage.

Lebanon—Chas. V. Arnold will open garage and repair shop, Weidman St.

Meadowlands—J. B. Kelly sold garage and accessory shop to Hudak, Davis & Co.

Philadelphia:
Jos. O. Vavy will build addition, 16x13, to garage, 1723 N. Orianna St.; $6000.
Vim Motor Truck Co. purchased U. S. Midvale Ordnance plant, Fox St. and Roberts Ave.; will expend $1550 for repairs.

Pottsville—Frank Weston will open garage, 420 S. Center St.

Towanda:
Coalbaugh & Cranmer will make alterations to rear of public garage, 602 Main St.; $16,000.
Gillette & Wheller will build concrete block rear addition to public garage, 701 Main St.; $10,000.

Wilkes-Barre:
Lee Bettenbender will open garage and service station, Center Ave.
Durkin Bros. will open garage and repair shop, 203-4 S. Washington St.

South Carolina.

Laurens—Thomason's Garage opened in Roper building, W. Laurens St.

Tennessee.

Lewisburg—Best Garage, owned by Roy Colley, will be enlarged.

Memphis—Dave Derman and Harry Buglach will open garage and service station, 339-49 Monroe Ave.

Pulaski—Auto Supply House, opened garage and repair shop.

Rockwood—Perry Bros. opened repair shop, Cooper Bldg., Rockwood Ave.

Rome—T. G. Gann opened garage and repair shop.

Selmer—C. D. Taylor opened garage and repair shop.

Texas.

Abilene—Benj. Holmes will rebuild burned garage.

De Kalb—South Garage will rebuild.

Iowa Park—City Garage, owned by G. P. Gauntt, will rebuild.

New Braunfels—Alwin Kroeche will rebuild garage.

San Augustine—Tinsley Garage will rebuild burned garage.

Stamford—Chevrolet Automobile Co. will rebuild burned building.

Thrall—A. Wait & Co. will rebuild burned garage.

Waco—E. M. Cook, 330 N. 8th St., will rebuild burned garage.

Virginia.

Danville—Carroll Tire Co. will rebuild burned building.

West Virginia.

Charleston—R. B. Stone will rebuild burned factory building.

Wisconsin.

Alma Center—Johnson Bros. converted Hardtke Bldg. into garage and repair shop.

De Pere—Miller Auto Co. opened garage and repair shop, George St.

Kewaunee—W. A. Cowell will open garage and repair shop.

Klondike—Rolland Holtger opened garage and repair shop.

Lake Mills—Pirwitz Motor Co. will open garage and repair shop Main and Madison Sts.

La Crosse—Oakland Garage remodel 3-story bldg., Front and Main Sts.; $15,000

Mazomanie—Welsch & Son opened auto supply and repair shop, Denu Bldg.

Menasha—Mike Kotowski, proprietor Star Auto Garage, 361 Chute St., opened garage and repair shop, Schubert Bldg.

New London—Milo Smith opened garage and repair shop, Water St.

Oshkosh—Menasha Motor Car Co. will open garage and repair shop, Chute St.

Viroqua—Chas. Kuebler will open garage and service station, N. Rock St.

TERSE NOTES FROM THE SOUTHWEST.

Kansas.

Downs—Ray Zumwalt opened battery and repair shop, Morgan Ave., representing USL battery.

El Dorado—Detwiler & Milburn bought A. C. C. Garage, 212½ N. Gordy St.

Esridge—R. C. Day's Garage destroyed by fire; loss, $20,000, partly insured; 15 autos burned.

Harper—M. I. Failler, formerly with Big Four Radiator Co., Anthony, opened radiator shop in building east of Citizen's State Bank.

Kingman—Cheatum & Co. sold Cannonball Garage to W. R. Harroule of Pretty Prairie and Bob LeFever.

Lewis—J. C. Williams leased Santa Fe Garage of R. W. Lehman.

Neodosha—R. E. Henderson sold garage building, 8th and Main Sts., to A. W. Bailey.

Sterling—White Motor Co. bought Owsten & Gilmore Garage; mgr., Geo. Schleiter.

Missouri.

Amsterdam—W. H. Dye leased Thompson Bros.' repair shop, Amsterdam Garage Bldg.

Belton—Crouch & Hundley purchased Golden Rule Garage.

Bresheur—Emery and Milton Keller purchased lot of R. W. Propst on the square and will erect cement or hollow tile garage, 44x90.

Brookfield—J. W. Maxwell & Son completed repair shop.

Carthage—Joplin Oil Co. constructing filling station, Central Ave.

Chaffee—Roy Bush opened Frank Alsebrook's Garage, Main St. and Wright Ave.

Clarence—Ruby Rennier bought Illinois Oil station of C. M. Whittenburg.

Cowgill—Loy V. Minghini moved Palace Garage from Opera House Bldg. to Berlincourt stand, Main St.

Flat River—St. Francois Motor Co. opened Ford sales and service station, Silsby & Murphy Bldg.

Laclede—A. G. Grees leased garage to J. F. Males, Chilicothe.

Marshfield—Freeman Randolph bought half interest of brother, Irwin, in Randolph Bros.' Garage, E. Jackson St.

Oak Grove:
F. C. Claycomb and Geo. Hutchens, formerly of Shelby Motor Co., open garage, W. J. Richardson Bldg.
R. C. Hague sold interest in garage business.

Pleasant Hill—Bean Knorpp opened Exide battery charging station, farm light plant agency and heating plant store, Furniture Store Bldg.

Tuscumbia—F. L. Thompson, blacksmith, bought half interest in Tuscumbia Garage.

Versailles:
D. K. Driver bought garage of Reed & Thompson, N. Fisher St.
August Heineman purchased interest of Don Carlos in Carlos & Heineman's Garage.

Oklahoma.

Arnett—Thomson's Garage bought by Floyd Freeman.

Buffalo—Dan Neathery purchased interest in People's Auto Supply Co. of Criswell & Weese.

Kiowa—H. V. Bosley bought Unique Garage of C. S. Lewis & Son.

Tulsa:
Alco Garage opened at 16 E. 11th St., capacity 200 cars; owners, R. J. Allison, Jr., W. E. Allison, Mr. Rothstein.
Kelly Tire Sales Co. moved to 715 S. Cheyenne St.; mgr., E. B. Altepeter.
Oklahoma Battery & Suppy Co., 11 W. 7th St., purchased by F. M. Tennell, C. H. Merrican and F. H. Weiss; agent for Prest-O-Lite batteries, gas tanks and appliances.
Tulsa Boiler & Machinery Co. opened all-night battery service station, 707 S. Boulder Ave.; distributor of Paterson and Maibohm cars and Superior batteries; mgr., H. P. Kay.

Texas.

Austin—Everready Battery Station moved to 408 Congress Ave.; John L. Martin, mgr.

Claude—Donald McGregor of Miami joined Watt Smith in Magnolia Garage enterprise.

Dallas—U. S. Tire Co., N. Y. City, established headquarters with G. W. Manchester as agent.

Galveston—Jasper Auto Garage, with cars, parts and accessories, destroyed by fire; loss, $75,000, partially insured.

Honey Grove:
National Oil Co. is to resume work on filling station, Main and 7th Sts.
Wood Motor Co., W. H. Wood, mgr., opened service garage.

Houston—R. L. O'Brien resigned as manager of Houston branch of Fisk Rubber Co. of Texas, to accept position with Miller Bros., overall manufacturer. E. N. Reifel from San Antonio Fisk branch succeeds Mr. O'Brien.

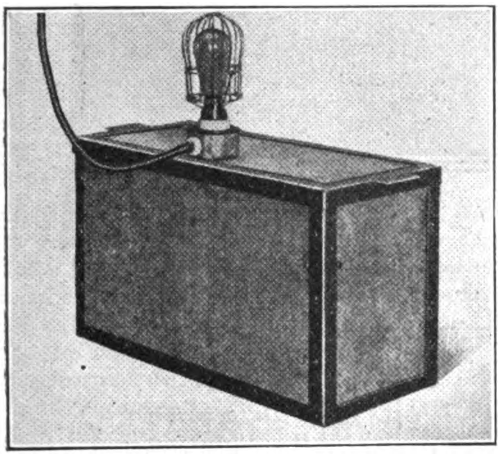
Mexia—Limestone Motor Co. awarded contract for erection of large warehouse in S. Mexia.

Orange—Gulf Motor Co., Division St., purchased from R. H. Craves by Jesse Gunstream and Gilbert McDonald.

Strawn—Jones & Matthews opened battery station and will also handle accessories.

ACCESSORIES DEPARTMENT

The Hyrate Electric Oven is said to give practical results in saving time and labor, as well as breakage in battery tear down. The manufacturer also claims that it has the distinct advantage that no labor is required while the battery is being heated, and with the Electric Oven the cells are heated not only rapidly, but fairly and evenly, and without burning or charring the tray or rubber parts, and thus danger from explosion of igniting gases in the cells is eliminated. They also claim that the Hyrate Electric Oven will do the work of several steam ovens in actual output, as there is no steam gauge to watch, or work of filling the boiler, as with the Hyrate Electric Oven the external solid parts of the battery are thoroughly heated before the solution rises in temperature, so that the plates are not injured by the heat.



The Hyrate Electric Oven is manufactured in two types, one for from 110 to 125 volts, and the other from 220 to 250 volts. It will operate on either direct or alternating current.

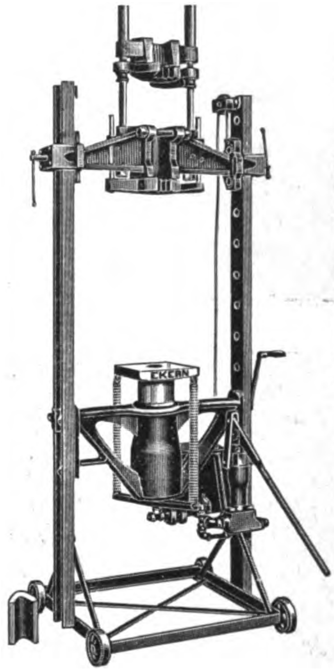
Manufactured by Service Station Supply Co., Detroit, Mich. List price, $38.50.

Ekern's Hydraulic Arbor Press is a new appliance which is especially designed for service in the garage, machine shop and factory. While it may be put to many uses it is stated to be especially adapted to force gears, pulleys, collars or bushings on or off shafting without defacing parts, also for straightening shafting, bars or axles, forming metal parts and many other purposes.

The press is built adjustable so the range of work it will do is practically unlimited. It is mounted on wheels so that it may be rolled to any part of the shop and after service may be put out of the way, thus economizing valuable floor space.

This press has a push up extension instead of down and thus with the extension bolts and the extra cross head, which is used when pressing parts on long shafts, its capacity is claimed to be practically unlimited.

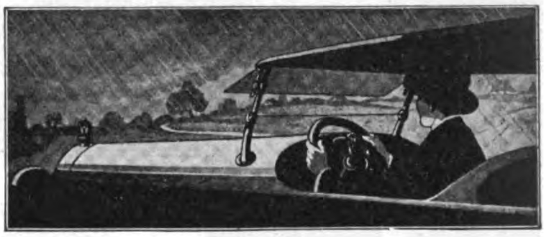
Detailed description: Capacity, 32 tons; distance between standards, 30 inches; floor space, 31x34 inches; base strong; pump strong, simple packed piston with check valves, placed for convenience of operation; cylinder, heavy cast, bolted to two heavy channel steel upright standards; ram, hollow cast, machined to fit cylinder; diameter, six inches, with eight-inch stroke; lower plate, 11x13 inches, cast to ram; upper plates, one circular and one circular with V cut in for letting small rods or shafting by; springs attached to return ram quickly; cross head very heavy with 3½-inch U opening adjustable every five inches up to 48 inches from lower ram plate, being raised and lowered by cable over pulley arrangement and fastened with follower castings with heavy lugs which pass through channel standard into cross head and quickly adjusted and forced into place by heavy screws on each side; weight, 800 pounds without extras.



Manufactured by the Ekern-Turk Manufacturing Co., Pipestone, Minn. Distributed by H. G. Paro Co. 1412 South Michigan avenue, Chicago, Ill. Prices and literature on request.

Pickard's Windshield Protector is especially designed to afford a means of protection against the sun's glare by day and the piercing rays of headlights on approaching cars by night. It is made to fit all models of cars and can be easily adjusted to suit the vision of the individual driver. It is stated that it will not whip with the wind, is substantial and rigid, and is made with a strength that will withstand all jars and bumps.

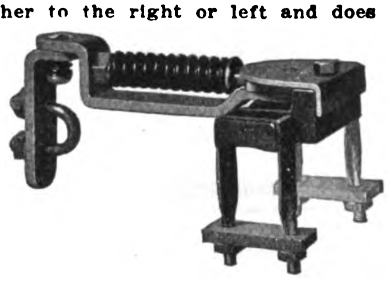
It is constructed of genuine Agasote board, bound on all four sides with U-shaped steel, covered with Never-Leak top fabric and fitted with brackets substantially made. It can be curved to fit any top and will remain in the desired position permanently. The Pickard Windshield Protector is not only recommended for its utility, but it is also said that it will add to the appearance of any car, being built along lines of harmony and refinement as to detail. It is secured to the car by clamps of fine quality bronze which will not rust or corrode, one set being designed for the majority of touring cars, a second for extra large windshield posts, and still another for closed models. In ordering, the name and model of car should be given, so that the proper clamps may be supplied.



Manufactured by the T. W. Pickard Co., Columbus, O. Literature and prices on request.

The Balcrank Stabilizer for Ford Cars is an aid to ease in steering, is attached to the front axle and tie rod, strengthening, it is claimed, the entire steering mechanism.

It is stated that the Balcrank Stabilizer cannot get off center, lock or freeze, and allows the front wheels to be turned either to the right or left and does not interfere with steering. When driving straight ahead the stabilizer aids the wheels to run straight.



The Balcrank Stabilizer is made of high grade material throughout and is easily attached by any repairer in a few minutes time without the use of any tools other than a wrench. Full instructions accompany each set, showing the method of attaching.

Manufactured by the Cincinnati Ball Crank Co., Cincinnati, O. Price, $6.75.

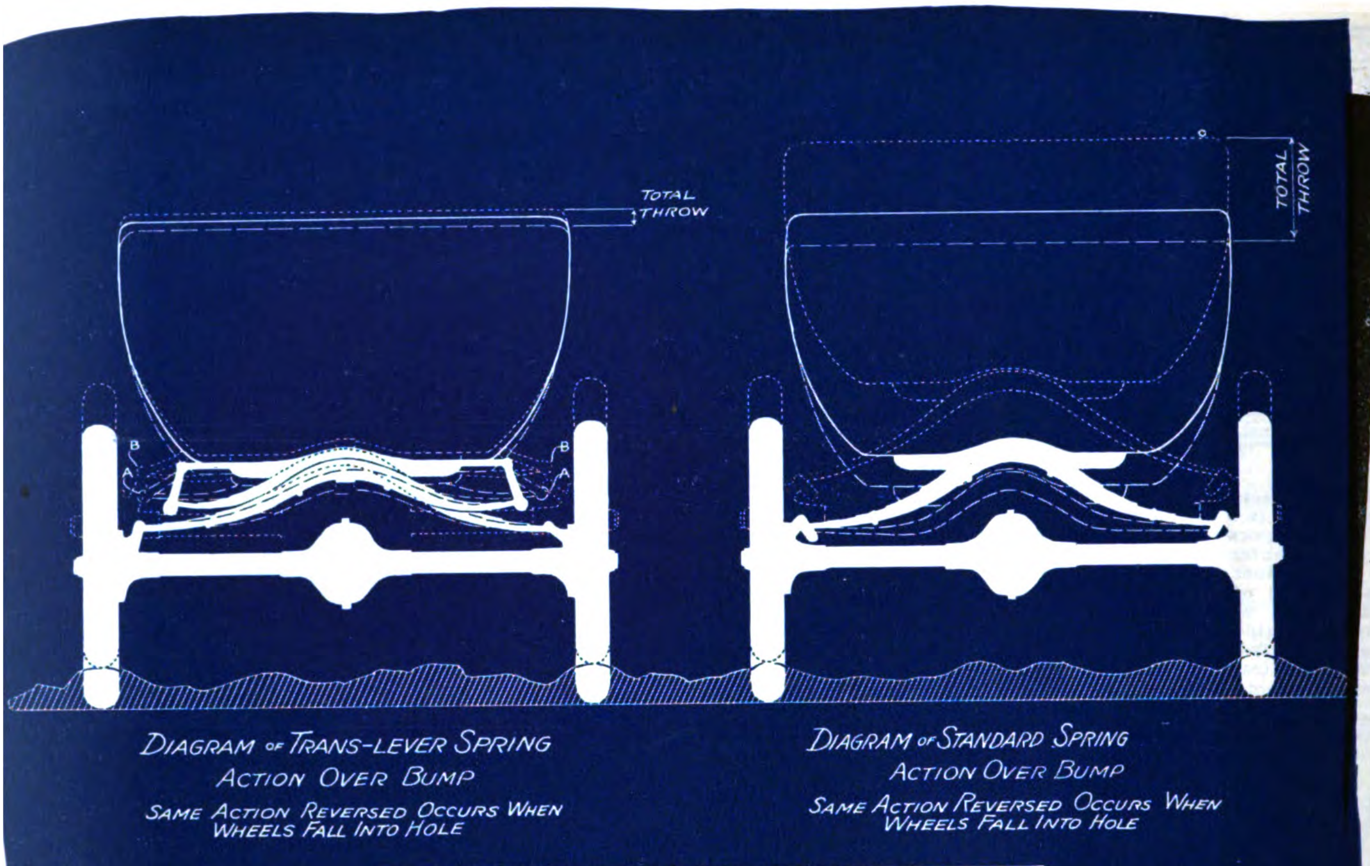
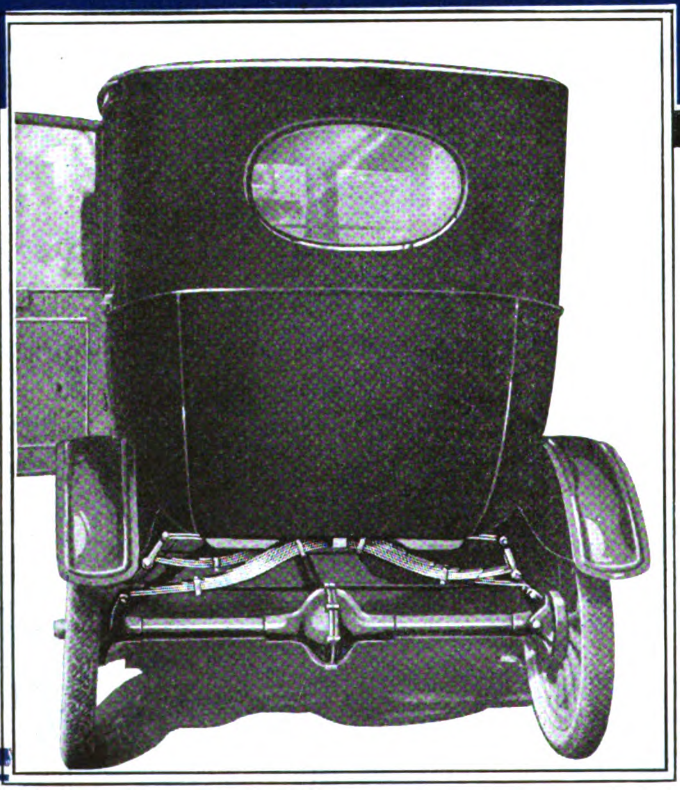


DIAGRAM OF TRANS-LEVER SPRING ACTION OVER BUMP
SAME ACTION REVERSED OCCURS WHEN WHEELS FALL INTO HOLE

DIAGRAM OF STANDARD SPRING ACTION OVER BUMP
SAME ACTION REVERSED OCCURS WHEN WHEELS FALL INTO HOLE



Showing Trans-Lever Spring installed on a Ford —no change in appearance.

See Description of Blue-Print on Opposite Page.

These engineers' drawings graphically illustrate the remarkable way in which the Universal Trans-Lever Spring saves the car and the passengers from road shocks.

The movement of the body in going over a bump is but a fraction of that experienced with an ordinary spring suspension.

Compare the total throw of the body shown in the blue print above.

A Remarkable New Spring on Fords

DURING the past four years, well known Detroit engineers in the automotive industry have been at work, developing a new principle in spring suspension.

The new spring is now ready for Ford cars and later will be applied to all makes.

As the blue print on the opposite page shows, this new spring suspension really consists of two springs, crossing each other, and extending practically the full width of the car. Each spring is approximately the same size and weight of the entire Ford rear spring, giving more than twice the amount of efficient spring area.

One end of each spring is fastened to the axle the same as the ordinary Ford spring. The other is shackled to an extension, bolted on to the regular Ford rear frame member. The springs are not clamped to the frame member at the center.

In the center of each spring is a one-inch hardened steel roller bearing which allows the spring free longitudinal and fulcrum movement. This gives 90 inches of free spring as compared with 36 inches in the ordinary Ford spring.

When the wheel of a car equipped with an ordinary spring hits a bump, the body is actually carried higher than the bump itself by the sudden releasing of the pent up energy in the spring due to the impact. And as the wheel drops off the bump, the body drops below its normal position. The entire travel is indicated in the blue print by the dotted and dashed lines. (Opposite page.)

Now compare this with the travel of the body when Trans-Lever Springs are used. The body rises only slightly above normal and drops only slightly below—with but a fraction of the movement which occurs with ordinary springs.

Besides the almost unbelievable smoothness of the body motion accomplished by the Trans-Lever Spring, of equal importance is the fact that it has been made practically unbreakable.

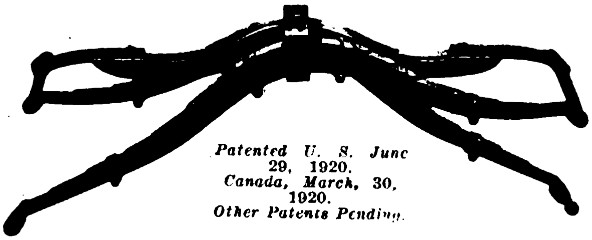
As the entire 90 inches of spring is free, the vibration is spread over the entire length, thus avoiding crystallization.

The spring is easily attached by anyone—requiring no drilling or alteration to body or chassis.

Absolutely Guaranteed

Such an abnormally large factor of safety is provided in Trans-Lever Springs that they are sold with an unconditional guarantee against breakage for the entire life of the car. After ten days use any dissatisfied user may return springs to us at our expense.

Trans-Lever Springs forever solve the vibration problem, giving the car almost unbelievable smooth riding qualities. They save their cost in a short time by reducing tire, gasoline and up-keep expense. And they do away with all necessity for shock absorbers, snubbers, coil springs and other make-shifts.



Patented U. S. June 29, 1920.
Canada, March, 30, 1920.
Other Patents Pending.

PRICES:—

Eight Leaf Spring, Ford Touring, Coupe, Roadster, $35.00. Nine Leaf Spring, Ford Sedan, Delivery Truck, $37.50.

Representatives Wanted

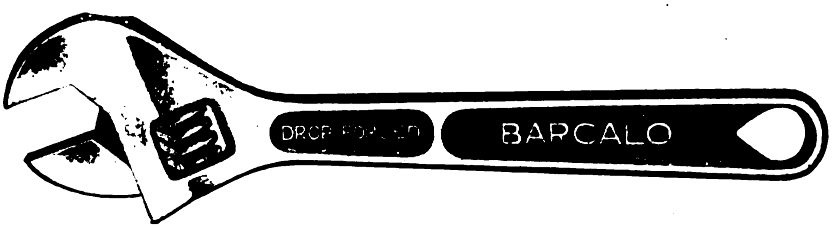
We desire to get in touch with high grade men with sufficient capital to take on the sale of these springs. Opportunities open in practically every territory. Authorized distributors in most large centers—Communicate with factory direct.

UNIVERSAL TRANS-LEVER SPRING COMPANY
14th and Howard Streets **Detroit, Michigan**

TRANS-LEVER

• SPRINGS •

The Barcalo Model N Wrench is stated to be the culmination of 25 years experience in the making of metal products by the Barcalo Manufacturing Co. Three years ago the company began to develop a 22½-degree angle open and adjusted wrench. The engineers had instructions to put a finish on the wrench that would be an index to its quality. The result of all these efforts is the Barcalo Model N wrench. The severest tests have been put on the wrench and it is reported to have stood up admirably under all circumstances.



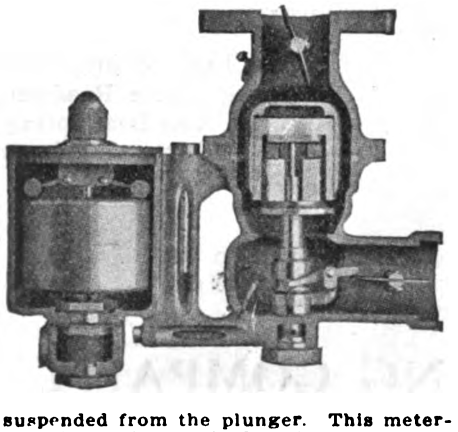
to turn out a design equal to any on the market, and to leave nothing undone in the matter of quality. A special analysis steel gave exceptional hardness and toughness. All working parts were so refined that they would be absoluetly dependable, so that all parts would work smoothly, no matter how difficult the position in which the user might find himself. A study in heat treatment got the exact degree of toughness and hardness in the finished wrench. It was determined

The Model N wrench, as well as other Barcalo wrenches and Barcalo combination pliers are sold to hardware, accessory and kindred jobbers.

Manufactured by the Barcalo Manufacturing Co., Buffalo, N. Y. Represented in the central western territory by the Barney Moore Co., State and Lake building, Chicago; eastern territory by George L. Holmes, 1776 Broadway, New York city, and southeastern territory by G. R. F. Cotten, 1317 Race street, Philadelphia, Pa.

The Aero Carburetor is stated to be scientifically designed to give perfect carburetion on any motor at any speed and under any weather condition. It is of the constant vacuum type, absolutely automatic in action, feeding the correct amount of air and fuel to the motor at any speed.

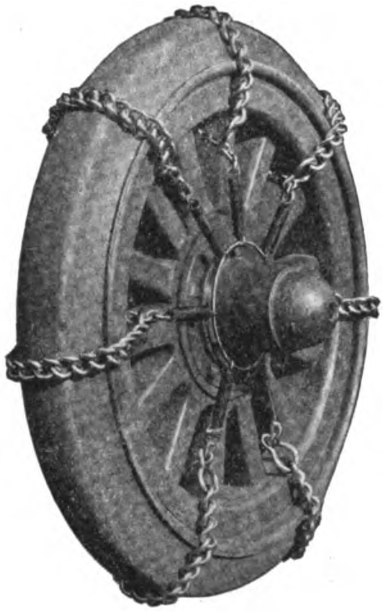
The accompanying illustration shows a cross section of the Aero carburetor. The gasoline is fed from the fuel tank through a filter chamber into the constant level float chamber and the starting well, the same level of gasoline being maintained in both. When the motor is ready to start a rich mixture of fuel is sucked into the motor from the starting well. This enriches the normal mixture, making the starting of the motor extremely easy. When the engine has become warm the dash control is pushed back and the fuel is thereafter supplied through the metering nozzle, into which extends a metering pin which is connected with and suspended from the plunger. This metering pin, as it is raised or lowered, regulates the amount of fuel being fed. It is also connected with the plunger, which regulates the amount of air taken by the carburetor. As the plunger is raised or lowered the proportion of both air and fuel is scientifically regulated, it is claimed, and a consistently uniform mixture of air and gasoline is in this way supplied for all motor speeds.



It is stated by the maker that the Aero carburetor reduces wear and tear on the car, is as fool-proof as a carburetor can be made, having no air valves, springs or adjustments; and reduces gear shifting in crowded traffic.

Manufactured by the Aero Products Co., 112 Hamilton avenue, Cleveland, O. Price on request.

The Trax-Yun Truck Tire Chain is stated by the manufacturer to be one of most convenient and economical devices of this nature on the market. They are sent out ready for use, with no clamps to fit and nothing to attach permanently. The outfit for each wheel consists of a center ring which fits loosely around the hub. Attached to this ring are seven springs. Seven chains are looped around the tire and felloe. The links are broad and flat to avoid cutting the tire and to give maximum traction surface. At one end of each chain is a triangle grab link. On the other end is a series of straight links. This end is slipped through the grab link until the chain is taut, then it is fastened to the end of the spring. The center ring and springs exercise equal tension on all the chains and hold them in place with just enough slack to let them slide along the tire, thus preventing gouging that occurs with too rigid chains when there is a sudden stop or continued use.



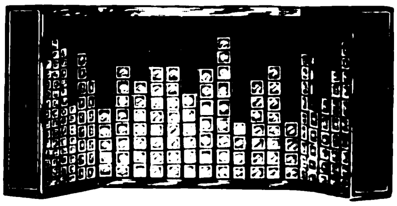
Trax-Yun truck chains can be used in any number of units. If the road and load conditions only require the use of four chains it is not necessary, because of their design, to apply more. The effectiveness of Trax-Yun chains is not lessened unless the condition really requires the use of complete sets. Usually seven (eight on specially large sizes) are furnished for each rear wheel. The length of each chain is adjustable to the size of the felly and tire by a series of straight links at the end of the chain. These links are for locking in the triangle grab link. Then the springs on the center ring are attached to their respective chains. This ring fits over the hub out of the way and combines every separate chain into a complete unit. Cross chains are all oversize, being made of 7/16-inch steel on large sizes, ⅜-inch on medium and 5/16-inch on the small.

They are packed one set in a canvas bag with size marked thereon. Each set contains 14 complete cross chains for all small sizes (except 32x3½ which has 12) and two rings with seven springs on each ring, all assembled and ready to use on the rear wheels. Large dual sizes contain 16 cross chains.

They are also supplied in sizes for pneumatics, both single and dual.

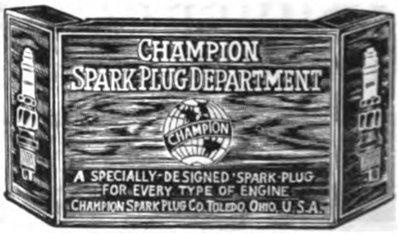
Manufactured by the Cleveland Chain & Manufacturing Co., Cleveland, O. Sizes and prices supplied on request.

The Champion Spark Plug Merchandiser is the result of an attempt on the part of the Champion Spark Plug Co., maker of the well known Champion products, to further its service policy by the developing and perfecting of a merchandising device or silent salesmen for the use of its dealers. This is presented in the form of a cabinet of neat and substantial construction equipped to carry a supply of every type of Champion spark plug made. Individual compartments separate the various types, making it a simple and easy task for the dealer to select the type of plug called for. The accompanying illustrations show the front and rear views.



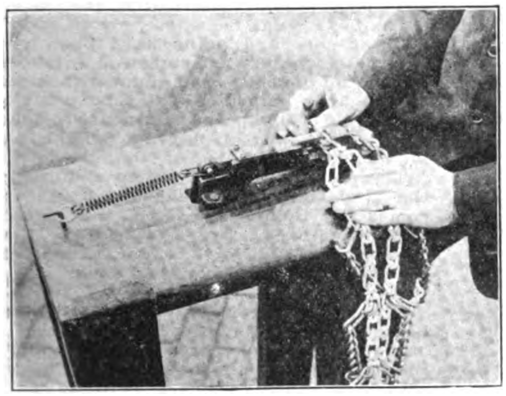
The merchandisers are modern in every respect with steel covers, on the front of which are carefully worked out index charts giving the special mark or symbol number of every plug carried in the case or made by the Champion Spark Plug Co. With the aid of the index chart the selection of the proper type of plug for a customer is a matter of but a moment, whether it be for passenger, commercial, tractor, motorcycle, motor boat, farm or stationary engine.

The Merchandiser is 31 inches long, 15 inches high and 11 inches deep. It can be placed to advantage on any show case, counter or shelf and because of its neat appearance makes a handsome fixture for any store. One of these Merchandisers will be delivered to any dealer ordering a full assortment of 200 Champion spark plugs and 100 insulators, and as the company allows the dealer to specify any one of five different assortments of plugs, he should have no trouble in selecting a combination that will meet his trade requirements.


CHAMPION
SPARK PLUG DEPARTMENT
CHAMPION
A SPECIALLY-DESIGNED SPARK-PLUG FOR EVERY TYPE OF ENGINE
CHAMPION SPARK PLUG CO. TOLEDO, OHIO, U.S.A.

Distributed by the Champion Spark Plug Co., Toledo, O.

The Spook Skid Chain Machine has been designed for repair shops and service stations which do considerable work on side and cross pieces of non-skid chains for passenger cars, and should prove of interest to the trade. The machine is easily fastened to any work bench and is operated by means of a foot pedal attached to the machine and working underneath the bench.

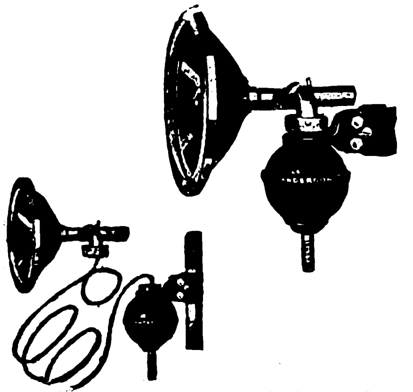


With this machine, it is claimed, cross chains may be easily removed in a fraction of the time usually required and new cross chains fastened in place. It is stated that one man with this machine can easily do as much work in one day as could be done in six by the older method at the same time in a more satisfactory manner.

Sold by the Fairbanks Co., Broome and Lafayette Streets, New York, N. Y. Prices and literature on request.

The Model C Auto Reelite is a new 1921 single-shell model, which has the extension trouble light feature which is stated to have made the Auto Reelite so popular in the trade. The maker asserts that special attention has been given to the design from an engineering standpoint to secure a most rugged and powerful spot light, as well as a beautifully designed model.

It in reality combines three lights in one, spot, trouble and portable. To use as a trouble light simply unscrew the knurled nut at the top of the reel container and withdraw the lamp to any part of the car; just like raising or lowering a window shade.



Following are brief specifications: Made in black and nickel and all nickel finishes; Packard Mazda C lamp bulb; all nickeled parts are absolutely non-rusting. Detachable rear view mirrors supplied, if required, on models C-6 and C-7. Anderson switch conveniently mounted on handle. Universal windshield clamps.

Made by the Anderson Electric & Equipment Co., 154-160 Whiting street, Chicago, Ill. Prices: Standard models, finished in lustrous black enamel, nickel trim, without mirror, C-6, six-inch, 20 candlepower, $9; C-7, seven-inch, 27 candlepower, $10; mirror, $1 extra. Sterling model, searchlight, all nickel finish, with mirror, Model SC-7, seven-inch, 27 candlepower, $15.

The Eclipse Valve Grinder with ballistic movement is claimed to not only do a much better job than by hand methods, but to do it much more quickly and at a fraction of the cost. The grinder is of attractive appearance, light in weight, of ample power, simple in design, has few parts and is of just the right shape to be easily handled.

The motor is under perfect control by means of a trigger switch located handy to the finger of the operator, and operates on either alternating or direct current from 10-volt service sockets. The housing is a tough aluminum alloy, made in two compartments, effectively separating the grease packed mechanism from the motor. The bearings for the motor and mechanism of the grinder are of bronze metal and the gears, pinions and other moving parts of the best steel alloys, heat treated to insure strength, toughness and wearing qualities.

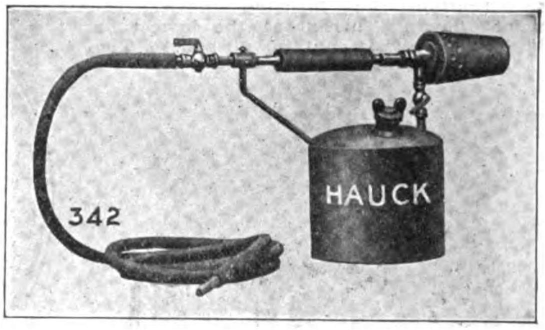
It is stated that it is not necessary to make adjustments to the mechanism and none are provided, but should it become necessary to take the grinder apart the assembly plan is so simple that every part can be taken out and replaced by any shop mechanic, all the parts of the grinder being interchangeable.

Many other features are mentioned which should make this device very desirable for the service station repairer who is called upon to grind valves in the automobile or truck engine.

Manufactured by the Eclipse Valve Grinder Co., 20th street, at Oak, Terminal Railway building, Kansas City, Mo. Prices and literature on application.

The Hauck Compressed Air Torch is considered a practical tool for the service station and garage, as it is designed to burn kerosene, fuel or refuse oil in connection with compressed air. Any service station, equipped with air pump and storage tank for inflating tires, can use this torch to advantage. The manufacturer cites many instances of work done with the torch, showing its economy in operation and wide range of usefulness. By removing the nozzle of the burner it is stated that the torch can also be used as a sprayer to clean engine parts and remove grease.

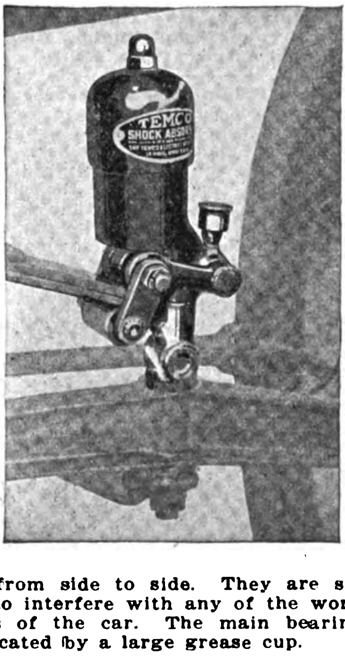
It is claimed that as there is no pressure used in the tank the device is especially safe in operation. The fuel is siphoned to the burner, being controlled by a special adjustment. After the flame of the torch is regulated the control is locked in position. It is stated that the burner lights instantly and does not carbonize. The tank is of steel with all seams and spuds welded and tinned inside and out. It is furnished complete with necessary hose and pilot light. One gallon of kerosene will operate the torch, it is stated, for 45 minutes.



Manufactured by the Hauck Manufacturing Co., 101 11th Street, Brooklyn, N. Y. Prices on request.

Temco Shock Absorbers are designed to gain greater comfort and economy for light cars and are stated to offer the following advantages: The use of telescoping dust caps, longer, stronger springs and radius links to prevent side sway. Each Temco shock absorber consists of two long helical springs, one within the other, both made of genuine crucible vanadium steel. These springs work freely up and down under a telescoping covering that protects them from dust and dirt. There is nothing exposed but a highly finished japanned covering that is easy to keep clean and is stated to add a neater and more complete appearance to the car.

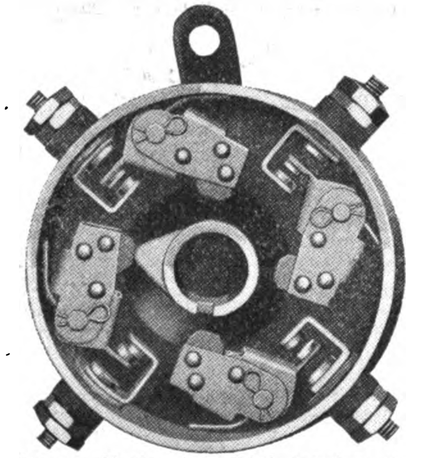
Temco shock absorbers remain absolutely upright all of the time. They are held straight by radius links which also prevent any disagreeable swaying of the car from side to side. They are stated not to interfere with any of the working parts of the car. The main bearing is lubricated by a large grease cup.



The entire set of four can be attached by any person in an hour's time, as they come completely assembled and there are no holes to drill. They will fit all Ford models of all years, including touring, roadster, coupe and sedan. The maker offers to refund purchase price if they are not found satisfactory in every way.

Manufactured by the Temco Electric Motor Co., Leipsic, O. Price, $20 for a complete set of four.

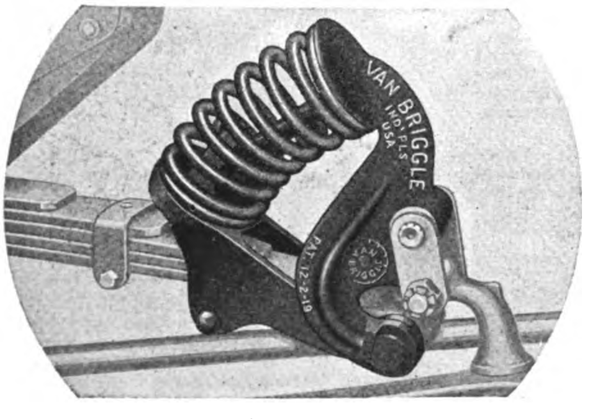
The Gladiator High-Tension Timer System has been available for Ford cars during the past year only, yet it is stated to represent over 30 years' practical experience in gas engine and automotive ignition designing on the part of the maker. Its outstanding features are the sliding, self-cleaning, rocker action contact points and the Liberty motor type cam. This combination is claimed to give perfect ignition, thus insuring an ever efficient flowing current at the lowest or highest speed. It contains no rollers. The sliding, self-cleaning, high-tension, magneto contact points are impervious to corroding, pitting or burning.



The Gladiator high-tension timer system for Ford cars, trucks and Fordson tractors is based on the same principle as that used in the most expensive cars. The Liberty motor type cam forces a positive contact at any speed, at the correct instant. The greater the speed the longer the contact or spark is held in each cylinder because of the lag (the drop of the fiber block to normal position).

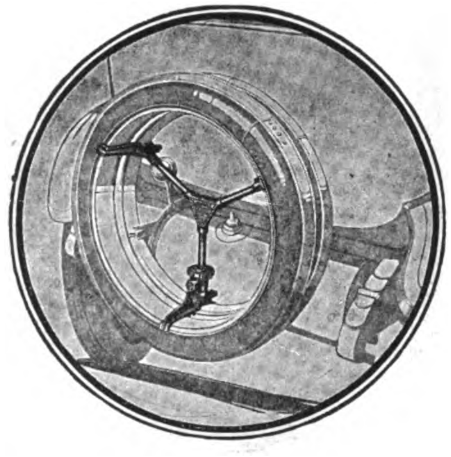
Every Gladiator high-tension timer is guaranteed for 50,000 miles of service and money back if user is not absolutely satisfied. Full directions are included for installing instrument in 10 minutes time. **Manufactured by the Gladiator Co., 204 Monroe avenue, Grand Rapids, Mich.; factory, Auburn, Ind. Price, $5.**

The Van Briggle Shock Absorber Model "C," for Ford cars, is said to represent the work of several years of experiment, and claim is made that excessive vibration and side sway are greatly reduced by its use. The top lever of the absorber acts as a lengthened shackle, thus smoothing the motion of the car spring and giving the effect of a lengthened wheelbase. It is simple in construction, easy to install and of very substantial make. Claim is made that jobbers who have tried the absorber are enthusiastic in their approval, and feel that it will meet with a well deserved welcome by the Ford owning public.



Manufactured by the Van Briggle Motor Device Co., Indianapolis, Ind.

The Twinlock Tire Carrier is designed to embody in the ordinary tire carrying feature the additional one of security from theft of spare tires. It carries one or two tires, as desired, and locks one or both. It may be attached to any car having a circular carrier in a few moments time without the aid of tools. An idea of the construction and application can be gained from the cut.

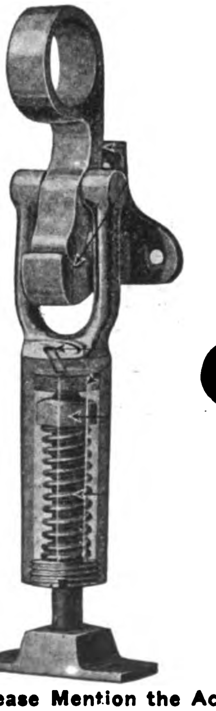


The Twinlock carrier is stated to pass the inspection requirements of the Underwriters' Laboratories, and the company expresses its confidence in the burglar-proof feature incorporated in the device by offering to pay a reward of $100 for the arrest and conviction of anyone stealing a tire from a Twinlock carrier when it is locked.

Manufactured by the Twinlock Co., 15th and Cambridge streets, Philadelphia, Pa. Dealers are invited to write for proposition.

The Ideal Hood Lock is a new device in this line which is stated to be easily operated and to positively prevent rattling of the hood, is adjustable and self-oiling.

The hood lock is of the eccentric type, which permits the lock to be operated with but one finger and which also permits the use of a very much stronger spring than is used in the present type of hood locks. The eccentric locking element is so associated with the hood catch that a two-point bearing (see cut) is secured, which is stated to positively prevent rattling of the hood.



The hood lock is adjusted by rotating the concentric support, or lock body, on the anchor bolt, which lengthens or shortens the lock as desired. The lock body carries an absorbent pad (see cut) which contains sufficient oil for lubricating all moving parts. Each time the lock is released the anchor bolt automatically is forced into engagement with the absorbent pad, which lubricates the moving parts.

Great care and pains have been given to create what is most desired in service, beauty of design and appearance and which also embodies the above unique features. All exposed parts are made of brass and are all highly polished and nickel plated.

The manufacturer is prepared to supply the trade and individual users and welcomes any inquiries.

Manufactured by the Ideal Brass Works, 560-570 North Elder avenue, Indianapolis, Ind. Price, $1.50 each.

A New Standardized Acetylene Gas Head Lamp especially designed for use on heavy duty trucks was recently put on the market, which is stated to be well balanced and extremely rigid so as to withstand the effects of the unusual conditions imposed by service on this type of vehicle.

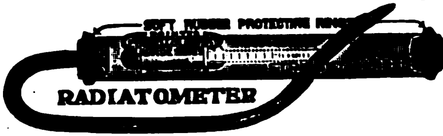
The reflector of this lamp is an extra heavy genuine mangin mirror, held securely in place by two steel clamping rings, four bolts extending clear through a heavy sheet metal body; four lock washers and eight nuts.

The lens is held in place in the same manner and the door is fastened to the body with an extra heavy hinge, riveted together with a large brass pin, thereby preventing rust and making secure construction. The hinge is placed on the top of the door so that should the door be left open it will automatically close itself.

The burner is a De Lux type placed in the proper position to give the maximum efficiency in light.

Manufactured by the Indiana Lamp Co., Connersville, Ind. Prices and literature on request.

The Radiatometer is a newly perfected instrument for testing radiator solutions. As will be noted from the accompanying cut the instrument is simple in construction and it is stated to be accurate as well. It works on exactly the same principle as the Master hydrometer made by the same company. A long flexible rubber tube allows easy access to the radiator solution. A graduated chart on the float tells instantly the strength of solution necessary to withstand varying degrees of temperature. It is then an easy matter to pour in enough alcohol to withstand even the most severe weather.

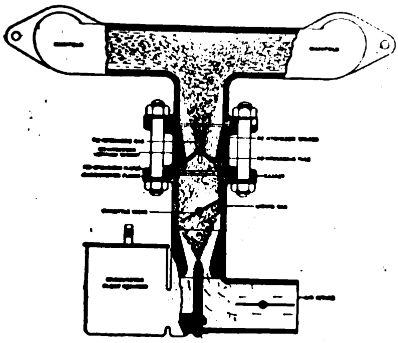


Manufactured by the Beckley-Ralston Co., Chicago, Ill. Dealers' proposition and prices supplied on request.

The Ball & Ball Re-Atomizer, the invention of F. O. Ball, is being made by the carburetor department of the Penberthy Injector Co.

The Re-Atomizer (cut "A") is placed between the carburetor and the manifold. It comprises a spacer into which is pressed a venturi throat carrying four small tubes. The spacer contains a passage way of the same diameter as the intake manifold. Around the lower outside edge of the Re-Atomizer is a groove or annulus which forms a small circular chamber between the inside of the spacer and the outside of the Re-Atomizer.

The ejector effect of air flowing by a tube extending into the air stream in the direction of flow of the air is very well known. This principle is the basic idea of this Re-Atomizer. It will be readily seen that the ejector effect on the four tubes which extend into the throat will draw into the annulus any liquid gasoline which may be passing up the wall of the carburetor and eject it from the tubes in a highly atomized condition so that it floats in the air stream and goes equally to the different cylinders.

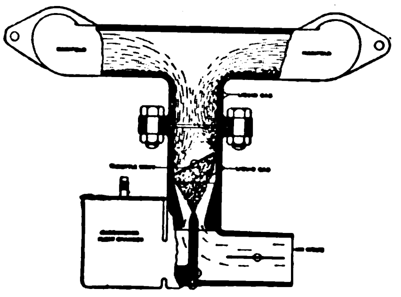


Cut "A"

This complete re-atomization of the gasoline is stated to make it possible to adjust the carburetor for a much leaner mixture, thus giving more miles a gallon and very much smoother running of the car.

It is well known that unless all the gasoline is burned in the cylinders some of it goes down by the piston into the crankcase, thus vitiating the lubricating oil. The Re-Atomizer is designed to eliminate this, thus preserving the quality of the lubricating oil and saving the bearings of the engine.

Cut A shows the Re-Atomizer installed, and it may be noted that the gasoline is completely vaporized and thrown into the center of the air stream, giving a mixture of good quality and an even distribution.

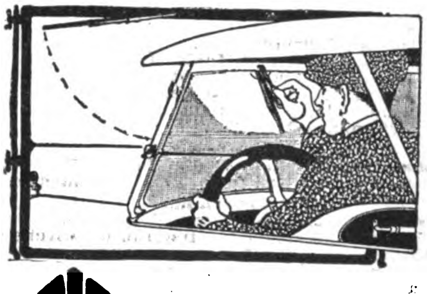


Cut "B"

Cut B shows the ordinary type of carburetor construction without the Re-Atomizer installed, and the globules of fuel are depicted adhering to the walls more on one side than on the other, resulting in uneven distribution and a poor mixture.

Manufactured by the Penberthy Injector Co., Holden avenue and Grand Trunk railway, Detroit, Mich. Information and prices supplied on request.

The Trico Crescent Windshield Cleaner is designed to fit all types of windshields on both open and closed cars. Attachment may be made by clamping over the top of the frame on open cars or by drilling the frame on both open and closed cars. This method of drilling the frame is stated by the manufacturer to be most ideal attachment for a windshield cleaner of the pivoting type. Attachment through the glass is also possible, but is not recommended.



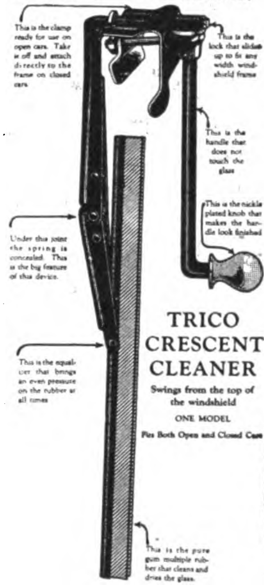
TRICO CRESENT CLEANER

The Trico Cleaner has a real handle that does not touch the glass, but allows the cleaner to fit up snugly to the frame out of sight when not in use. By discarding the clamp and drilling the frame of windshield a splendid fit is possible on open car where top might otherwise be injured by clamp.

The working parts are superior, bringing even pressure to bear on the two rubber strips, which clears and dries the glass at the same time.

The metal parts are treated with army zinc to prevent rusting. The finish is rubber coat black enamel, presenting a rich and durable covering.

The Trico Cleaner is furnished in two styles, black enameled, with flat handle grip, and brass, nickel plated, fitted with nickel plated ball handle.

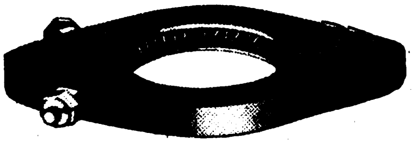

This is the clamp ready for use on open cars. Take it off and attach directly to the frame on closed cars.
This is the lock that slides up to fit any width windshield frame
This is the handle that does not touch the glass
This is the nickle plated knob that makes the handle look finished
Under this joint the spring is concealed. This is the big feature of this device.
This is the equalizer that brings an even pressure on the rubber at all times
TRICO CRESCENT CLEANER
Swings from the top of the windshield
ONE MODEL
Fits Both Open and Closed Cars
This is the pure gum multiple rubber that cleans and dries the glass.

Manufactured by the Trico Products Corporation, 624-628 Ellicott street, Buffalo, N. Y. List price, $2 each in black; $3.50 in nickeled brass. A free counter display is offered to jobbers.

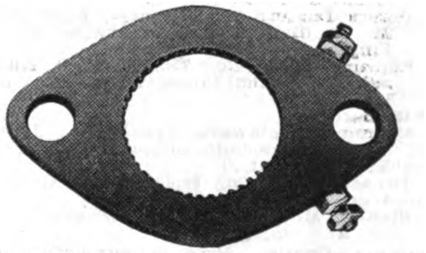
The G & G Electric Manifold Heater is a new manifold heating device, recently put on the market, the invention of John E. Godman and Joseph M. Garr of Lafayette, Ind. The accompanying cuts show top and perspective views of the device.

The heater is placed between the flanges of the carburetor and the flange of the intake manifold and is controlled by a switch conveniently located on the instrument board. The location of the heater makes it possible for it to perform its mission, viz.—to preheat and vaporize the gasoline immediately after it passes the carburetor; and at the same time its design is stated to be such that there is no obstruction placed in the gas passage of the manifold. Another feature of its design is that it is not in any way affected by vibration nor are there any parts that may loosen and fall into the carburetor or to be forced into the combustion chamber of the motor.

The heating element in the G. & G. Electric Heater is brought to a red heat in approximately 15 seconds: in less than a minute's time it will vaporize even low grade gasoline sufficiently for the motor to be started readily with the first engagement of the starter, even in zero weather, it is claimed. However, the heater is not beneficial in cold weather alone, but also is stated to be a decided aid in starting the year around.

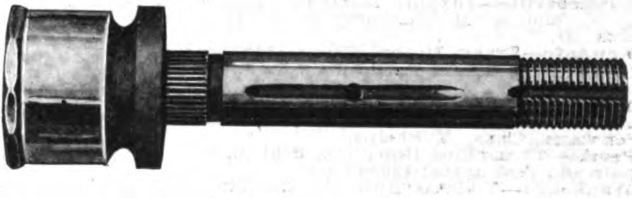


Aside from its ability to facilitate starting it accomplishes other purposes worth considering, viz.: (1) By vaporizing the gasoline before it reaches the motor it prevents any of it from passing into the combustion chamber in liquid form to work its way down the cylinder walls into the lubricating oil. This means that the oil in the crankcase remains pure longer and consequently does not have to be changed as often as it otherwise would. In this connection it may be noted also that the heater tends to prevent the carbon, which is caused by an accumulation of unburned fuel, from forming in the combustion chamber and on the piston heads. (2) It saves the drain on the battery caused by repeated engagement of the starter, when the motor will not fire on account of the fuel being insufficiently vaporized.



Manufactured by the G. & G. Electric Heater Co., 219 North Fourth street, Lafayette, Ind. Price, 7.50 delivered.

Ford-Clark Grease Bolts are stated to be made to precision measurements and to be finished by grinding, especially up to the one-inch size bolt in diameter, to a tolerance which is either plus or minus .005 of an inch. In the welded type of bolts, as shown in the illustration, the stem is made from a special stock 1/64 of an inch oversize, and on this is welded the hex stock cut to the proper length for the head. The head is then machined, threaded and drilled and the bolt knurled under the head, turned and pointed for length to an exact dimension from under the head to the end of the body or shank. The lead and cross holes are then drilled, the "grease flat" milled and the bolt threaded, carbonized, hardened and ground and the cups assembled.



Bolts made in this manner, the manufacturer states, are designed to give unusual wear and long life.

Manufactured by the Ford-Clark Co., 3125 Perkins Avenue, Cleveland, O. Prices on request.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN CARS, TRUCKS, TRACTORS, ETC.

Arkansas.

Fort Smith—DeJarnette Motor Co., all kinds of motor driven vehicles, parts and accessories and to operate garages and repair shops and conduct general business; $50,000; pres., J. J. DeJarnette; sec. and treas., Rutherford J. Ross; Ona E. DeJarnette.

California.

Hollister—Chappell Motor Co., autos; $25,000.

Connecticut.

Waterbury—Davis & Nichols, Inc., autos; $25,000; H. C. Davis, S. W. Nichols, H. B. Dennison.

Delaware.

Dover:

Bethlehem Distributions Assn., autos, boats, machinery, etc.; $1,000,000; Wray C. Arnold, Frank W. Fry, Philadelphia, Pa..; Frank A. Cabeen, Jr., Haverford, Pa.

Elkhart Motors Corp.; $3,500,000; M. L. Rogers, L. A. Irwin, W. G. Singer.

Glenwood Motor Car Co.; $25,000,000; C. T. Cohee, S. L. Mackey, R. E. McCloskey.

National Finance Corp., Philadelphia, autos; $250,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Peters Eastern Motor Corp.; $1,000,000; M. L. Rogers, L. A. Irwin, W. G. Singer.

Supreme Motor Co.; $50,000; F. R. Hansell, J. Vernon Pimm, B. H. MacFarland.

Wilmington:

Commerce-Delaware Truck Co., Delaware Sales of Commerce trucks; Thos. Wright.

Drexel Motors Co.; $5,030,000; T. L. Croteau, M. A. Bruce, S. E. Dll.

Stearns Motor Sales Co.; $100,000.

Georgia.

Atlanta—Currie Bros., distributor of autos, trucks and tractors; $250,000; J. W. Edwards, J. S. Currie.

Savannah—C. E. Vinson Motor Co.; $20.-000; C. E. and L. B. Vinson, Coleman Fannin, L. A. Grace, H. L. Copps.

Illinois.

Belvidere—Manley Motor Co.; $100,000.

Chicago:

Acme Auto Co.; $50,000; J. F. Corcoran, C. F. Celler, Peter Petrie, Wm. H. Long, Nathan L. Krueger.

Sieber Auto Sales Co.; $5000; E. H. and J. H. Funke, Chas. Sieber.

Woodlawn Motor Car Sales & Service Co.; 1000 shares, no par value; Karl F. Marquardt, Fred and B. A. Apeland.

Edwardsville—Tuxhorn Motor Co.; $10,000; C. V. and A. H. Tuxhorn, B. H. Richards, Jr.

Kewanee—Tracy Motor Corp.; $125,000; Glenn K. Tracy, J. O. Huffman, C. F. Moburg.

Oak Park—Oak Park Taxi & Auto Co.; autos; Henry M. Davidson, Frank Schwartz, Chas. A. Phelps.

Peoria—Thompkins-Riner Co., deal in, repair and rent autos; $25,000.

Waukegan—Tibbetts Auto Co., 205 Sheridan Rd., South.

Indiana.

Greentown—Greentown Motor Co.; $25,-000; Dennis and Anna C. White, Edward A. Siersdorfer.

Kansas.

Atchison—Atchison Motor Co.; $40,000; H. M. and Earl Robbins, J. S. Killarney, P. C. Garvin, Jas. Patrick Smith.

Hutchinson:

A. L. Auto Co., deal in autos and operate a school of instruction in mechanical operation and construction of cars; 20,000; H. D. Lloyd, Hutchinson; W. H. Whitlock, Ft. Scott; W. Kenno Jackson, Kansas City.

Southwest Motor Co.; $100,000; Elmer J. Negy, Geo. Moliter, J. H. Tuder.

Peabody—McConnell-Linley Motor Co.; $40,000; Louis D. Linley, Donald F. McConnell, Chas. E. Irving.

Pittsburg—Pittsburg Overland Co., 4th and Locust Sts.; W. L. Williams, J. C. Broadley.

Topeka:

Rowles Motors Co.; $50,000; P. J. McBride, L. W. Rowles, 1263 Harrison St.; H. H. Mack, 1628 Clay St.

Topeka-Overland Co., 912-14 Kansas Ave.; absorbed Mack Motor Co., 1017 Kansas Ave., and old Topeka-Overland Co.; Willys-Knight, Overland and Nash cars and trucks and Diamond T trucks.

Kentucky.

Glasgow—Glasgow Motor Co.; $50,000; F. N. and B. F. Bradford, Basil Richardson.

Louisiana.

New Orleans—Sherrouse Motor Co., Inc., 747 St. Charles St., distribute Mitchell cars and parts; pres., Julian M. Sherrouse; vice pres., F. J. Weinberger; treas., Theo. Frank; sec., J. Walton Sherrouse; salesmen, Alex. Allain, Francis J. Kelley.

Massachusetts.

Boston—Traffic Sales Corp., 961 Commonwealth Ave., sell and service Traffic trucks; John L. Brooks, John Wood, Rich. McGann.

Everett—Mohawk Motor Co.; $100,000; Wm. W. Partridge, Geo. H. Greenleaf, Florence McMillan.

Pittsfield—Brewer Bros., Inc., autos; $100,-000; Gilbert M., Edward A., Edna L. and Fred M. Brewer, Loring B. Tower, Albert W. Rhoades, Theron H. Perkins.

Michigan.

Detroit:

Detroit Consolidated Sales Co.; $10,000; Enoch H. Herman, Chas. H. Hinckley, J. B. Nebrick.

I. C. V. Co., autos and accessories; $50,-000; Henry C. Lockwood, W. J. Meihenheimer, E. A. Burke.

Minnesota.

Arthyde—Arthyde Land & Lumber Co., agricultural implements; $50,000.

Hopkins—Hopkins Motor Car Co.; $35,000; pres., Helmer Olson; sec., O. F. Dahlberg; treas., John Schinster.

Madison Lake—Mercantile Co., farm machinery; $60,000.

Minneapolis—Lenhart Wagon Co.; $100,-000; Frank Alfred and Ray F. Lenhart.

Northfield—Plasket, Ferstler & Berke, Paige, Velie and Hupmobile cars.

St. Paul—Paige Motor Sales Co., 48 E. 4th St.; $50,000; pres., Harry Keep; vice pres., Leo Farr; sec. and treas., Robt. L. Forgan.

Sauk Rapids—Appert Hardware & Implement Co.; $50,000; Ludger E. Fouquette, Jos. H. Bettendorf.

Missouri.

Joplin—Hudson-Hughes Motor Co.; $50,-000; Jas. T. Hughes, W. H. Withrow, Grove C. James, atty., Frisco Bldg.

Memphis—Motor Inn, Briscoe Garage and Sales Pavilion branch.

St. Louis:

Boehl Motor Truck Co.; $25,000.

Cole Motor Co.; $50,000.

Diamond T Motor Truck Co. of St. Louis, 713 N. 11th St.; $10,000; Philip C. Wise, atty., 448 Pierce Bldg.

U. S. Truck Sales Co., U. S. trucks.

Montana.

Butte—Motor Service Co.; autos; $25,000; F. C. Brandin, Saml. B. Curtis, Janie Brandis.

Nibbo—Midland Elevator Co., farm machinery; $100,000.

Nebraska.

Kenesaw—Kenesaw Motor Co., autos; $50,000.

Omaha—Omaha Tractor & Supply Co.; $100,000; John von Dothren, F. L. and Chas. H. Shirk, Alfred Idso.

Wood River—Wood River Implement Co.

New Jersey.

Jersey City—Universal Sales Co., motor conveyances; $100,000; Geo. Fielding, Fred W. Fuller, Lewis G. Hansen.

Newark—Daniel Auto Co.; autos; $100,-000; Wm. W. Bingham, Benj. Newman, John Mires.

W. Hoboken—B. D. L. Motors Corp.; autos; $100,000; Pauline Paul, John H. Sheridan, Jos. P. Briody.

New York.

Alden—Alden Motor Sales Corp., Erie County; $50,000; L. P. Meyer, R. B. McConnell, G. B. Doyle, Buffalo.

Brooklyn:

Armleder Motor Truck Co.; $100,000; C. W. Steele, J. S. Hyatt, A. Scheve.

Chas. Fick Corp., autos; $15,000; P. D. Benson, W. W. Reeves, A. E. Chaffey, 154 Nassau St.

Buffalo:

Autopawn; $30,000; H. H. Schumacher, H. J. Besse, R. W. Warner.

Nash-So. Park Co., autos; $33,000; E. F. Bleeck, C. A. and C. A. Winegar.

Granville—W. C. Glines C., autos; $10,000; H. E. and E. E. Paul, W. C. Glines.

New York City:

Clinton Truck Sales Corp.; $150,000; A. J. Furth, S. Newman, H. H. Waller.

J. C. Collins, Manhattan, autos; $5000; J. C. Collins, J. D. Rubin, D. J. Bryan, 200 W. 98th St.

Commodore Motor Sales Corp., Manhattan; $10,000; W. P. Jackson, E. R. Smith, H. Bond, Commodore Hotel.

D. M. S. Motors, Manhattan; $30,000; T. Myers, J. V. Schenck, E. DeWolf, 11 Wall St.

Do-It-All Tractors Corp., Manhattan; $100,000; G. H. Scanlon, R. M. Frink, H. Jensen, 935 Lafayette Ave., Brooklyn.

Finance Storage & Warehouse Corp., Manhattan, motor vehicles; $50,000; M. J. Taylor, L. Pritz, J. F. O'Donnell, Hotel Empire.

Four Wheel Hydraulic Brake Co. of New York, Manhattan, autos; $5000; M. M. Maze, J. H. Naughton, I. Margoles, 2650 Broadway.

A. G. Griess, motor cars; $40,000; A. Pollack, F. A. Connolly, A. G. Griess.

Jas. W. Jackman Co.; Manhattan, autos; $150,000; M. M. Broke, J. Schwarz, S. Kaufman, 1847 Park Place, Brooklyn.

Wizard Auto Co. of New York, Manhattan; $20,000; E. Leone, C. S. Phillips, F. B. Wood, 233 Broadway.

Rochester:

Clampitt Berghash Co., autos; $15,000; G. S. and M. S. Clampitt, A. Berghash.

Empire State Motor Corp.; $25,000; B. C. Van Alstine, H. W. C. Retallick, E. Farmer.

Syracuse:

Revoir Motors; $100,000; W. D. Andrews, F. G. and M. M. Revoir.

Ross Auto Corp.; $5000; F. C. Saxton, E. L. Bulkley, C. S. Ross.

Utica—Mohawk Valley Motors; $40,000; J. L. Dandy, J. L. Wills, J. S. Bird.

North Carolina.

Monroe—Blakeney Truck & Motor Co.; $15,000.

Raleigh—Elk-Hart Motor Sales Co., distribute Crow-Elkhart cars in Virginia, North and South Carolina; Edgar G. Lee.

North Dakota.

Bismarck—Bismarck Implement Co.; agricultural implements, etc.; $25,000.

Ohio.

Columbus:

Columbus H. C. S. Motor Sales Co.; $25,000; J. Loviner, K. F. Coulter, W. K. Gonagle, F. L. Johnston.

B. M. Ellis Motor Co., distribute Lincoln cars in Columbus and Central Ohio; B. M. Ellis.

Greenfield—Tri-County Motors Co.; $50,-000; C. L. Doster.

Massillon—Massillon Farm Implement & Supply Co.; $25,000; A. L. Albrecht, C. W. Joss, J. Hammersmith, M. V. Ross.

Newark—Licking Motor Sales Co.; $25,-000; O. D. Holler, C. Hayden, W. K. Wobbecke, S. M. Wolfe.

Oklahoma.

Allen—Allen Garage, Nash cars and trucks and Magnolia oils and gasoline, Caldwell Bldg.; E. K. Vernon, A. J. May.

Bartlesville—Economy Thresher Co.; $100,000; G. E. Richmond, L. A. Rowland, W. W. Lowe.

Bigheart—Presbury Motor Co.; $50,000; J. A. Presbury, Hominy; A. W. Bruce, Jas. M. Carriger, Bigheart.

Checotah—J. O. Price Hardware & Implement Co.; $5000; J. C. and B. A. Price, A. J. Martin.

Commerce—Liles & Clark, Central Garage; Fred Clark, formerly of O. T. Garage; E. H. Liles.

Oklahoma City:

Hickman Smith Auto Co.; $15,000; E. A. Hickman, H. E. and A. W. Smith.

Marker Truck & Tractor Co.; $15,000; J. R. and I. M. Marker, Robt. P. Calvert.

Frank Miller Motor Co.; $10,000; Frank and Louise Miller, Edward Hirsch.

Tulsa—Indian Motor Sales & Service; $25,-000; F. E. McGuffin, S. W. Neff, A. H. Thomas.

Rhode Island.

Providence—Burnett Motor Sales, Inc.; $20,000; Wm. N., Henry B. and Raymond L. Burnett.

South Dakota.

Chester—Chester Implement Co.; Carl Grove, owner.

Mitchell—Stedman Co., farm implements; $50,000; G. E. and H. W. Stedman, A. L. Baum.

Sioux Falls—Kuhl's Auto Exchange, Watkin's Garage, W. 9th St., used cars.

Texas.

Abilene—Perry Newberry Motor Co.; $30,000; J. T. Perry, Clyde Newberry, Comer Clay.

Beaumont:
- Walter J. Leicht Auto Co.; $15,000; Walter J. Leicht, J. J. White, E. C. Cherry.
- Nash East Texas Co., to succeed Lester Auto Co.; pres. and man., W. H. Remeser.

Hemphill—Hemphill Motor Co.; $20,000; A. M. Jones, L. Low, J. W. Minton.

Mission—Mission Motor Sales Co.; $15,000; J. M. Shaver, Logan Duncan, E. K. Johnson.

San Antonio—Fulton National Truck Co. of Wilmington, Del.; $250,000; A. L. Jones, agent.

Tyler—Baldwin, Warren & Coppedge, autos; $10,000; E. L. Coppedge, C. A. Warren, Fred Baldwin.

Wichita Falls—Williams-Thompson Motor Co., garage and salesroom, 905 Lamar St., agency for Packard car; W. Oscar Williams, W. K. Thompson.

Virginia.

Petersburg—Sycamore St. Service Station, autos and accessories; $10,000.

Washington.

Spokane—Ace Motor Co., 1125 1st Ave., distributes Ace cars; W. J. Morphew, L. H. Krumsick.

West Virginia.

Welsh—Welsh Truck & Auto Co.; $25,000; J. J. Sweeney, W. A. Wilson, R. C. Taylor, Jas. A. Strother, T. A. Johnson.

Wisconsin.

Hurley—Maple Ridge Development Co., autos, etc.; $8000; Danl. Reid, Henry Meade, O. M. Schaus.

Kenosha—Murdock & Huber, Park and Church Sts., to succeed Barber Auto Accessories Co., agency for Reo cars and to specialize in electric and battery work for autos.

Madison—Madison Used Car Co.; $40,000.

Milwaukee—Wm. F. Sims Co., 539 Milwaukee St., distribute Lincoln car in Wisconsin and Upper Michigan.

Northfield—Hagen & Larson Co., agricultural implements; $50,000.

Waupan—Landall Bros. Garage, autos and agricultural implements; $100,000.

MANUFACTURERS OF CARS, TRUCKS, TRACTORS, ETC.

Delaware.

Dover:
- Air Liner Engineering Corp., to make and deal in airplanes, hydroplanes, etc.; $60,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.
- Armstead Snow Motors of Alaska; $1,500,000; Arthur J. Kingsbury, L. B. Phillips A. E. Silver.
- Armstead Snow Motors of Canada; $10,500,000; Arthur J. Kingsbury, L. B. Phillips, A. E. Silver.
- Armstead Snow Motors of the U. S.; $10,500,000; Arthur J. Kingsbury, L. B. Phillips, A. E. Silver.
- Elkhart Motors Corp.; $3,500,000; M. L. Rogers, L. A. Irwin, W. G. Singer, Wilmington.
- General Tillage Corp., farm implements; $500,000; Arthur Britton, Saml. B. Holland, Robt. K. Thistle, New York.
- Glenwood Motor Car Co.; $25,000,000; C. T. Cohee, S. L. Mackey, R. E. McCloskey, Wilmington.
- Ideal Tractor-Cultivator Co.; $1,200,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.
- Kentucky Templar Co., autos; $300,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.
- La Glore, autos; $100,000; C. T. Cohee, C. B. Outten, S. L. Mackey, Wilmington.
- Lite Tractor Corp.; $750,000; Robt. N. Fulton, Rich. J. Lippey, Max J. Kaplin, Easton, Pa.
- Revere Diesenberg Co. of Phila., autos; $50,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Wilmington:
- Elysee Motor Corp., bicycles and motorcycles; $100,000; M. M. Lucey, M. B. Reese, V. P. Lacey.
- Kansas Truck & Motor Co.; $1,000,000; C. T. Cohee, C. B. Outten, S. L. Mackey.
- Otovic Products Corp., autos and parts; $2,000,000; Harry and Kenneth L. Emmons, A. L. Dorsey.
- Reliable Auto Parts Co., make and sell motor trucks, etc.; $100,000.
- Washington Rapid Transit Co., autos for passengers and freight; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Illinois.

Chicago—Edward Holt Co., make and sell autos, equipment, metal specialties, etc.; $40,000; Frank A. Voiles, Geo. A. Stevens, Edward Holt.

Greenville—Duty Motor Corp., two-ton trucks; $500,000; W. H. Rutner, W. J. Gubser, J. P. Snowden, P. Harnetiaux.

Moline—R. & V. Motor Co., Knight engines and autos.

Indiana.

Indianapolis:
- C. E. Holt Mfg. Co., cultivators; $100,000; C. E., K. A. and R. I. Holt.
- Motor Truck Engineering Co., design and build motor trucks to meet special requirements of individuals; mgr., Robt. DeSchaum.

Iowa.

Muscatine—Lorensen Harvester Co., mowing machines, hay stackers and other farm implements; $400,000; pres., Carl Loresen; vice pres., Jas. Krieger; sec.-treas., Mrs. Martha Juhler.

Maine.

Portland—Yellow Cab Mfg. Co., autos; $1,000,000; New York representative, H. H. Lawson, 123 W. 64th St.

Massachusetts.

Boston—Nelson Mfg. Corp., tractors and other equipment; pres., A. H. Nelson; treas., W. A. Cook; directors, A. H. Nelson, W. A. Cook, J. R. Reeder, J. W. Colgan, pres. Lincoln Savings Bank, Boston.

Worcester—G. F. H. Corp., trucks, tractors and auto parts; $250,000; A. O. Higinbotham, Jerome R. George, Jr., Saml. O. Cumberland.

Michigan.

Monroe—Hood Motor Car Co.; motor trucks; Walter C. Hood.

Minnesota.

Breckenridge—Tedapul Tractor Mfg. Co.; tractors and farm implements; $350,000; C. R. Lillibridge, M. E. Wheeler, Breckenridge; Jas. S. Jenson, Fergus Falls; J. W. Lillibridge, Oakes, N. D.; Geo. D. Smith, Grand Forks, N. D.

Mississippi.

Vicksburg—Morrissey-McGee Tractor Co., tractors and parts; $50,000; T. M. Morrissey, Lindsay McGee.

New Jersey.

Camden—International Aero Construction Corp., airplanes; $25,000; F. R. Hansell, I. C. Clowe, John A. McPeak.

Carlstadt—Stafford Roller Bearing Car Truck Corp.; $1,000,000; Auguste M. Tiery, Raymond E. Cook, Wm. J. Gilleran.

Newark, N. J.—Washington Auto Painting & Body Co., autos, auto bodies, etc.; $105,000.

Perth Amboy—New Brunswick Motor Car Co., autos; $125,000; Harry Brower, Max Gilian, Clark A. Butterworth.

New York.

Albany—Durant Motors, Inc., passenger cars; $5,000,000; W. C. Durant.

Buffalo—Poll-Eels Corp. of Del., airplanes and motors; $250,000; rep., C. H. Keefer.

Jamestown—Binghamton Motor Corp., Clifford Bldg., to assemble five-passenger cars.

Morris—Linn Tractor Corp.; pres., T. R. Hanks, Taylor-Wharton Iron & Steel Co., High Bridge, N. J.; 1st vice pres., H. H. Linn, Morris; 2nd vice pres., H. H. Salmon, Jr., Garden City, L. I.; sec., R. G. Thatch, New York City; treas., Geo. Whitman, Morris; supt., H. H. Linn.

New York City:
- H. & D. Motors, Inc., Manhattan, autos, etc.; $500,000; G. F. McKay, Breton Hall Hotel.
- O-B Electric Vehicles, Queens; $500,000; W. J. Bergold, W. H. Bloom, T. F. Baumann, 307 E. 90th St.
- Victor Page Motors Corp., to manufacture and market lightweight car; pres. and chief engineer, Maj. Victor W. Page.

Syracuse—Ross Auto Corp.; $5000; F. C. Saxton, E. L. Bulkley, C. S. Ross.

North Carolina.

Fayetteville—Farmers' Plow Co.; $100,000; W. T. Herndon, Sr., W. T. Herndon, Jr., W. H. Merritt.

Winston-Salem—Norfleet Baggs, Inc., make, rebuild and repair autos; $125,000.

Ohio.

Garfield—Garfield Steam Truck Corp., steam motor trucks; Duncan Macdonald.

Oklahoma.

Bartlesville—Economy Thresher Co.; $100,000; L. A. Rowland, G. E. Richmond, W. W. Lowe.

Pennsylvania.

Philadelphia—Union Motors, to manufacture and repair; $5000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

Tennessee.

Jellico—Southern Carrplane Mfg. Co., to succeed Jellico Aero Club, make the Carrplane; $250,000; pres. and gen. mgr., L. E. Woody; sec. and treas., W. I. Jones; designer, Capt. Walter L. Carr.

Wisconsin.

Boscobel—Geo. L. Hunt Mfg. Co., tractor specialties; $25,000; Geo. L. Hunt, H. E. Kemp, Chas. A. Blair.

Racine—Eastman Sales Co., make and deal in motor cars, trucks, tractors, parts, materials, equipment and supplies; $25,000; Arthur S. and E. W. Eastman, Jacob Ritz.

MANUFACTURERS OF ACCESSORIES, PARTS AND EQUIPMENT.

California.

Los Angeles:
- Commercial Motor Co., auto motors and parts; $200,000; Geo. Goodrum, A. E. Neff, Fred S. Slagle.
- Garden Court Motor Corp. auto motors and other equipment; $500,000; W. J. Jourden, A. C. Shepherd, F. A. Hartwell, 310 American Bank Bldg.
- Potter-Strutz Radiator Co., auto radiators and other metal equipment; $75,000; T. J. Potter, A. J. Strutz, E. G. Matthews.

San Francisco—California Rubber Co., Oceanic Bldg., cord tires, tubes, dipped rubber goods, mechanical rubber goods and rubber tubing and hosing; pres. and gen. mgr., R. L. Brown; sec., John J. Jones; treas. and executive assistant to pres., Henry P. Adams.

Delaware.

Dover:
- Acme Motor Shield Corp.; $100,000; C. T. Cohee, C. B. Outten, S. L. Mackey.
- Alexander Mirroscope Co., Inc.; $6,400,000; A. W. Britton, Robt. K. Thistle, Saml. B. Howard, New York City.
- Alger-Sawyer Automotive Corp.; $100,000; Lyman S. Alger, Gordon L. Sawyer, Howard A. Wolcott, New York city.
- Auto Anti-Carbon Co., automatic steaming devices; $200,000; Wilber A. McCoy, Pittsburgh, Pa.; W. I. N. Lofland, Frank Jackson, Dover.
- Auto Fuel Economy Corp., auto equipment; $1,200,000; Arthur W. Britton, Saml. B. Howard, Robt. K. Thistle, New York city.
- Auto Parts Mfg. Corp.; $250,000; G. E. Porter, F. M. Lucore, Houston, Tex.; C. T. Cohee, Wilmington, Del.
- Auto Specialty Co.; $50,000; A. Bragdon, S. M. Bingham, Gary, W. Va.; F. L. Hodges, Thorpe, W. Va.
- Cleveland Nut & Bolt Co.; $302,000; Chas. B. Bishop, A. M. Fox, R. H. Ochletree, Wilmington.
- Ibex Rubber Corp.; $135,000; Geo. O. Smalley, Bound Brook, N. J.; Wm. F. Jennings, Plainfield, N. J.; Harry J. Lindsey, Detroit, Mich.
- Kingsford-Gustafson, internal combustion engines; $300,000; M. L. Rogers, M. M. Nicholas, Wm. G. Singer, Wilmington.
- Liberty Airless Tire Corp.; $2,000,000; Arthur J. Kingsbury, L. B. Phillips, D. D. Wharton.
- Lite Products Corp., lighting devices; $200,000; Arthur J. Kingsbury, L. B. Phillips, A. E. Silver.
- Fred Myers Corp., develop plants for signals to prevent theft of autos; $300,000; M. Lucey, M. B. Reese, L. S. Dorsey, Wilmington.
- O. C. T. Sectional Tire & Rubber Co.; $1,000,000; Jas. B. O'Connor, Lawson T. Atwater, S. L. Carter, Kansas City, Mo.
- Philadelphia Vulcanizing Machine & Rubber Co, tires and tubes; $50,000; Russell Satterthwait, Mayette Daniel, Mary Kosher, Philadelphia.
- Salon Innovation Battery Co., storage batteries; $10,500,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.
- Templar Tire Co.; $50,000; M. L. Rogers, L. A. Irwin, W. G. Singer.
- Watts Co., mechanical and electrical engines; $225,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland, Philadelphia.

Wilmington:
- C. P. H. Motor Corp., engines and machines; $2,000,000.
- Dixie Tire & Rubber Assn., Ltd., tires and other rubber goods; $500,000.
- Non-Metallic Piston Corp., engine pistons, etc.; $500,000.

Florida.

Titusville—Superior Motor Works, auto parts and equipment; $100,000; Thos. G. Knight, R. B. Hawley, E. J. Stewart.

Georgia.

Atlanta:

Cotton States Rubber Mfg. Co., auto tires and tubes; $2,000,000; J. B. Anchors, R. W. Ragin, G. J. Reuter.

Rentz Spark Plug Co., Rentz spark plug; $500,000; W. C. Rentz, P. H. Orr, Asa G. Candler, Jr., John S. Hurt, Geo. D. Webster.

Illinois.

Chicago:

Burn Clean Non-Carbonizing Spark Plug Corp., 4201 Southwestern Ave., spark plugs; John M. Stemie, Anton W. Konchen, C. Knox Harding.

Faber-Schneider Radiator Co.; $100,000: U. S. Demoulin, G. C. Steffey, Louis Faber, Philip Schneider.

Motor Rim & Wheel Mfg. Co.; $150,000; C. A. Sartain, Edward Moran, Elgar C. Wells.

New Star Auto Metal Works, Inc.; $10,000; Morris Vleinger, Jacob Kaplan, Hyman Krumer.

R. A. Schultz Mfg. Co., 1801 Belmont Ave., worm drive axles for motor trucks; $60,000; pres., R. A. Schultz; sec. and treas., Thos. Moore.

Seric Mfg. Co., 29 S. La Salle St.. auto axles; H. I. Charbonneau, Wm. E. Kaiser, G. L. Bishop.

Whitney Bearing Corp., 536 Lake Shore Drive, bearings, trucks and tractors, etc.; Julius Keller, Sr., Harry Keller, Francis X. Busch.

Indiana.

Indianapolis—Automotive Appliance Corp.; $10,000; H. S. Wilcox, Arthur Boor, E. J. Porter, J. H. Payne.

Kansas.

Hutchinson—Electrolyte Mfg. Co., 512 N. Main St.; batteries; $500,000; M. F. Cavanaugh, F. M. Mason, W. C. Washburn, A. A. Maltby, E. N. and O. B. Van Hosen, Elkhart.

Kentucky.

Lexington—Mercury Body Corp., auto bodies, etc.; $100,000; K. G. Pulliam, Sr., C. E. McCormick, Guy Huguelet, L. G. Pulliam, M. E. McDaniel.

Maine.

Portland:

Luthy Storage Battery Corp., make, repair and deal in electric batteries; $100,000.

Sennett Auto Signal Co.; $100,000; Walter C. Sennett, Ernest L. Merrill, Harry L. Cram.

Maryland.

Baltimore—Spann Motor Co.. Inc., Philadelphia and East Aves., auto parts and equipment; $225,000; Chas. A. and John D. Spann.

Massachusetts.

Boston—De Luxe Specialty Co.; $25,000; Peter E. Thompson, Christian V. Nepper, Robt. W. Singer.

Michigan.

Calumet—Calumet Truck Body Corp., auto truck bodies and parts and equipment of trucks; $200,000; Wm. H. Tielman, Frank S. Carlton, O. F. Bailey.

Coleman—Coleman Body Co., auto bodies; $50,000; W. E. Reed, H. L. Nevison, L. L. Bowland.

Detroit:

Arrow Pump Co., 1438 Washington Blvd., small pumps for auto, marine and tractor engines; F. M. Cobb, R. G. Donley.

Axton-Cozone Mfg. Co., make and sell car tops; $60,000.

Star Quality Accessory Co., 711 Union Trust Bldg., auto bumpers and similar metal products; $100,000; A. C. Wilber, O. and J. C. D. Graw.

Tell-Tale Spark Plug Co.; $50,000.

Minnesota.

Minneapolis—Rhone Electric Co.; $100,000; pres., Even J. Rhone.

St. Paul:

Blekre Tire & Rubber Co., cord and fabric tires and tubes; $4,500,000; pres., E. O. Blekre; vice pres. and treas., S. E. Blekre; sec., G. W. Wills; vice pres. and gen. sales mgr., S A. Rheinstrom; advertising mgr., G. O. Ludcke; supt., W. E. Greer.

Levis Mfg. Co.; $100.000; pres.. Wm. F. Lewis; vice pres., F. J. Camitsch; sec., Edward J. Heger.

Missouri.

Herman—General Rubber Co., tire fillers and other rubber articles; $500,000.

Kansas City:

Goldfisch Storage Battery Co.; $4000.

Terrell Tire & Rubber Co. of Wilmington, Del.; $100,000; principal Missour; agent, Alva C. Terrell, 1512 McGee St.; atty., Harold E. Neibling, 715 Commerce Bldg.

St. Louis:

Automotive Piston Ring Co.; $7000.

Continental Battery Co.; $120,000; Carter, Collins & Jones, atty., Boatmen's Bank Bldg.

St. Louis Welting Co.; $35,000; Morris Tucker, atty., Title Guaranty Bldg.

Montana.

Glendine—Montana Wheel & Rim Co.. $25,000; F. J. Winkler, L. O. Kern, C. S. Johnson.

New Jersey.

Boonton—Yale Piston Ring Co.; $125,000; Fred S. and Irene G. Yale, Thos. G. Saxton.

Bradley Beach—Ross Bearing Co., roller bearings; $60,000; E. T. and D. M. Ross, W. M. Little.

Jersey City—Central Auto Top Co., 561 Central Ave., motor tops and frames; Herbert Genis, 202 Monticello Ave.

Newark:

Newark Auto Parts Co., 75 Mt. Prospect Ave., auto equipment; Jos. C. Baldi.

Old Hickory Tire Co., 710 Broad St., tires. tubes and rubber goods of all kinds; $3,500,000.

Westville—Westville Body Works, auto bodies; $125,000: Earl H. and Hagen A. Johnson, Ambler A. Harling.

New York.

Brooklyn—Frank De Rosa & Co., auto bodies; $25,000; R. Castronuove, G. Russo, F. DeRosa, 1182 59th St.

Buffalo—Powerton Tire Corp. of Delaware; $500,000; rep., T. J. Costello.

Jamestown—Atlantic Convertible Auto Body Co., auto bodies; $50,000; J. T. Morrison, F. C. Congrove, J. D. Curtiss.

New York City:

Automotive Specialty Corp., auto parts; $20,000; L. E., A. L. and S. A Fogel.

Angnex Manhattan Tire Corp., Manhattan; $75,000; W. Beaney, E. Antkes, R. A. Wicksel, 15 E. 40th St.

Diamond Auto Trunk & Case Co., Manhattan; $20,000; L. Katz, H. Englander, N. Diamond, 524 W. 162nd St.

Hart Bell Mfg. Co., 1926 Broadway, auto equipment.

Ideal Auto Body Co., Manhattan, $5000; J. M. Manchester, J. Russo, H. Woltman, 626 Concord Ave., Bronx.

King Tire Co.; $50,000; P. Turk, J. and L. Wertheimer.

McGuire Convertible Auto Body Co.; $300,000; J. J., B. and E. McGuire.

Motor Driven Clock Corp., Manhattan; $50,000; C. W. Landers, P. F. Casey, I. S. Lambert 132 Nassau St.

Perfect Valve Grinder Corp.; $300,000; C. H. Schadee.

Porter Electric Carburetor, Manhattan, $300,000; F. W. and F. B. Skinner, A. W. Porter, 126 W. 36th St.

Raiway Motors, Inc., motor truck frames, parts, etc.; W. D. A. Rose, L. Prasher, H. S. Gray.

Star Rubber Co., Inc., to manufacture and deal in tires, etc.

O. Voige Primer & Spark Plug; $100,000; H. Wiener, J. G. and O. Voigt.

Rochester—Villard Auto Signal Co., Inc.; $100,000; E. B. Leery.

North Carolina.

Ayden—Automotive Parts & Mfg. Co.; $10,000.

Ohio.

Columbus—Case Herron Motor Pump Co.; $21,000; F. L. Dutton, H. E. Peters, W. L. Herron, H. B. Herman, M. A. Rau.

Defiance—Highway Engine Co., auto truck engines; $1,500,000.

Lorain—Lorain Auto Body Co., Schill Pleasure Boat Co. plant, auto bodies; pres., S. J. Wirtz.

Toledo—Hauger Wheel Mfg. Co.; $1,000,000; J. C. Fair, R. K. Shelburn, J. F. Angell, B. M. Bishop, M. B. Smith.

Pennsylvania.

Pittsburgh—Electric Auto Signal Co.; $100,000; A. J. Henseler, B. Hudson, C. R. Blakeley.

Wilkinsburg—West Penn Body Co., auto bodies; $50,000; treas., H. Mutchler.

South Carolina.

Greenwood—Greenwood Body & Wagon Works, truck, Ford and bottle-deck bodies; pres., J. L. Beaudrob; vice pres., T. C. Beaudrob; sec., B. J. Nickle.

Texas.

Dallas—Martin-Parry Corp. of Dallas, auto bodies; $10,000; R. F. Robinson, A. W. Spence, G. W. Hall.

Washington.

Spokane—Tubular Steel Auto Wheel Mfg. Co., auto accessories; $200,000.

Wisconsin.

Eau Claire—Gillette Rubber Co.; $6,500,000.

Green Bay—Gold Seal Battery Co., batteries; $300,000; pres., E. J. Balza; vice pres., Jas D. Saley; sec. and treas., F. J. Mongin; directors, Louis J. Moreau, T. J. Bast.

Hartford—Storm King Mfg. Co., auto and truck cabs, tops and specialties; $25,000; Clifton Montgomery, Arthur J. Hazen, Gordon Davey.

Milwaukee:

Bay Rubber Co., rubber products; $675,000; E. J. Larson, Wm. Eickoff, H. P. Hensing.

Oilgear Co., hydraulic transmissions and devices for the automotive and general industries; $500,000; J. A. Dietrich, Howard T. Foulkes, J. A. Wickham.

Seymour Laboratories, Inc., succeeding W. E. Seymour Mfg. Co., to make piston rings and other automotive parts and specialties; $250,000; Walter E. Seymour.

Standard Die Casting Co., dies, die castings and similar articles; $100,000.

U. S. Spring Corp., iron and steel products and implements for mechanical and agricultural use; $25,000.

Neenah—Twin City Auto Body Works, auto bodies, principally truck equipment; $25,000; Fred C. Stecker, Frank Foth, John Blenker.

Racine—Standard Piston Pin Co., machinery, tools and metal products, specialties in gas engines and other automotive parts; $25,000; W. F. Hansch, John B. and Jos. G. Barr.

Sheboygan—E. R. Krueger & Son to succeed Krueger & Stolzenberg, wagon and body builder.

Arkansas.

Berryville—Berryville Auto Service; $50,000; J. R. Neff, W. G. Hanburg, C. T. Denny.

Pine Bluff—Keller's Garage, general repair business, 1108 State St.; Danl. Keller.

Russellville—Cothren & Bragg's garage and repair shop, Old Mill Bldg., north side of railroad; J. W. Cothren, Monroe Bragg, owners.

Delaware.

Dover:

Cosmopolitan Auto Service Assn., to owners of autos; $100,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland, Wilmington.

Gilpin Ave. Garage, repair shop; $10,000; Andrew C. Gray, Herbert H. Ward, Jr., E. Ennalls Berl, Wilmington.

Schuler Garage & Sales Co.; $50,000; Lyle M. and Hugh A. Schuler, Warren, Pa.; J. W. Kendall.

West Garage; $101,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland, Wilmington.

Illinois.

Chicago:

Ford Auto Hospital, Inc.; $10,000; I. L. Vogel, J. C. Schwartz, J. A. Karash.

National Auto Laundries Co., 6048-52 Broadway, erect and operate 18 auto laundries in Chicago; pres., Raymond G. Hancock; Geo. H. J. Haas.

Indiana.

Keystone—Keystone Garage and Accessory Shop; F. W. Carnes.

Kansas.

Alta Vista—Spot Cash Garage; John Jacobs, Dwight, Kan.; Geo. Dunlap; mgr., John Jacobs.

Dwight—Filby & Tingley, Mecca Garage.

Emporia—Commercial Garage, 710 Commercial St., general auto and tractor repair work; H. C. Long, B. P. Miller, W. H. Shuey.

Hutchinson:

A-1 Auto Service Co.; $50,000; H. D. and N. P. Lloyd, Hutchinson; W. L. Whitlock, Ft. Scott.

Kansas Lutby Battery Co., service station, 17 4th Ave., agency for Lutby storage battery; pres., Howard J. Cary.

Kansas City—Central Battery & Service, 1028 Central Ave., electrical repair work.

Olathe—West Side Garage, Blucher Bldg., auto, radiator, pump repairing and storage; Earl Reeding, Jess Harness.

Salina—Motor Service Co., service station, Barr & Butschel, 144 S. 5th St.; Haase Bros. owner.

Topeka—Topeka Battery Service Co., 926 Kansas Ave., Exile battery; M. P. Olson, Wm. Hayes.

Wellington—Sumner County Buick Co., to succeed Arnold Buick Co.; mgr., R. T. Looney, Wichita.

Kentucky.

Lancaster—Central Garage & Repair Shop; Wm. Marsee, C. B. Turner.

Louisiana.

New Orleans—Standard Motor Accessories & Garage Corp., to establish system of garages for housing autos now parking on streets; $3,000,000; S. P. Wambsley Harry W. Fitzpatrick, H. M. Moore, J. R. O'Leary.

Maine.

Portland—Libby Garage Co.; $10,000; Harry F. Brewer, Irving R. Libby, Fred. J. Laughlin.

Massachusetts.

Boston—McLean Bros. Garage Co.; $50,000; John A., Roderick D. and Margaret H. McLean.

Cambridge—Mass. Ave. Garage, Inc.; $100,000.

Gardner—Chairtown Garage, Inc.; $25,000; Nelson E. Frissell, John T. Suominen, Axel Teittinen, August Lake.

Michigan.

Battle Creek—K-L Garage & Repair Shop, 32 W. State St.; F. A. Walters, H. J. Higgs.

Minnesota.

St. Paul:

General Auto Sales Garage, succeeding General Auto Sales, Inc., 404 N. Exchange, cor. 6th St., auto laundry and day and night storage and service; R. A. Briggs, Robt. Atkins, Edward P. Pittsen.

Quick Service Battery Co.; $10,000; Celia T. Venneman, Helen Chook, Benj. Norton.

Seldale Garage, Inc.; $50,000; Albert L. Silberstein, M. J. Barry, W. I. Cohen.

Missouri.

Harrisonville—Gray & Freeman, auto repair shop, rear Kohler-Wolfe Motor Co., east side Public square, general repair work; Harry M. Freeman, Fred D. Gray.

Jefferson City:

Madison Repair Shop, Stokes Griffin Garage; J. H. Althoff:

T-G Motor Co., Overland and Willys-Knight cars; J. W. Taylor, Jefferson City; L. P. Griffin, Russellville.

Kansas City:

Atlas Auto Livery Co.; $2000.

Broadmour Garage, 35th St. and Broadway.

Miller Auto Repair Co.; $25,000.

King City—Sauceman & Praisewater, Amble Inn Garage; R. W. Sauceman, Tarkio, Mo.; R. R. Praisewater, Savannah, Ga.

St. Louis:

Bartling Deering & Powers Tire Co.; $15,000.

Delhi Battery & Supply Co.; $300,000.

Nelson Motor Car Maintenance Co., 3334 Washington Ave.; $50,000; Higdon & Higdon, atty., Central National Bank Bldg.

Nebraska.

Long Pine—Long Pine Tire Station, repairs, vulcanizing, etc.

Trenton—Clark & Masters, Clark Hays Garage.

New Jersey.

Newark—Modern Garage Co.; $100,000; Morris Pankins, Meyer Rashkas, Newark; Ike Koplowsky, Brooklyn, N. Y.

New York.

Babylon—South Shore Garage; $20,000; H. N. Green, H. T. Robbins, H. J. Pidgeon.

Baldwin—Amos V. Pearsall, Nassau county, livery and garage; $5000; I. P. Smith, R. M. and A. V. Pearsall.

Brooklyn:

Alborn Garage; $12,000; L. Tamerlis, S. H. Lichtenstein, A. L. Friedman.

B & G Garage; $5000; S. and W. Blank, C. Garcia.

Four Garage; $24,000; A. Mangieri, V. Salli, A. Mastelli.

G. & A. Garage Corp.; $7000; C. Ambash, J. Miller, H. Friedman.

Gare Garage Corp.; $5000; C. L. Raskin, I. E. Meller, H. Gare, 271 Barret St.

Jack Roth's Auto Service; $5000; J. Keating, L. Groves, J. Roth.

Townsend Garage; $50,000; R. C. Dubois, J. A. and R. Townsend, 232 76th St.

Well Worth Garage; $20,000; J. Kalmus, M. Cohen, I. Gottlieb, 291 Berryman St.

Buffalo:

E. Buffalo Garage & Service Corp.; $25,000; A. F. Smith, W. E. Bryant, G. B. Riegel.

Ellicott Tire & Repair Co.; $20,000; L. S. and W. K. Allen, T. R. Wheeler.

Jarvis Garage Co.; $5000; F. Weisedel, E. E. Engstrom, R. Braunlein.

Glen Cove—Glen St. Garage; $100,000; H. L. Hedger, P. F. McMahon, C. F. Wheeler.

Kingston—Ulster Garage; $25,000; A. F. Molineaux, C. A. Warren, J. W. Eckhert.

Mt. Vernon—Civic Center Garage; $10,000; L. E. R. and M. K. Harris, M. Shimer.

New Albany—National Garage 216-20 E. Market St.; N. A. Greene.

New York City:

Edward E. Bouchard, Manhattan, auto service and repairs; $5000; I. W. and W. F. Sullivan, E. E. Bouchard, 731 E. 22nd St., Brooklyn.

Cosmopolitan Body & Repair Co., Manhattan, overhaul vehicles; 15,000; O. J. Christ, J. Fedor, J. Pafchik, 317 W. 13th St.

Dandy Garage, Manhattan; $25,000; C. T. Gysin, J. and C. McCluskey, 258 W. 65th St.

Eastern Auto Storage Corp., Manhattan; $100,000; H. Amerman, W. Hutchinson, A. Bickel, 233 Broadway.

East River Garage; $10,000; J. E. and F. Stolwitz.

A. M. Franklin Auto Service, Bronx; $5000; O. J. Kalt, M. I. and A. M. Franklin, 2776 Webster Ave., Bronx.

G. & E. Repair Co., Manhattan, autos; $10,000; H. Chandler, J. Steudle, L. Elliott, 200 E. 68th St.

G. G. Corp., Manhattan, garage; $65,000; A. Geiger, B. and J. Goldman, 152 W. 118th St.

G. R. Co., Manhattan, deal in garages; $10,000; M. Lichtenstein, W. Loeb, S. J. Joseph, 837 Beck St., Bronx.

Harlem Market Garage, Manhattan; $15,000; M. Stottmore, J. S. Weinberger, P. Lippner, 109 Lewis St.

Harwell Garage, Manhattan; $50,000; H. M. Heyman, H. Schapiro, H. Gerson, 30 E. 42nd St.

Hillcrest Garage, Manhattan; $10,000; I. B. Funt, P. Lippner, M. Cohen, 51 Chambers St.

Hudson Auto Repair Corp., Manhattan; $6000; E. Easn, B. Gurwotz, S. E. Eschen, 1474 Madison Ave.

Leonel Garage & Storage Corp., Manhattan; $6000; N. F. and P. W. Hanson, L. E. Breithaupt, 76 Riverside Drive.

Lyric Garage Corp., Manhattan; $10,000; T. Morgan, R. L. Carr, C. W. G. Balter, 56 Wall St.

Reiss Bros., garage, Manhattan; $10,000; M. H. and S. S. Reiss, M. Rasbaum, 91 E. 1st St.

Salgas Garage; $50,000; A. Zeitlin, M. Salkin, S. Gast.

Samson Garage; $12,000; J. Grossman, M. Jacobwitz, B. Green.

Santis, Bronx, storage and autos; $10,000; E. A. and J. L. Cella, T. B. Liddle, 520 E. 157th St., Bronx.

S. & K. Garage Realty Co., Manhattan; $10,000; H. Saslaw, C. H. McAdie, I. Krasney, 5307 3rd Ave., Brooklyn.

W. 218th St. Garage, Manhattan; $20,000; M. J. Bohrrer, S. Henenfeld, J Rothart, 1563 Hoe Ave., Bronx.

Williamsville—Amherst Service Garage. Erie county; $10,000; H. P. Miller, S. F. Carr, P. J. Snyder.

Yonkers—T. L. & F. M. Garage Co.; $6000; L. Tamerlis, S. H. Lichtenstein, A. L. Friedman, 69 E. 104th St.

Ohio.

Cleveland—Euclid Square Garage Operating Co.; $10,000; W. H. Seagrave.

Columbus:

A-B Net Garage & Accessory Co.; $20,000.

Quilian Garage Co.; $10,000; A. Obenland, P. C. Mathews, E. F. Hucksoll, W. J. Kennedy, C. R. McClelland.

Dayton—Ohio Motor Service Co.; $10,000.

Marietta—Marietta Ignition Service Station, expert work on magnetos, generators and starting motors; A. J. Weslin, W. F. Wesel.

Oklahoma.

Comanche—Highway Service Garage; John L. Peters.

Oklahoma City—Tuck's Garage; $10,000; T. M. Borden, Wm. J. Armstrong, A. G. McVay.

Pennsylvania.

Beallsville—Baker & Startate, National Garage.

Texas.

Colorado—National Guarantee Chain Garage Co.; $150,000; vice pres., G. E. Womack. General offices, Kansas City, Mo.

Dallas—Champion Garage & Machine Shop, Inc.; $5000; B. D. and Preston Owen, R. R. Dodson.

El Paso—Cleveland Square Garage; $75,000; S. G. Groom, A. B. LaGasse, W. L. Campbell.

Houston:

Houston Battery Service Co.; $10,000; Will G. Van Vleck, O. R. Tilley, Robt. L. Sonfield.

So. Texas Radiator Works, 202 Preston Ave., specialize in radiator, fender, muffler and gasoline repairing.

Ranger—City Garage & Machine Co.; $10,000; R. D. Lincoln, J. T. Harness, L. R. Taylor.

Rusk—Walker Motor Co., garage business and agency for Chevrolet cars; W. R. Walker, Jas. W. Pryor.

Strawn—Jones & Matthews, battery station, Davis Bros. Bldg.

Vernon—Mechanics' Garage, 408 N. Main St.; Irwin McCarter, Les Williams.

Waco—K. T. Garage, 110 Peach St., repair work on autos; B. F. Dorr, J. A. Ritter.

Wisconsin.

Milwaukee—South Side Garage, $10,000; John Rutkowski, Chas. and John Borezyeskowski.

ACCESSORY, PARTS AND EQUIPMENT DEALERS.

Ft. Smith, Ark.—Ever-Ready Tire Service Co., tires, accessories and attachments for autos; $35,000; pres., Clarence Mourning; vice pres., W. B. Hodges; sec. and treas., Frank Hickerson.

Little Rock, Ark.:—Four-Six Tire Co.; Jas. H. Rice, P. T. Phillips, A. G. Kahn.

Pine Bluff, Ark.—McClean Cycle Co., 903 Main St.; Robt. McLain, C. Z. and Irwin McClean.

Chicago, Ill.:

Acme Auto Accessory Co.; $50,000; J. F. Corcoran, C. F. Celler, Peter Petrie, Wm. H. Long, Nathan L. Kreuger.

Magic Mfg. Co., auto parts; $10,000; Bert H. Krafft, F. A. Florell, Norman A. Street.

Service Sales Corp.; $10,000; Thad. R. Laing, A. C. Goldsmith, C. T. Frantz.

Davenport, Ia.—Horst & Wilkinson, accessories and Hood and Goodyear tires; Herman J. Horst, Clyde L. Wilkinson.

Hutchinson, Kan.—Hockaday Auto Supply Co.; $15,000; R. K. Hockaday, Hutchinson; F. W. and G. A. Hockaday, Wichita.

Portland, Me.—Dyer-Mahar Co., 27 Forest Ave., Mohawk tires.

Detroit, Mich.—Detroit Consolidated Sales Co., Inc., 2631 Woodward Ave., selling agent for manufacturers of equipment for automotive trade; pres., E. H. Herman; vice pres., C. H. Hinckley; treas., J. F. Nebrick; sec., C. C. Weisblum; W. G. Sparling.

Minneapolis, Minn.:

Kennedy Cab & Body Co., cabs and bodies; pres., R. F. Keeler; vice pres., E. L. Kennedy; sec. and treas., M. R. Bookwalter.

Mitchell Battery & Tire Co., 1209-11 Lake St.

St. Paul, Minn.: Auto Owners' Tire Corp.; $500,000; P. D. Boardman, P. J. McKenna, O. J. Jacobson.

Willmar, Minn.—Bergan Bros., to take over Hoglund hardware business; O. C. and L. B. Bergan.

Kansas City, Mo.—Daley Tire Co.; $5000; Walter W. Galvin, atty., Scarritt Bldg.

St. Louis, Mo.:

Battery Supplies & Equipment Co.; $30,000; J. H. Reese, atty., 5468 Oriole Ave.

Elbee Tire & Auto Co.; $15,000; R. C. Lister, Michigan and Kansas Sts.

Bozeman, Mont.—Story Motor Supply Co.; $100,000; J. L. Casey, U. R. Cochran.

Butte, Mont.—Motor Service Co.; $25,000; Final C. and Janie Brandis, Saml. B. Curtis.

Jersey City, N. J.—International Auto Accessory Co.; $150,000; Albert J. Elliott, Fred. B. Bard, New York City; Alice V. Blois, Jersey City.

Brooklyn, N. Y.:

Ocean Auto Supply Co.; $5000; A. C. Noble, R. H. Brenninger, M. C. Beach, 1325 Bedford Ave.

Reddock-Simon Co., electrical supplies; $10,000; I. and R. Simon; M. D. Reddock, 1446 42nd St.

Jos. H. Suntag, auto accessories; $5000; M. Sachs, I. Kelly, E. Behrens, 111 S. 9th St.

New York City:

Asiatic Rubber Import Corp., Manhattan; $25,000; A. Marcus, D. Kolkin, J. Zalowitz, 35 Norfolk St.

Chain Gasoline Station, Queens; $5000; C. Schnee, J. C. Likewise, E. H. Ericson, Brooklyn.

Evans & Ould, 1780 Broadway; manufacturers' agent for automotive goods; Wm. A. Evans.

Hygrade Taxi & Supply Co.; $8000; C. Sable, L. Buchner, M. Haut.

Jaffe Tire Co., Manhattan; $5000; R. H. Blank, C. Diringer, N. Jaffe, 362 5th Ave.

Schenectady, N. Y.—O. K. Battery Sales Co.; $5000; E. J. Sharpley, J. A. Bell, J. A. Francken, Jr.

Utica, N. Y.—Camp Fire Co.; $20,000; G. E., H. H. and G. H. Camp.

Fargo, N. D.—Northwestern Oil Co. and Servor Oil Co., consolidated as Servor Oil Co.; $1,000,000; pres., Col. J. H. Fraine; gen. man., M. J. George.

Cleveland, O.—Hartman Tire & Repair Co.; $10,000; R. C. Hartman, T. A. Ryan, C. E. Clark, M. H. Gelfand, W. H. Fehrenbach.

Tulsa, Okla.—Indian Motor Sales & Service Co.; $25,000; F. E. McGuffin, S. W. Neff, A. H. Thomas.

Ft. Worth, Tex.—Roberson Auto Supply Co.; $30,000; T. E. Roberson, J. W. Milner, A. J. Beavers.

Houston—Goodson Filling Station; $2000; Ed. Sheffield, W. G. and Dot B. Frazer.

San Antonio, Tex.—U. S. Tire Co., 211 N. Flores St., new and used tires and vulcanizing; H. J. Eisenberg.

Milwaukee, Wis.—Federal Tire & Supply Co., distribute Federal tires in Milwaukee and vicinity; $175,000; Arthur L. and Henry C. Grede, Herbert A. Ruhnke.

MISCELLANEOUS.

Dover, Del.:
- Link Auto Finance Corp., real estate and insurance agency; $600,000; Wray C. Arnold, Frank W. Fry, Frank A. Cabeen, Jr., Philadelphia.
- Motor Finance Corp. of Washington, Inc.; $200,000; Hilton W. Robertson. White Haven, Md.; Herbert W. Soper, Jose C. Brooks, Washington, D. C.
- Oldsmobile Albany Co., Inc., act as agent for companies, etc.; $150,000; Arthur W. Britton, Saml. B. Howard. Saml. B. Howard, Robt. K. Thistle, New York City.
- Pneucar Corp., development of patents; $35,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Wilmington, Del.—American Protective Bureau, protection of autos against theft, etc.; $15,000; M. M. Lucey, M. B. Reese, L. S. Dorsey.

Jacksonville, Fla.—Randolph Motor Transportation Co.; $50000; D. C., C. D. and R. W. Randolph.

Bloomington, Ill.—Bloomington Champaign Motor Truck Co., freight business; Kauffman Bros.

Chicago, Ill.:
- Klingen Motor Transportation Co., general draying, hauling, expressing and teaming; Walter J. Middleton, Walter Klingen, John Kabat.
- Manufacturers' Trust, to finance manufacturing of motor trucks; $10,000,000; pres., Col. C. R. Vincent, Vincent Trust Co.

New Orleans, La.—Standard Motor Accessories & Garage Corp., to erect two six-story garages, each with capacity for 1000 cars on ramp system; also 5 accessory and equipment stations to operate on cooperative basis; $1,000,000.

Worcester, Mass.—G. F. H. Corp., to succeed Chas. B. Foster, motor truck de veloper; $252,000; business to be moved to Denver, Col.

Houghton, Mich.—Michigan Iron Land & Lumber Co., to succeed Michigan Iron & Land Co., manufacturing lumber for auto parts, general manufacturing, lumbering and mercantile business; $2,000,000; Henry, Edsel and Clara Ford.

Anetlope, Mont.—Antelope Motor Inn.; $8000; Chester Foster, J. and Rich. Grayson.

Camden, N. J.:
- Garage Poster Advertising Co.; $200,000; Wilfred B. Wolcott, Gordon Gray, R. C. Alexander.
- South Jersey Bus Co.; $60,000; Chas., Nellie and Jas. Holt.

Newark, N. J.—Motor List Co., advertising; $25,000; Martin Tuttle, Des Moines, Ia.; E. G. Pratt, Jr., Louise Brooks, Newark.

Albany, N. Y.—Hudson Valley Air Line, operate air planes; $150,000; Dr. H. L. K. Shaw, J. F. Bailey, F. L. Hichman.

Binghamton, N. Y.—Binghamton Taxi Cab Co.; $20,000; G. F. Waight, E. J. and J. E. Fitzmartin.

Brooklyn, N. Y.—
- Mack Motor Haulage Corp.; $5000; B. E. and L. Z. Richardson, 424 17th St.
- Rohs Transportation Co., auto; $5000; M. C., K. and H. Rohs, Sr., 672 Humboldt St.

Buffalo, N. Y.:—Kissel Trucking Corp.; $20,000; F. Colson, R. and F. H. Staley.

Cohoes, N. Y.—Gray Motor Express; $15,000; B. Steiner, A. H. Thompson, W. L. White.

Great Neck, N. Y.—Universal Auto Bus Service Corp.; $50,000; H. Venzke, R. W. McCreery, P. Nelson.

New York City:
- Aldenhurst Auto Van & Express Co., Manhattan; $15,000; E. Eisenstein, E. C. Kelly, M. Tachna, 30 Broad St.
- Automotive System & Forms Co., Manhattan; auto bookkeeping; $10,000; J. O. Davies, A. W. and R. P. Macdougall, 1834 Broadway.
- Defiance Auto Trucking Co., Manhattan; $5000; P. A. Schmitt, E. J. Dwyer, S. Ross, 110 W. 42nd St.
- E. 75th St. Coach & Auto Co., Manhattan; $15,000; E. J. Donohue, J. J. Herold, 1320 ulton Ave., Bronx.
- Electric Auto Show, Manhattan; $30,000; G. Tiernan, F. H. Parcells, J. M. Purcell, 64 Wall St.
- Mulcahy Taxi Cab Co., Manhattan; $5000; M. J. Huggard, J. M. Siegler, J. Mulcahy, 1014 1st Ave.
- Reliable Motor Trucking Corp., Bronx; $50,000; H. J. Smith, W. J. Landes, I. Waldman, 120 Broadway.
- Square Trucking Corp., Manhattan; $10,000; J. C. Rosa, M. S. Longsdorf, H. S. Wooden, 17 Battery place.
- Standard Auto Luggage Co., Manhattan; $10,000; M. Silverman, S. Goldberg, O. Auerbach, Coney Island.

Put-In-Bay, O.—Put-In-Bay Auto Ferry Co.; $15,000; T. B. Alexander, W. Schnoor, C. B. Johannsen, H. Fox, E. Meyer.

Philadelphia, Pa.—National Finance Corp.; $250,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington Del.

Ft. Worth, Tex.—Texas Garage & Shop Owners' Assn.; pres., Sidney Harrison.

INCREASES IN CAPITAL.

Bridgeport, Conn.—Raybestos Co., maker of auto brake lining, etc.; $2,000,000 to $3,000,000.

Greenwich, Conn.—Palmer Bros., maker of gasoline engines, etc.; $250,000 to $500,000.

Hartford, Conn.—Hartford Automotive Parts Co.; $1,500,000 to $2,000,000.

Chicago, Ill.:
- Reliable Tire & Vulcanizing Co.; $5000 to $10,000.
- Williamson Motor Co., car distributor and service stations; to $100,000.

Ft. Wayne, Ind.—Barrysot Implement Co.; $25,000 to $100,000.

Indianapolis, Ind.:
- Haywood Tire & Equipment Co., maker of machines for rebuilding tires; $20,000 to $400,000.
- National Motor Vehicle Corp.; 80,000 shares to 140,000 shares, no par value.
- Oakes Co., maker of auto fans and parts; $450,000 to $700,000.

La Porte, Ind.—Pony Tractor Co.; $100,000 to $500,000.

Richmond, Ind.—Geo. W. Davis Motor Car Co.; $160,000 to $300,000.

Louisville, Ky.—Louisville Auto Supply Co.; $25,000 to $100,000.

Bronson, Mich.—Douglas-Rudd Mfg. Co., maker of electric battery products, connections, etc.; $30,000 to $236,000.

Detroit, Mich.:
- Detroit Steel Products; to $5,250,000.
- W. Detroit Sales Co.; $25,000 to $100,000.

Lansing, Mich.—Re-Motor Car Co.; $10,000,000 to $15,000,000.

Saginaw, Mich.—Nelson Motor Truck Co., maker of motor trucks and parts; $500,000 to $1,100,000.

Lewistown, Mont.—Pioneer Implement & Auto Co.; $10,000 to $50,000.

Newark, N. J.—Kwick Start Spark Plug Co., 16 Boyden Place; $125,000 to $500,000.

Brooklyn, N. Y.:
- Auto Outfitters; $10,000 to $20,000.
- West End Garage & Auto Co.; $500 to $50,000.

Buffalo, N. Y.:
- Curtiss Aeroplane & Motor Corp., Elmwood Ave.; to $6,978,100.
- Lumen Bearing Co., brass and bronze castings, soldering babbitts and ingot metals; to $500,000.
- Parenti Motors Corp.; $2,500,000 to $10,000,000.
- U. S. Light & Heat Corp.; to $8,50,000; an increase of $1,500,000.

Elmira, N. Y.:
- Bolton Motor Co.; $5000 to $10,000.
- Ward-LaFrance Truck Co., maker of auto trucks, affiliated with American LaFrance Co.; to $10,300,000.

Geneseo, N. .Y—Geneseo Auto Co.; $22,000 to $50,000.

Jamestown, N. Y.—Jamestown Garage Co.; $10,000 to $50,000.

New York City:
- Chatham Garage, Bronx; $20,000 to $75,000.
- Duplex Engine Governor Co., Manhattan; $300,000 to $500,000.
- FosterKetchum Auto Co., Manhattan; $10,000 to $50,000.
- Lloyd's Fire Truck Corp., Manhattan; $100,000 to $150,000.
- Maxwell-Chalmers Co.; addition of $15,000,000.
- Walter Motor Truck Co. ,maker of Walter trucks; to $1,000,000.

Niagara Falls, N. Y.—U. S. Light & Heat Corp.; $7,000,000 to $8,500,000.

Olean, N. Y.—Olean Motors Corp.; $10,000 to $25,000.

Rochester, N. Y.—A. M. Zimrich Motor Co.; $5000 to $25,000.

Utica, N. Y.—Balch Body Corp.; $25,000 to $50,000.

Winston-Salem, N. C.—Motor Co.; $50,000 to $450,000.

Cincinnati, O.—Cincinnati Auto Body; $100,000 to $200,000.

Columbus, O.—Reese Motor Co.; $150,000 to $300,000.

Oklahoma City, Okla.—Parks Motor Co.; $50,000 to $150,000.

Ardmore, Pa.—Auto Car Co., maker of motor trucks; to $4,839,600.

Lancaster, Pa.—Rowe Motor Mfg. Co., maker of worm driven motor trucks, purchased Lancaster Body Co.; capital increased from $500,000 to $2,000,000.

Greenville, S. C.—Greenville Cadillac Co.; $30,000 to $100,000.

Brady, Tex.—Brady Auto Co.; $10,000 to $50,000.

Dallas, Tex.—John H. Dunn Tire Co.; $10,000 to $50,000.

El Paso, Tex.—El Paso Battery & Ignition Co.; $15,000 to $30,000.

Charleston, W. Va.—Charleston Steam Tractor & Truck Mfg. Co.; $1,000,000 to $2,000,000; name changed to Automoto Mfg. Co.

Antigo, Wis.—Antigo Tractor Co.; $500,000 to $1,000,000; name changed to Antigo Tractor Corp.; gen. man., W. L. Carver; asst. man., M. H. Houck; C. R. Parratt.

Green Bay, Wis.—Lanchin Loehr Lubricating Piston Co.; $50,000 to $150,000.

Ladysmith, Wis.—Hein Implement Co.; $25,000 to $75,000.

Milwaukee, Wis.:
- American Auto Co.; $14,000 to $100,000.
- Northwestern Malleable Iron Co.; $500,000 to $1,200,000.
- Overland Wisconsin Co., distributor of Overland and Willys-Knight cars, etc., in Wisconsin; $50,000 to $250,000.
- Pawling & Harnischfeger Co.; $1,000,000 to $3,000,000.
- Sivyer Steel Casting Co.; $200,000 to $400.000.
- Sterling Motor Truck Co., maker of Sterling trucks; $250,000 to $1,000,000; Arthur C. Wollensak chief engineer.

Oshkosh, Wis.:
- Ralph M. Burtis Co., hardware; $12,000 to $25,000; name changed to Stillman Hardware Co.
- Thom Auto Co.; $25,000 to $100,000.

Racine, Wis.—Modine Mfg. Co.; to $450,000.

Superior, Wis.—Twin Ports Steel & Tractor Co., maker of tractors and automotive parts and materials; $10,000 to $100,000.

Two Rivers, Wis.—Kahlenberg Bros. Co., maker of oil engines; $75,000 to $300,000.

CHANGES IN NAME.

San Leandro, Cal.—C. L. Best Gas Traction Co. to C. L. Best Tractor Co.

Santa Rosa, Cal.—Houts-Moulton Cleveland Co. to Houts, Hilliard & Bridgeford Motor Co.

Chicago, Ill.—Findlay Disc Wheel Corp., maker of steel wheels for auto service, to Findlay Steel Wheel Corp.

Arkansas City, Kan.—Woods Bros. Garage to Cannon Ball Garage, 306 N. Summit St.; Roupp & McClosky, owner.

Eskridge, Kan.—Willard's Battery Station to United Electric Service Station; W. C. Rea and Burl E. Muns, mgrs.

Louisville, Ky.—Mahan Bowman Co. to Mahan Motors Co.

Baltimore, Md.—Baltimore Auto Trade Assn. to Baltimore Auto Dealers' ssn.

Dawson, Minn.—Barkeus & Lund Garage to Barkeus & Holton; D. T. Lund, owner.

Brookfield, Mo.—Dickinson Motor Co. to Moore Motor Co..; Vernon C. and Leo E. Moore, owners.

Harrisonville, Mo.—Cable & Lyon, dealer in Chevrolet cars, to G. E. Cable & Co.: Geo. E. Cable, owner.

St. Louis, Mo.:
- Curtis-Robertson Aircraft Corp., maker of airplanes and parts, to Robertson Aircraft Corp.
- Shurnoff Mfg. Co., maker of spark plugs, combination manifolds, grease retainers, running board supports, heaters, etc., absorbed by Inland Machine Works.

Springfield, Mo.—Haskett-Mace Motor Co. to Haskett Motor Co.; Guy R. Haskett, owner.

Pawnee City, Neb.—Overland Garage to Scoville Auto Co.; C. A. Scoville, owner.

New York City:
- Bristol Motors Corp., Manhattan, to Aircraft Repair & Service Co.
- O. J. Childs Co., 1265 Broadway, maker of fire equipment, merged with Utica Fire Apparatus Co., Utica, N. Y.

Oneida, N. Y.—Keller Merrell Motor Co. to Keller Motor Co.

Youngstown, O.—Ohio Garage Co., dealer in Essay, Marmon and Hudson cars, to Wick Ave. Motor Co.

Enid, Okla.—Broadway Garage to O'Connor Motor Co., 206 E. Broadway.

Perry, Okla.—Cooper Motor Co. to Model Garage; Pollard & Mezinge, owner.

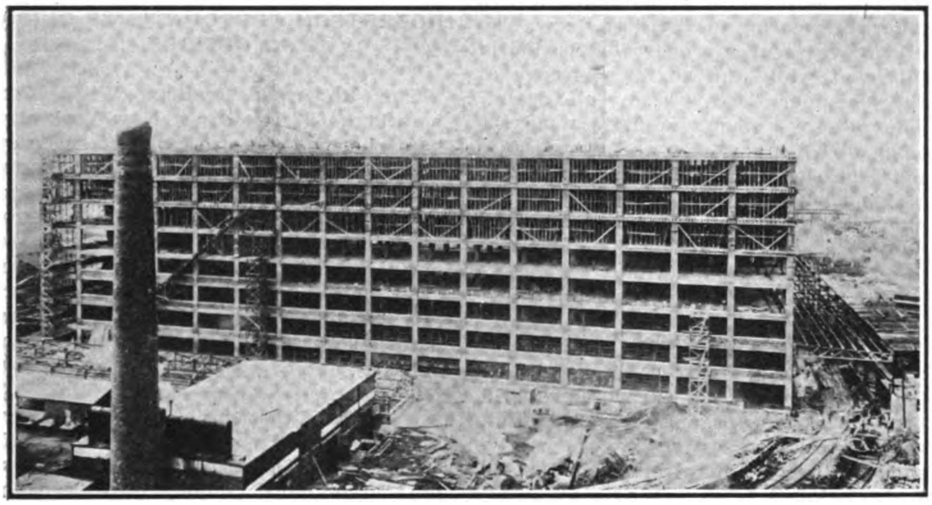
Philadelphia, Pa.:
- Bigelow Willey Motor Co. to Geo. A. Willey Motor Co.
- Lewis & Roth Corp., 15th and Wood Sts., to Electric Power Equipment Co.; trade name of products changed to Elpeco.
- Postal Tire & Rubber Co. to Atlantic City Tire & Rubber Corp.

NOTES OF INDUSTRY AND TRADE

Dodge Brothers Building Big Addition

Substantial evidence of the confidence in the future of the business of Dodge Brothers, the well known Detroit manufacturer of Dodge Brothers cars, is found in its expenditure of between $6,000,000 and $8,000,000 in the expansion of its factory. The present building programme is the largest in the history of the concern, and will bring the total floor space of the plant up to more than 100 acres. In 1914, when the production of Dodge Brothers motor cars began, the total floor space was eight acres.

The principal unit of the construction programme now in progress is the new press steel building, with a floor area of 860,000 square feet. The new construction building, which has just been completed, is eight stories high and has a floor area of 140,366 square feet. Another important unit now being built is the power plant.



Indicating Extensive Expansion Programme of Dodge Brothers Co. at Detroit.

With the gradual expansion of the factory the interplant traffic problem became one of prime importance. The distance between the main building and plant four is nearly a mile and until recently it was necessary to cross 12 railroad tracks to reach it. This problem was solved by the simple, but costly expedient of digging a tunnel. Now half the distance is cut off and traffic passes under the 12 tracks instead of over them. The tunnel is a good example of the efficiency measures always being introduced at the Dodge Brothers factory, which has the reputation among authorities of being one of the most thoroughly equipped and best managed factories in the world.

When the present building operations are completed others will probably begin. There is nearly always something in progress. The maximum production attained so far was an average of about 600 cars a day, but this will be materially increased by the extra facilities.

LOUIS DUSENBURY ENLARGES STAFF.

Louis Dusenbury & Co., Inc., 229-233 Fourth avenue, New York City, importer and manufacturer of upholstering materials for automobiles, carriages, air ships, etc., announces the following increases in its executive staff:

Louis E. Dusenbury has been appointed vice president and Harold W. Schwab secretary, these additions being made necessary by new production plans developed by the company which include the early presentation to the trade of an entirely new line of art motor fabrics. These new Dusenbury motor fabrics will apply the "Period" idea in a unique way to motor car upholstery, being interesting reproductions of the world's greatest decorative themes by the company's expert stylists.

The Dusenbury Co. is represented in Detroit with exhibition and sales rooms at 426 Woodward avenue, the main offices being located in New York city and factories in Bridgeton, L. I., N. Y.

Established in 1849, Louis Dusenbury & Co., Inc., has maintained a continuous business existence of more than 70 years, making it the oldest producer in its line in the country.

KIRKLAND-CRAVENS MOTORS IS HAYNES DISTRIBUTOR.

The Haynes Automobile Co., Kokomo, Ind., has made official announcement that the Kirkland-Cravens Motors, Inc., 1513 McGee trafficway, is to have the distribution of Haynes cars in all of the states of Kansas, Oklahoma and western Missouri and northwest Texas.

The officers of the new company are as follows: President, H. G. Kirkland; vice president and treasurer, Walter Cravens of Salina, Kan.; general manager, H. E. Rose; vice president, F. D. Phillips; manager of wholesale department, Ralph C. Garland; retail sales manager, George R. Hutchings.

Expansion Plans Show Business Revival

The addition to the factory of the Matthews Engineering Co., Sandusky, O., is nearing completion. This is 100 by 140 feet and will be completely equipped with the latest machinery for the manufacture of electric light and power plants which this company produces under the trade name of "Matthews Full Automatic."

The appointment of Thomas H. Bingham as production manager of the enlarged factory is announced. He has been for the past five years general superintendent of the works of the International Harvester Co. at Akron, O. He received his early training in engineering methods in Scotland, having come to this country 14 years ago, since which time he has been engaged in tool making and in superintending factory production.

BADGER CO. PLANS EXPANSION.

Antitcipating a quick return to normal business conditions and desiring to be in a position to serve the trade promptly, the Badger Manufacturing Co., Milwaukee, Wis., has leased a new factory building at Clinton and Oregon streets, that city. It is a three-story structure with a large basement, built of cement and brick, exceptionally well lighted and ventilated—in fact, ideal in every way for the manufacturing of the equipment made by this concern.

With the leasing of this new plant the two factories used up to the present time will be vacated and the entire organization brought together under one roof, which will overcome the inconvenience experienced in operating two plants in different parts of the city.

ALLIS-CHALMERS' BIG BUSINESS.

Unfilled orders of the Allis-Chalmers Manufacturing Co., Milwaukee, Wis., at the end of 1920 aggregated $17,500,000, it is stated, an increase of $2,000,000 compared with the previous year. One order received during the closing weeks of the year called for $1,000,000 worth of gas engines for a prominent steel company. New orders are said to be coming in at the rate of about 75 per cent. of capacity.

CLIMAX ADOPTED BY MUNDIE.

The Climax Model T, 5½ by seven-inch motor, made by the Climax Engineering Co., Clinton, Ia., has been adopted as standard power equipment by the Mundie Manufacturing Co., Peru, Ind., for its No 8, 10 by 10-inch Zin-Ho compressor. This company has used the Climax Model K, five by 6½-inch motor, on its smaller outfits for several years

Stark-Inland Machine Works in Larger Quarters

OPTIMISM and a full-speed-ahead policy for 1921 have been adopted by the officers and employees of the Stark-Inland Machine Works, St. Louis, Mo., manufacturer of the famous Stark-Inland spiral cut one-piece piston ring, which recently celebrated its fifth anniversary by removal to new and larger quarters. While many plants connected with the automotive industry were temporarily closed during the past few months, due to general business depression, it has been a matter of comment that the wheels of the Stark-Inland organization did not stop turning, with the exception of a brief period occasioned by the removal and installation of machinery in the new factory at Jefferson and Lucas avenues.

History has been made by the company ever since it was organized in the early part of 1916. The original force consisted of 20 workmen, who were employed in modest quarters, affording less than 3000 square feet of floor space. Five years have passed and today Stark-Inland one-piece piston rings, to the number of 6,000,000, are used in practically every part of the world; in fact, wherever automobiles, trucks, tractors, motorcycles, locomotives, stationary gas engines, marine engines, air compressors, refrigerating machines, aeroplanes and mining machinery are known. Thus the product comes into service in the air, on the water, under the water, on the ground, under the ground, in every clime and among practically all the peoples of the earth.

In the accomplishment of the phenomenal results obtained for this product, credit is given by the management to publicity as being largely responsible. The aggregate amount expended for advertising, foreign and domestic, by this organization during the past five years exceeded $750,000. Judicious use of printers' ink was employed in various media to tell the world about the band of expanding metal around the piston, which serves to prevent the gas or steam from escaping between the piston and the walls of the cylinder.

The new plant facilities cover more than 70,000 square feet of floor space, and several hundred highly skilled workers are employed to take care of the demand for the product. The management started in business with a capital of $30,000, while the present capitalization is $2,000,000.

Development of Stark Oilless Ring.

Not content with the unusual success of the spiral cut piston ring, the management recently developed the Stark oilless, a popular priced, quick acting piston ring, to enable dealers to supply the demand for a ring of this type. The oilless was placed on the market four months ago and the sales have already totalled several hundred thousand. This ring is made on an entirely new principle—having the turned finish or quick seating feature fully developed. It adapts itself quickly to the contour of the cylinder, by wearing in with less delay. The oil groove assures proper distribution of lubricant while the auxiliary groove at the shoulder "scrapes the oil down." The oilless is manufactured under the same strict supervision as is applied to the Stark-Inland one-piece piston ring.

Coincident with its removal to new quarters the company announced that it had absorbed the Shurnuff Manufacturing Co. of St. Louis, and the stockholders of this latter company are now stockholders in the Stark-Inland Machine Works. With the addition of the Shurnuff line of products, which have been favorably known to the trade since 1916, the Stark-Inland organization now offers to the trader a varied line of motive products. The entire line, which is being marketed under the trade mark brand of Star-K products, is as follows: Star-K-Inland spiral cut piston ring, Star-K oilless quick seating piston ring, Star-K breather spark plug, Star-K-Shurnuff grease retainer, Star-K-Shurnuff combination manifold, Star-K-Shurnuff running board supports, Star-K-Shurnuff windshield ventilator and Star-K-Shurnuff heater.

Will Still Operate Old Factory.

In addition to the new facilities at Jefferson and Lucas avenues, the company will continue to operate the factory at Eighth and Mound streets, where the equipment will be used to manufacture the tools with which the piston rings are made. Dies and jigs will also be made at this plant.

Officers of Company.

The officers of the company are: President, Ottmar G. Stark; vice president, Louis J. Stark; secretary, Fred E. Moore; treasurer, Daniel A. Ruebel.

The officers named, together with John F. Shuford, Edwin H. Wagner and Lawrence C. Kingsland comprise the board of directors.

ROBERTSON CORPORATION'S CHICAGO OFFICES.

The Robertson Resilient Wheel Corporation, 1697 Broadway, New York city, has taken a long-term lease of space on the second floor of the Armour Postal Station building, 3019 Indiana avenue, Chicago, which it will occupy as general offices about Feb. 1. The company reports a brisk demand for the resilient type of wheel, both for passenger cars and commercial vehicles, and contemplates increasing its factory facilities at an early date.

It is stated that the factory of the Lexington Motor Co., Connersville, Ind., is operating at 50 per cent. of its normal production and employing 70 per cent. of its usual working force.

General Office - Factory
and Tool Machine Shop
STARK-INLAND MACHINE WORKS
STARK-INLAND
STARK-INLAND MACHINE WORKS
STARK-INLAND MACHINE WORKS
STARK-INLAND MACHINE WORKS

Ford Factories Are Under Production

While an attitude of reticence is still maintained by the officials of the Ford Motor Co. concerning its financial and production affairs, it is known that the main plant at Detroit and quite a number of the assembling plants in various sections of the country are under production to a limited extent, and it is stated that the preference in taking on the thousands of workers again has been given to married men and those having dependents.

There has been no authoritative statement from any Ford official regarding the financial situation of the company, but it is stated on good authority that any negotiations that might have been under consideration with New York banking interests were broken off for the reason that the bankers' demands were considered unreasonable by Henry Ford, and it is also understood that he refused to permit a bankers' committee or representative of the banks to supervise the operation of his plants.

One of the late features in Ford's affairs is the $5,000,000 damage suit filed against Henry Ford by Morris Gest, a theatrical producer, alleging libel in statements published in the Dearborn Independent, a newspaper which is stated to be controlled by Ford. Officials of the company stated that this matter would be ignored.

Henry Ford also recently gave expression in interviews to somewhat unusual theories in regard to the betterment of the condition of rural residents and also advanced plans for the welfare of the great mass of workers in automotive and other manufacturing enterprises.

While official announcement is lacking, it is stated on authority that W. R. Campbell, secretary and assistant general manager of the Ford Motor Co. of Canada, will succeed F. L. Klingensmith as vice president and general manager of the Ford Motor Co. Campbell is reported to be virtually in authority at the big factory at Highland Park.

Mr. Campbell is 39 years old and has been with the Ford company of Canada since it was organized in 1904. Prior to that he was with the Queen City Oil Co.

W. C. Anderson, director of operations in Europe, with headquarters in London and Paris, tendered his resignation last week and this was followed by that of Louis Block, in charge of the Philadelphia branch.

STORM CO. ISSUES INTERESTING PAMPHLET.

The Storm Manufacturing Co., Sixth avenue and Fourth street, Minneapolis, Minn., maker of motor renewing equipment, recently published an interesting pamphlet entitled, "How I Made My Garage Pay in Winter," which is teeming with suggestions which should be of value to garage owners, repair men and service stations in the way of stimulating business during the cold season when there is so often a falling off in the repair business. It is pointed out that now is the logical time for overhauling the motor car when the cars are laid up and the work can be done thoroughly and carefully. The garage or repair shop that is equipped with a few economical, labor saving pieces of repair and replacement equipment is in a position to make a strong bid for this work during the slack season.

The Storm Manufacturing Co. is supplementing the pamphlet mentioned above by a series of suggestions on "Filling the Shop with Profit Possibilities," which will be sent on request to anyone interested.

INFRINGEMENT CLAIMED BY SECURITY CO.

It is stated that the Security Manufacturing Co., Los Angeles, Cal., through its subsidiary, the Miller-Chapman Co., has filed several suits for infringements on its basic patents on automobile theft signals. The patents sued on are the Ells reissue patent 14,956, the Chapman design patent 54,377 and the Chapman mechanical patent 1,343,709. It is stated that these patents cover broadly every device which is adapted to lock on a wheel and to produce a bumping movement if the car is started.

SEWELL CO. APPOINTS DISTRIBUTORS.

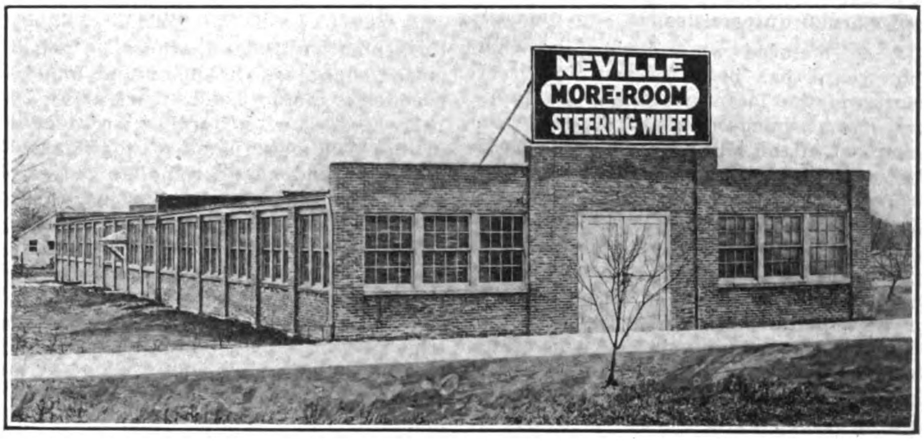
The Sewell Cushion Wheel Co., Detroit, Mich., manufacturer of resilient motor trucks wheels, announces the appointment of the following distributors: Marriott-Howe Tire Co., Mobile, Ala.; Rubber Tire & Supply Co., Springfield, Mo.; F. A. Thompson, Hutchinson, Kan.; M. H. Rykowski, New Orleans, La.; Habbie Motor Co., Montgomery, Ala.; Baldwin Repair Co., Middletown, Conn.; A. F. Greene Co., Norwich, Conn.; Bee Jay Tire Service, Davenport, Ia.; Lampher Motor Co., Joplin, Mo.; Gibbes Machinery Co., Columbia, S. C.; Gibbs & Williams, Salt Lake City, Utah; Peoria Tire and Vulcanizing Co., Peoria, Ill.; O. F. Kress Co., Lawrence, Mass.

Further sales expansion is already under way for 1921.

Neville Mfg. Co. in New Quarters

The accompanying illustration shows the new quarters of the Neville Steering Wheel & Manufacturing Co. at Wayne, Mich. This concern makes the Neville More Room Steering Wheel and this new location will provide much needed space for the expansion of the company's production activities, giving more than three times the floor space as was had at the old plant in Detroit.

The new factory is of brick and cement construction, 50 by 280 feet, with plenty of light and modern facilities.



New Factory of Neville Steering Wheel and Manufacturing Co. at Wayne, Mich.

SPEEDWAY CO. PERFECTS EIGHT VALVE HEAD.

The Speedway Engineering Co., Indianapolis, Ind., manufacturer of Ford speed specialties, which has for a number of years been making the Peugeot type 16-valve camshaft head for Ford cars, especially designed for racing and fast roadster equipment, has been experimenting for a number of months on an eight-valve head for Ford pleasure and commercial cars. It is stated that W. L. Hunt, the designer for the 16-valve head, has now perfected the eight and that it will be placed on the market within the next 30 days. It is claimed that this head will increase the motor efficiency of the Ford power plant from 30 to 35 per cent. The head develops about 30 horsepower, and it is stated that, by its use, the possible speed of Ford cars can be increased to 60 or 65 miles an hour.

The new eight-valve head is claimed to be easily installed, as it fits right on to the Ford block without any change other than the removal of the old head and no special mechanical or technical knowledge is required. It is suggested by the manufacturer that here is a solution for garage men who have been wondering what to do with their accumulation of used Ford cars.

The Packard Motor Car Co., Detroit, announces the re-employment of 1000 additional men, raising its working force to about 4000.

Personal News of Industry and Trade

Jacobs with Hammered Piston Ring Co.

Joseph S. Jacobs has been made manager of the advertising department of the American Hammered Piston Ring Co., Baltimore, Md. He has been associated with the sales and promotion activities of this concern for about a year and a half as assistant to Walter P. Coghlan, general sales manager, and will now assume definite direction of the advertising department, assisted by C. B. Cook. Mr. Jacobs joined the Bartlett-Hayward Co., the parent concern, in 1915, direct from his college activities, and started in a modest position, but rapidly assumed various responsibilities. During the war he was assistant superintendent of the million dollar drop forge plant of the Bartlett-Hayward Co., which was engaged in making high explosive shells. He has attended the Polytechnic Institute in Baltimore, Johns Hopkins and Cornell universities.

J. G. Melbrod who, during the past four years, has been foreman in direct charge of the Titanium Bronze Co. foundry, has assumed charge of the same department of the Hills-McCanna Co., 2025 Elston avenue, Chicago, Ill. Mr. Melbrod's association with the Titanium Bronze Co., and a previous connection with the Lumen Bearing Co., also of Buffalo, N. Y., both of which companies specialized on automobile worm wheels, has given him a wide experience in the handling of aluminum bronze and other metals that, coupled with the Hills-McCanna Co.'s reputation in the construction of bronze worm wheels, and the use of manganese aluminum in gear cases and rear axle housings, makes this new connection of Mr. Melbrod of decided interest to the trade.

Frank J. Flynn has been appointed service manager of the Connecticut Telephone & Electric Co., Meriden, Conn. He has been for several years with the Connecticut company in the field, both among service stations and jobbers. Many of the Connecticut stations were appointed by Mr. Flynn, so that his acquaintance and experience fit him admirably for this new work. I. L. Doolittle, who has been service manager for the past two years, joins the sales division of the company, where his previous training and his qualifications should prove most valuable.

E. A. Taylor has been appointed works manager in charge of production by the Liberty Motor Car Co., Detroit, Mich. He has just severed his connection with the Pierce-Arrow Motor Car Co., Buffalo, N. Y., as production manager and, previous to that, held executive positions in charge of manufacturing departments. He was with the Cadillac Motor Car Co. from 1909 to 1912. In 1912 he became associated with the Maxwell Motor Co. in charge of Detroit plants, and in 1913 was transferred to the Maxwell Motor Co.'s plant at Dayton, where he was in entire charge of the plant and foundry, producing motors and rear axles. In 1917 he became general superintendent of the Chalmers plant of the Maxwell Motor Co. and was in complete charge of negotiations and completion of important war work in addition to the manufacturing of cars. In 1919 he left the Maxwell Motor Co. to join the Pierce-Arrow company.

G. M. Berry, Vice President and General Manager, Stevens Duryea, Inc.

William Elliott Phelps, formerly district sales manager for the Haynes Automobile Co., Kokomo, Ind., has been appointed to the position of general sales manager of the same company, according to an announcement by Vice President and General Manager Alton G. Seiberling. Mr. Phelps, who is a graduate of Princeton unversity, has a long record of successful automobile salesmanship. He was a prominent figure in the sales organization of the Chicago branch of the Winton company, and previous to that was district sales manager of the Haynes Motor Car Co. of Chicago, where he built up one of the most efficient automobile selling organizations in the Middle West. He was also general sales manager of the All-American Truck Co. In addition to his career as a successful automobile salesman, Mr. Phelps holds a high position in automobile circles, having been state automobile investigator for the State of Illinois and today is a leading member of some of the prominent motor clubs in and around Chicago.

John S. Hyatt is the manager of the new Armleder Motor Truck Co. of New York, a branch of the well known Armleder truck manufacturing concern of O. Armleder Co., Cincinnati, O., which has opened headquarters at Third avenue and Butler street, Brooklyn. **A. W. Christopher**, who has heretofore been associated with the sale of Armleder trucks in New York, will be sales manager of the new branch.

General Manager of Stevens Duryea

G. M. Berry, who joined Stevens Duryea, Inc., in July, 1920, as vice president and general manager, though still a young man, has been identified in a large way with the automotive industry for several years. He first came into prominence as an assistant sales manager of the Jeffrey company, later being appointed sales manager and eventually vice president and treasurer of that organization. After leaving the Jeffrey company Mr. Berry became assistant sales manager of the Willys Overland company, eventually being made commercial manager. In all of the several positions filled by him his work has been distinguished by a painstaking regard for every detail that could contribute to the development of a forward looking constructive programme, and he is known throughout the entire industry for the high standards of automobile merchandising which he has always advocated.

C. R. Miller has resigned as general manager of the Allen Motor Co., Columbus, O., after having served in that capacity since the removal of the company from Fostoria, O., to Columbus. Previous to that he was works manager of the Willys-Overland Co. From 1900 to 1918 he was associated with the Miami Cycle & Manufacturing Co., rising from foreman to general manager. Mr. Miller has not announced his plans for the future.

J. A. Palmer has become sales manager for the Neville More Room Steering Wheel Co., Wayne, Mich. He comes from the Burroughs Adding Machine Co., where he has been for 3½ years. Previous to that he was with the Good Health Publishing Co., Battle Creek, Mich. Mr. Palmer will have charge of both sales and advertising in his new connection.

J. H. Desmond who, for the past three years, has been district manager of the Hart-Parr Co. in the Canadian territory, with headquarters at Regina, has been placed in charge of salesmen in the field, with headquarters at the factory in Charles City, Mich.

Dorsey W. Hyde has resigned from the transportation engineering division of the Packard Motor Car Co., Detroit, to become assistant manager of the civic development department of the Chamber of Commerce of the United States.

R. J. Firestone, whose connection with the rubber industry has made him well known throughout the country, was elected a vice president of the United States Motor Truck Co., Cincinnati, O., at its recent annual meeting.

Hubert E. Hartman, assistant secretary and general attorney for the Ford Motor Co., has resigned, effective March 15.

Republic Truck Retaining Executives

E. E. Sieg is to retain the position of assistant general sales manager of the Republic Truck Sales Corporation, Alma, Mich., the sales outlet for Republic trucks, made by the Republic Motor Truck Co. Mr. Sieg joined Republic in 1914 and has been connected with the organization continuously since that time, acting successively as auditor, credit manager, and latterly, as assistant general sales manager, since Jan. 1 of last year. General Manager Frank E. Smith also announces the retainment of **Robert B. King** as eastern division sales manager. Mr. King has been actively connected with the Republic organization for almost three years in various capacities, his service in the sales division having begun over two years ago, as assistant sales manager of the northeastern division. On the rearrangement of the company's sales territories, he was appointed assistant western division sales manager, in which capacity he served until July, 1919, when he was placed in charge of the sales promotion department, serving there until the end of that year. He spent the past year in the eastern sales division, first as assistant manager, and latterly as division sales manager, which position he retains. During his business career, covering the past 10 years, he has had accounting and merchandising training in the hardware, motor and steel product fields, having successfully occupied important positions with the Lion Motor Co., Wilcox Wholesale Hardware Co. and for five years with the Peerless Wire Fence Co., all of Adrian, Mich.

Maurice J. Moore, secretary and treasurer of the LaFayette Motors Co., Mars Hill, Indianapolis, Ind., died at St. Vincent's hospital, Feb. 1, as the result of acute dilation of the heart, following an operation on his knee a week before. He was 35 years old and a wife and four-year-old son survive him. Mr. Moore has held the position of secretary and treasurer of the LaFayette Motors Co. since its inception in 1919; he was also president of the LaFayette Building Co. and was largely responsible for the building of a colony of beautiful homes for LaFayette employees near the LaFayette plant. He was formerly connected with the Northway Motors Manufacturing Co., Detroit, Mich. He was also comptroller of the Chevrolet Motor Co., of Flint, Mich., and auditor and later production manager of the Miami Cycle Co. of Middletown, O. During the war he was disqualified for overseas service by the affected knee, injured in a football game several years ago, but performed an important service as captain in the Motor Transport Corps, in charge of finance, accounting and settlement of claims under the Motor Vehicles division.

R. C. Huddle has been selected by the O. Armleder Co., maker of Armleder trucks, Cincinnati, O., to succeed W. R. Hill as purchasing agent.

A. D. Williams, in Charge of X Laboratory Sales.

Fred Wellman, for two years advertising manager of the National Motor Car & Vehicle Corporation, has resigned his position to join the National Motor Sales Co. of Chicago, distributor of National cars, in the capacity of sales manager. During his connection with the National factory Mr. Wellman engaged in sales promotion work in addition to advertising. Prior to his association with National he was identified with Carl G. Fisher in the latter's Indianapolis Speedway, Lincoln Highway and Miami, Fla., real estate promotions; also he was advertising manager of the Olds Motor Works in 1916. Mr. Wellman broke into the automobile industry via the newspaper route, having been automobile editor of the Indianapolis Times and Indianapolis News in 1911 and 1918 respectively.

L. Grant Hamilton of national prominence in automotive merchandising and advertising circles, has joined the staff of the Akron Advertising Agency, Akron, O. Since his discharge from two years' army service in France, Mr. Hamilton has been in active charge of the advertising of the Federal Motor Truck Co., Detroit, Mich. Prior to the war he was with the Campbell-Ewald agency; he also served as advertising manager of the Regal Motor Car Co., and was a member of the advertising and sales promotion departments of the Studebaker Corporation.

T. B. Blakiston, S. A. Barclay and A. M. Merrifield recently had their efficient services with the American Hammered Piston Ring Co., Baltimore, Md., recognized by promotion. Mr. Blakiston, who has been district sales manager for the southeast territory, has been made general sales manager to succeed J. H. Quackenbush. Mr. Barclay assumes Mr. Blakiston's former duties in the southeast, and Mr. Merrifield is in charge of the Chicago and western sales districts as district sales manager, replacing D. T. Preyer.

Williams Heads Sales X Laboratories

A. D. Williams has assumed charge of sales for the "X" Laboratories, manufacturer of "X" Liquid, and will have his headquarters at the New York office of the company, 25 West 45th street. Mr. Williams was formerly associated with the American Chain Co., Bridgeport, Conn., and the F. Hersh Hardware Co., Allentown, Pa. For the last few years he has been field manager for the Bethlehem Spark Plug Corporation, Bethlehem, Pa.

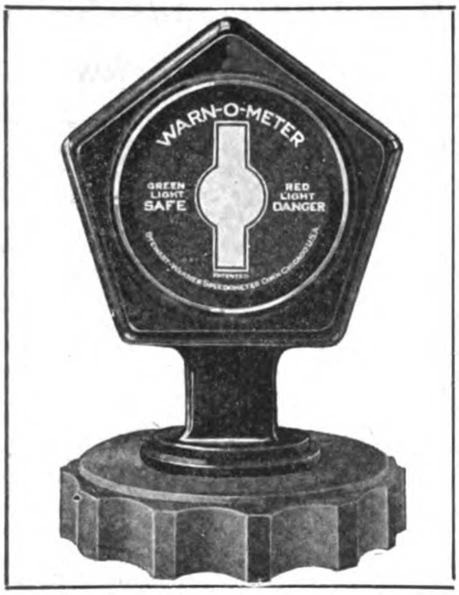
Clifford F. Messinger, general sales manager of the Chain Belt Co., Milwaukee, Wis., has been elected president of the Concrete Mixer Association of the United States. The other officers were: Vice president, W. B. Knickerbocker, Knickerbocker Co., Jackson, Mich.; treasurer, A. T. Scannell, Archer Iron Works, Chicago, Ill.; executive committee, H. E. Smith, president of T. L. Smith Co., Milwaukee, Wis., chairman; P. A. Koehring, secretary of Koehring Machine Co., Milwaukee; Z. W. Carter, sales director of Austin Machinery Corporation, Chicago.

Edward W. Kruspe has been appointed mid-west manager of sales for the Acason Motor Truck Co., Detroit, Mich., resigning from his connection with the Standard Motor Truck Co. to handle the states of Illinois, Indiana, Kentucky, Wisconsin, Iowa and Missouri for Acason. Mr. Kruspe has an enviable reputation in the truck selling field, having handled Four Wheel Drive trucks, as well as Standards, from coast to coast. He is also familiar with the retail end, having been for a time in business in Milwaukee.

George J. Blanton who for the past four years has been connected with the engineering sales department of the Chain Belt Co., Milwaukee, Wis., has been made New York district manager. Before joining the "Rex Family" in 1917, Mr. Blanton was associated with the General Electric Co. for eight years, three of which were spent in Schenectady, N. Y., and the other five in the Milwaukee office. Mr. Blanton is a graduate of the University of Michigan, Department of Mechanical and Electrical Engineering, class of 1909. He will have his headquarters at 50 Church street, New York city.

Dick Jemison, for 11 years sporting editor of the Atlanta, Ga., Constitution, has been appointed advertising and sales promotion manager of the Oldfield Tire Co., Akron, O. For the past year he has been in charge of sales promotion of the Miller Rubber Co. It is reported that an intensive publicity campaign is to be inaugurated under Mr. Jemison's supervision.

"Bob" Crowthers, formerly with the Gary Motor Truck Co., Gary, Ind., has joined Master Trucks, Inc., 3132 Wabash avenue, Chicago, in the capacity of advertising and assistant sales manager.



Front View of Stewart Warn-O-Meter.

STEWART WARN-O-METER FEATURED AT SHOWS.

One of the interesting new accessories being featured at the automobile shows the present season is an addition to the well known line of Stewart-Warner devices. This is the Stewart Warn-O-Meter, which is designed to eliminate, as much as possible, engine troubles which result from overheating.

Fitted to the radiator cap or front fender the Warn-O-Meter is wired back to a thermostatic unit attached to the engine. Concealed in the instrument are two small light bulbs. At normal motor temperature a steady green light shows. Should the cylinders become dangerously hot, due to a broken fan belt, clogged water pipe or other trouble, the thermostat automatically switches on a red light to warn the motorist so that he may remedy the defect in time. The Warn-O-Meter will operate and give true motor conditions regardless of the air or water temperature in the radiator, as it is not dependent on this factor, the operating medium being attached directly to the engine block.

One big point in favor of the Warn-O-Meter is that it will not allow itself to be overlooked. The brilliant red danger signal cannot fail to get the driver's attention when it suddenly flashes on. It can be easily read both day and night.

Another point worth mentioning is the difficulty which accessory thieves would meet with in attempting to purloin the Warn-O-Meter. Although they might obtain the indicating unit, it would be of no use to them without the connecting wires and thermostat and to procure the entire assembly would mean considerable time and trouble.

In the reverse side of the Warn-O-Meter, which faces the oncoming motorist, there is fitted a transparent design of attractive colors which is illuminated by the light within the instrument. This standard trade mark design may be replaced by the name of the car, the owner's monogram or some particular insignia. This adds an attractive touch to the car, especially at night.

The Warn-O-Meter can be easily installed on any car radiator or front fender, or on the hoods of air cooled cars not equipped with a radiator.

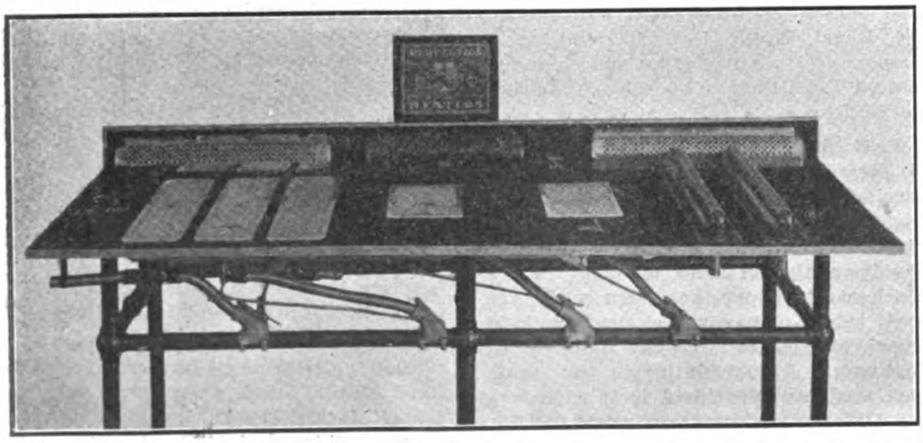
It is manufactured by the Stewart-Warner Speedometer Corporation, Chicago, Ill.

PERFECTION HEATERS AT SHOWS.

The accompanying illustration shows the display of heaters made by the Perfection Heater & Manufacturing Co., Cleveland, O., at the New York and Chicago automobile shows. It is stated that there were not less than nine varieties of this make, the Perfection, seen on 50 of the 88 makes of cars displayed at New York, and the same conditions were in evidence at Chicago.

"It is just as unreasonable—and as unnecessary, too,"—says C. S. Pelton, vice president of the Perfection Heater and Manufacturing Co. of Cleveland, "to ask any one kind of heater, or one particular size of valve, to adapt itself to all makes of cars, as it is to make the same request of any one size of carburetor or muffler. The latter idea would not appeal for a moment to any owner of a machine who cared a cent about the welfare of so valuable a friend; neither does the first—now.

"Structural and other features need not be disregarded. At least one type of Perfection heater will be suitable for installation on any passenger car or truck on which it is possible to use a heater. Perfection heaters have already been adopted as standard equipment on 47 motor trucks."

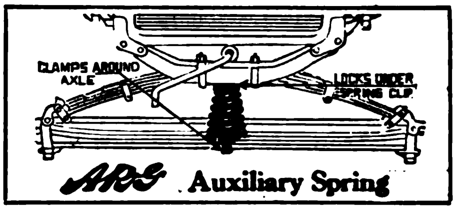


Display of Nine Varieties of Perfection Heaters Exhibited at the New York and the Chicago Shows.

SPRING PROTECTOR FOR FORDS.

The Arg Auxiliary Spring Co. of Birmingham, Ala., pioneer manufacturers of front spring protectors for Ford cars, states that it is now in production on the new Arg auxiliary spring for use on the new model Ford cars.

Until recently the front spring of the Ford car had two spring clips, but the late models have only a single clip. This has necessitated a slight change in the Arg spring, so that the spring can be attached to the new Ford models with the same ease and quickness of installation that has been experienced in the past in installing the Arg on the former models of Ford cars.



The Arg auxiliary spring locks around the front axle and under the spring clip. It is claimed that it not only protects against a broken front spring, but guards against tires being cut by fender irons, a racked, leaking radiator, worn out spring hangers and steering arm locking on radius rod.

While the Arg spring is not sold primarily as a shock absorber, Ford owners who have equipped their cars with these springs state that their cars do ride easier, as the same action of the Arg which protects the front spring from breaking also absorbs the jolts and jars of bad roads.

The Arg may be used on both passenger and commercial models of the Ford, and is sold only through regular trade channels; however, the company will be glad to send descriptive matter to car owners whose dealers have not been supplied with Arg springs by their jobbers.

STANDARDIZING COLOR SIGNALLING.

The use of red, yellow and green, as standardized color signalling, in the control of automobile traffic, is already established in over 200 cities and towns throughout the country, according to the traffic engineers of the Aga company of Elizabeth, N. J., marine lighthouse engineer and builder, which has just completed an investigation of traffic conditions in the United States. The three colors recommended by the standards committee of the American Association of State Highway Officials, are those uniformly used by the railroad systems; red, first degree danger; yellow, second degree danger, and green, traffic danger only.

THE NO-LEAK-O PISTON RING PRINCIPLE.

The No-Leak-O principle which is the distinguishing characteristic of an improved type of piston ring which is being marketed by the No-Leak-O Piston Ring Co., Baltimore, Md., is claimed not to be the result of accident or chance, but is the discovery of John E. Norwood, a mechanical engineer, who has devoted an active life to careful study and mechanical experimenting. He states that he found the underlying weakness of all ordinary piston rings to be the absence of any practical means to create and maintain a constant oil seal or film of oil between the ring and the warped or imperfect cylinder wall, and the lack of equalized ring pressure on the walls of the cylinders. It is claimed that the No-Leak-O ring obviates this weakness by its method of construction. A groove is cut around the ring at a right angle with the face, sloping on an angle of about 45 degrees in combination with the patented step-lap joint. The oil splashed up from the oil pit is picked up quickly by the rings until all the grooves are full. This forms a packing the same as the improved water pump; where a groove full of water makes its own packing against water. No surplus of oil or gas will pass the rings. The oil is retained in the groove between the ring and cylinder wall just where needed for lubrication and forming the oil seal. As the oil is worn out in lubrication, fresh oil is picked up. On the down stroke the square edge forming the groove gathers the surplus oil, pulling it toward the oil pit. On the up stroke it is distributed again from the sloping face of the groove, pulsating as it were, preventing the groove from clogging.

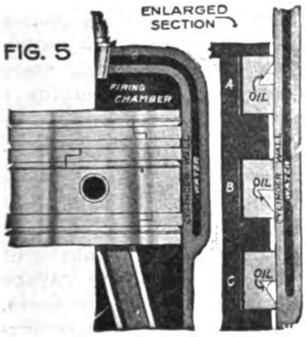


FIG. 5

No-Leak-O rings are made from a special formula of close grained, tough, gray iron, a few points softer than ordinary cylinder metal. They are accurately finished and individually cast, retaining on the inside the skin of the casting, which insures long life and lasting resiliency.

Another feature claimed in favor of No-Leak-O rings is that by reversing the top ring, using it the groove side up, the refuse unconsumed in the grade of fuel now common obtainable, is trapped in the groove and prevented from working past the piston ring down into the oil pit. This is denoted in the illustration. Fig. 5, letter A. On the firing or power stroke this trapped oil is wiped out of the groove on the cylinder wall into the heated firing chamber. It will then be exploded or will go out the exhaust pipe.

In connection with the phenomenal sale reported for No-Leak-O rings, the receipt of an order is announced from the Pennsylvania Rubber & Supply Co. of Cleveland, O., for an entire car load, this being stated to be the largest single order for piston rings ever placed by a single jobber.

The No-Leak-O piston rings retail for as low as 50 cents; the price was not advanced during the war despite the increased cost of manufacture all along the line. A standard policy of fair play towards the jobber, dealer and car owner has always been maintained.

CALDWELL LIGHTNING TIRE REMOVER.

Inasmuch as the Caldwell Lightning Tire Remover is stated to be simple in construction, and more so in use, and that it eliminates all lost motion and the worry of the old methods, it would seem to be a very useful adjunct to the equipment of every up-to-date garage. It is a solid casting weighing 300 pounds and has a machined channel, 37 by five inches, in which a heavy air tube works, pushing a wooden core with equal pressure against the inner circle of the tire at the bead, forcing the tire from the seat. The tire is placed on the device and clamped down well with the spider, which weighs 30 pounds. On wire wheels it should be noted that they are clamped through the hub. Then the tube is inflated with air through the valve stem just under the device. The illustration shows a 35 by five-inch tire pushed nearly off a wire wheel.

In order to handle the smaller sizes, a circular section is cut out of wooden boarding. This lies on the core under the tire and is slipped into the flange of the rim all around and catches the tire just as the wooden core does in the 35 by five-inch size. Two different sized spiders are supplied by which the rims are clamped, one for 24-inch rims and one for 25-inch, which are stated to cover all rims most used at present.

The maker of the Caldwell tire remover states that this equipment was recently installed in the Goodyear Repair School and the repair school of the Miller Rubber Co. at Akron, O.

It is manufactured and distributed by the Caldwell Motor Accessories Co., 408-410 North Central avenue, Knoxville, Tenn., which will supply prices and literature on request.

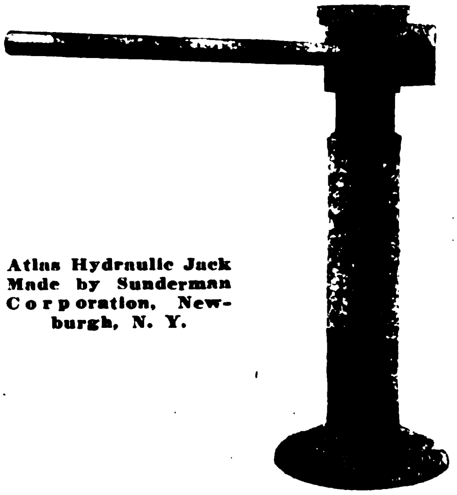
Showing Operation of Caldwell Tire Remover on Wire Wheel.

THE ATLAS HYDRAULIC AUTO JACK.

The Atlas Hydraulic Jack is stated to be the last word in jack building, as it is simple in design, durable in construction and dependable in action. with nothing to get out of order; no gears to slip, no ratchets to stick or catch, but works on the principle of the compression of fluids.

It is built entirely of steel and is claimed to be of the highest quality of material and workmanship. The simple instructions for its operation are as follows: Place the handle on the pump socket with the small notch downward. This notch fits into the slot or slide, and stops the handle on the bottom stroke to prevent tripping, when pumping up the jack. To lower, pull out slightly on the handle and push down the entire distance of the slot, which trips the jack.

For filling the jack with the light oil, which is used as the liquid operating medium, the top or lift cap is taken off, this being held in place by two set screws. A brass plug with a screw driver slot will then be seen, along the side of the pump plunger. This plug is removed and the receptacle filled with the fluid. When filled, carefully replace the plug and cap.


Atlas Hydraulic Jack Made by Sunderman Corporation, Newburgh, N. Y.

The caution is given not to attempt to pull the plunger out of the jack or the packing may be disarranged, which would be apt to cause a leak while lifting. It is also preferable to have a load on the jack when pumping it up in order to expand the packing.

The Atlas Hydraulic Auto Jack is manufactured by the Sunderman Corporation, Newburgh, N. Y. It is made in two sizes, 1½ and 7½-ton, the list price of the former being $7.50 and of the latter, $15.

MUELLER BATTERY HANDLE.

The Mueller Electric Co., 2135-43 Fairmount road, Cleveland, O., announces that it now has a wire type of storage battery handle (No. 7-A) ready for the market. These are lead coated to protect them from acid. The company claims the lead coating offers better protection to the metal because it is not porous as is lead plating.

TRIPLEX ALL-METAL WINDSHIELD VISOR.

C. A. Cathcart Co., Inc., 222 Massachusetts avenue, Boston, Mass., is offering to the trade an attractive and interesting accessory in the new Triplex all-metal windshield visor and rain gutter, for which the following advantages are claimed:

Direct and also reflection protection against sun, street lights and headlights.

Perfect vision in a rain storm (open upper windshield glass); rain gutter feature (integral), collects all rain drops and discharges at both sides of car; these usually form along the lower edge of the upper windshield glass and are blown on to the passengers or form the visor and are blown on to the windshield glass.

The Triplex also perform its functions when the top is down.

No moving parts; the Triplex will outlive the car; made of the highest grade automobile body steel, electrically welded; rigid construction; light weight.

Design tested out for many months on the road.

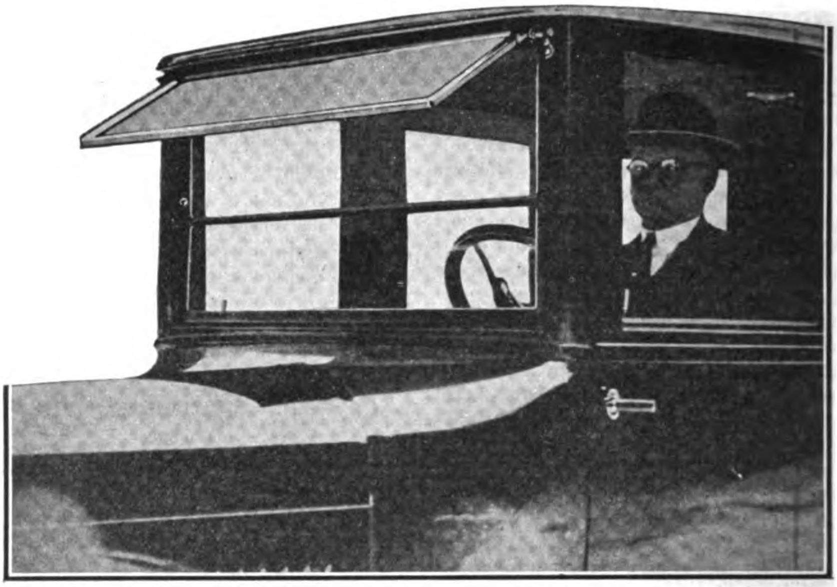
Pleasing appearance; well proportioned and adds to the appearance of any car. Has the look of being built-in as standard equipment.

Finished with three coats of black enamel, baked on; under side has a green non-reflecting finish.

Adjustable instantly to any angle, pull or push with the fingers; no tools required.

Attached in a few minutes, with a common wrench or screw driver, to any open or closed car.

The Triplex is a real "factor of safety." It is stated to perform every function that any other visor performs and has additional features all its own.



Illustrating Utility and Pleasing Appearance of Triplex All-Metal Windshield Visor, Manufactured by the C. A. Cathcart Co., Inc., Boston, Mass.

The weather has no effect on the Triplex because it has no leather, imitation, automobile top material, celluloid or paint in its construction to stretch, sag, develop "water pockets," burn or chip and detract from the general appearance of the car.

The Triplex is stocked in four sizes: 42 inches by 12 inches, 40 inches by 10 inches, 38 inches by 10 inches, 36 inches by 10 inches. Total adjustment 2½ inches on each size. The 38 inches by 10 inches is suitable for most open cars; 40 inches by 10 inches for most closed cars. Any special size furnished in less than one week, 20 per cent. extra, net cash with order. Quotations furnished for special colors and nickel plated brackets.

It is important to note that the overall length of the windshield glass moulding at the top may be between 1½ inches shorter and one inch longer than standard visor lengths. When ordering state whether the brackets are wanted for a closed or open model.

The list price is $12, f. o. b. factory.

GREB NO. 12 REAR AXLE PRESS.

One of the most popular members of the Greb line of automotive and garage equipment is the No. 12 rear axle press, which is especially designed for removing axle and drive shaft gears and pressing on axle gears, and has a capacity for shafts up to 1¼ inches and gears up to 6½ inches, and is thus particularly adapted for Fords, Chevrolets and other small cars. It will remove connecting rod wristpins, timing gears and spindle body bushings.

The method of operation is shown in the accompanying illustration:

No. 1—Pressing gear down by using the cup to remove lock rings. Axle is resting on base plate.

No. 2—Forcing axle through the gear after lock rings have been removed. The axle is now extending through the hole in base plate.

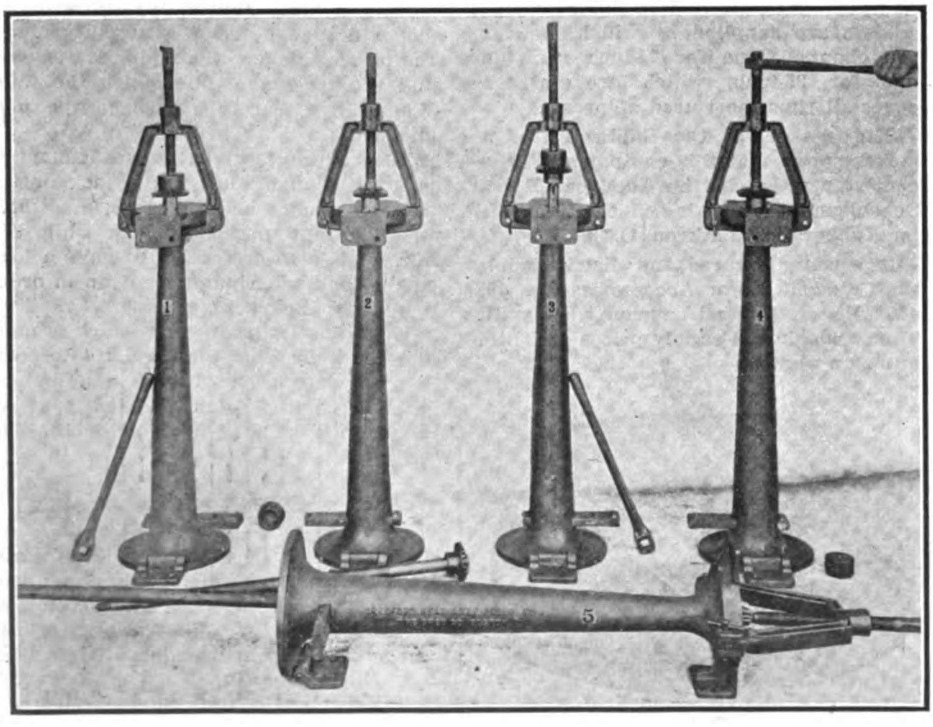
No. 3—Pressing new gear on to axle and below the groove so lock rings may be replaced. The base plate has now been moved back to first position, affording a base for axle to rest on.

No. 4—Forcing gear over lock rings, thereby locking same in proper position.

No. 5—Pressing pinion off drive shaft. This view shows how readily the press may be laid down by means of this base hinge, showing its adaptability for long range work.

The press is constructed throughout of steel and malleable iron. There are two collar supports on the interior of the column to prevent an axle from buckling.

The Greb equipment is manufactured by the Greb Co., Inc., 172-173 State street, Boston, 9, Mass. The list price of the No. 12 rear axle press, is $35.



Greb Rear Axle Press, No. 12, Made by Greb Co., Inc., Boston, Mass., Showing Method of Operation.

REFLEX TRANSMISSION LININGS FOR FORD CARS.

The development and refinement of Reflex Cord Mica Treated Transmission Lining is stated to be an illustration of the truth of the old maxim, "Necessity Is the Mother of Invention." The originators of Reflex cork saw the need of a transmission lining for Ford cars, which would give lasting service and entire satisfaction, and when one considers the attention and materials which enter into the construction and follows the different processes through which it passes, its reported wonderful success on the automobile accessory market is easily understood.

First, the cords of which the fabric is woven into 100 foot lengths, are carefully chosen of the very best grade of cotton and should any defect show in the fabric, on careful inspection after being woven, the length is immediately thrown out.

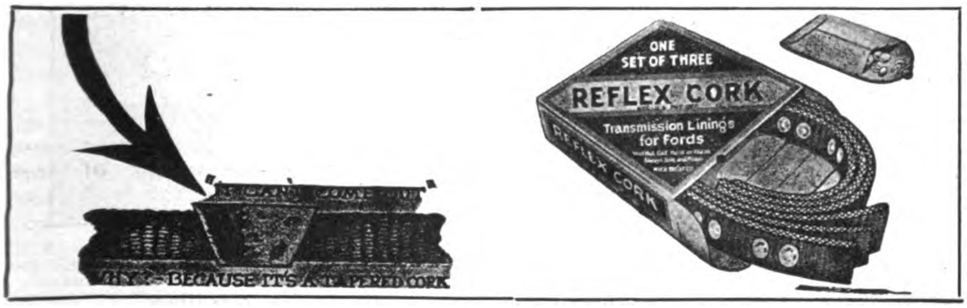
After being woven the fabric is taken to large vats, where it is dipped in a solution of chemicals, wax and other ingredients. It is in this process that mica, considered the greatest heat lubricant known, is added in powdered form, the fabric becoming thoroughly impregnated with it, thus making it soft and pliable at all times while in use. After the lining has been treated, it is subjected to a drying process and it is this which gives the fabric toughness and unlimited wearing service down to the last thread.

Next, the fabric is cut up into lengths of 24 inches, and in each length is punched 14 holes with a 33/64-inch taper, and into these holes are fitted the corks, also cut on the same taper. The holes in the fabric and the corks forming a perfect fit, there is no possibility of the corks coming out, the more pressure being applied the firmer the corks become imbedded in the fabric. The 14 tapered corks is strictly a Reflex idea, this amount, while being sufficient to take hold easily and smoothly, in no way weakens the fabric, as would be the case were more corks used.

The claim is made that Reflex Cork Mica Treated Transmission Linings never get hard nor slick and never grab nor slip, but take hold easily and smoothly. The corks remain soft and velvety because the cork surface does not become oil soaked, nor does the fabric become slick because, when pressure is applied, the mica works to the surface, in much the same manner as water is squeezed out of a sponge, keeping the fabric soft and pliable at all times. It is also stated that by the use of Reflex cork, perfect control of the car is given at all times, making driving a pleasure and a safeguard is offered on the lives of both pedestrians and drivers.

The Reflex Auto Accessory Co. has also placed on the market a transmission lining without the cork, and the same care and attention is put into the manufacture of this.

The Reflex products are made at Fort Wayne, Ind.


WHY?—BECAUSE IT'S A TAPERED CORK
ONE SET OF THREE
REFLEX CORK
Transmission Linings for Fords
REFLEX CORK

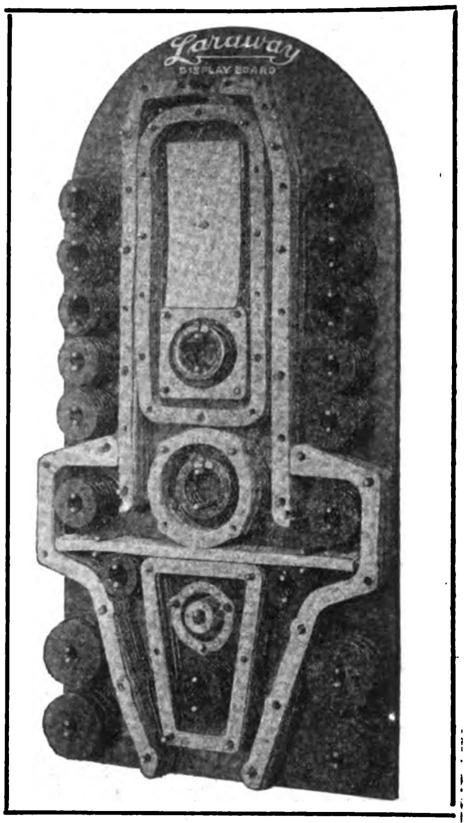
LARAWAY DISPLAY BOARDS FOR GASKETS AND WASHERS.

The Laraway Specialty Co., 546 W. Washington street, Chicago, Ill., is adopting an effective method of distributing cork and felt gaskets and washers for various models of cars. The illustration shows the No. 20 display board, which is characteristic of the line of equipment offered by this concern, this containing an assortment of cork and felt gaskets for Ford cars, together with three Holly and three Kingston carburetor floats, which are included free with this outfit.

These Laraway Patented Display Boards are the original type of equipment designed and manufactured by the Laraway Specialty Co. They are made entirely of hard wood, beautifully finished, with wooden pegs to fit the gasket bolt holes, which assures that the gaskets are properly held in shape, thus avoiding loss by breakage, etc. The principal feature of these display boards is that the goods are always on display and handy for immediate selection and use. The dealer or garage man can see exactly just what stock he has on hand at all times. The Laraway Patented Display Board is thus stated to be a powerful silent salesman, as the gaskets practically sell themselves by this system.

The display equipment is also made with assortments on boards suitable for Dodge, Chevrolet and Buicks, as well as Fords.

Literature, with prices and dealer's discount, will be furnished on request.



Laraway Display Board for Gaskets and Washers.

COPPOCK INTERNALLY HEATED MANIFOLD.

It is stated that poor gasoline holds no terrors for the car equipped with the Coppock Internal Manifold, which is being manufactured bv the Motovic Products Corporation, 441 State street, Detroit, Mich., as it is claimed to obviate poor ignition, carbon sooted spark plugs, thinned out lubricating oil, scored cylinders and burnt out bearings. The Coppock heater is stated by the maker to convert the lowest grade gasoline into uniform, live, dry gas, which gives perfect combustion. It gives heat at low speed and the engine can thus be throttled down to two to four miles an hour in high gear without bucking or jumping. The heat in the manifold regulates itself automatically so that just the amount needed and no more is taken from the exhaust. Gasoline, when vaporized and energized by the Coppock manifold, is claimed to produce a longer, more even and more powerful explosion, giving a smoother running motor, greater flexibility and more speed.

The manufacturer guarantees that the Coppock Internally Heated Manifold will give absolute satisfaction in every respect and that an increase of six to 12 miles a gallon of gasoline can be obtained by its use over that of standard equipment. It is an all-the-year-round proposition, giving the same results both in summer and winter.

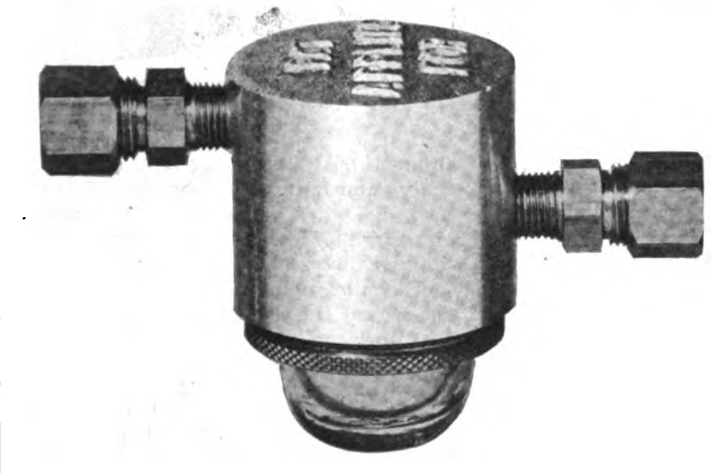
The simple instructions for installing are furnished with each manifold and it is stated that the work can be done in half an hour's time. The prices for the complete installation are as follows: For Fords, $10; all other makes with single intake manifolds, $12.50; all eights and twin sixes, $25.

ADVANCE CO. MOVES.

The Advance Rubber Co. has moved into its new plant in Brooklyn, N. Y., and is preparing for greatly increased production this spring.

WETHERHOLT VISIBLE GASOLINE PURIFIER.

When it is realized how much annoyance and delay are often occasioned by a little piece of dirt, lint or some other foreign substance in some part of the fuel supply system of the internal combustion engine, the utility of some eliminating or purifying device is self-evident. The Wetherholt Visible Gasoline Purifier, which is depicted herewith, is especially designed for this purpose, and is adapted for use on all automobiles, trucks, tractors, marine engines, airplanes, etc. It consists of a compact metal container in which is placed a fine screen through which the gasoline must pass, and on to the lower part of the purifier is screwed a glass cup into which all sediment or impurities that are filtered out by the screen drop. As this cup is always visible when the device is properly attached, it makes a check on the purity of the fuel.



The Wetherholt Visible Gasoline Purifier.

It is stated that the Wetherholt Purifier can be attached at any point in the gasoline line where it would be most convenient to see the glass bowl, and its fitting is a very simple operation. It is only necessary to cut the fuel supply pipe, preferably near the vacuum tank, when the vacuum system is used, and then the compression couplings and small brass fittings are slipped over the cut ends of the pipe with the Purifier between, the brass cup hanging down, and the couplings are tightened up snugly. On pressure or gravity feed systems the Purifier may be placed at any point where it will be easy to see and clean the cup, as stated before. When attaching to pressure or gravity systems it is necessary to shut off the gasoline at the tank or wherever provided, before cutting the pipe. Some pipe lines may be oversize on the outside and it may then be necessary to file a little off the outside of the pipe so that the compression couplings will slip over the cut ends.

To clean the device, simply turn the knurled retainer to the left, empty the impurities and replace.

The former price of the Wetherholt Visible Gasoline Purifier was $5, but this has been recently reduced to $3.50. It is manufactured by the Automotive Manufacturing Corporation, Strauss building, Chicago, Ill.

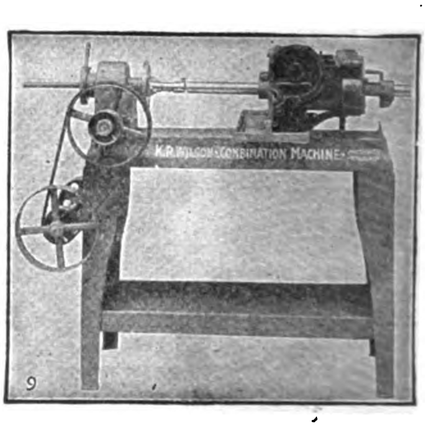
K. R. WILSON COMBINATION MACHINE.

In the K. R. Wilson Combination Machine there is offered a piece of equipment that should appeal to all repairmen that do work on Ford motors in that it combines seven machines and tools in one. These various fixtures and attachments are as follows: 1, rebabbitting fixture; 2, babbitt boring fixture; 3, main bearing reamer; 4. two-position motor work bench; 5, running-in, burning-in, lapping-in machine; 6, cylinder reboring machine; 7, spotting-in bar.

The cut shown herewith depicts the K. R. Wilson Combination Machine with the cylinder boring attachment ready for operation. The boring bar is supported on both ends of the cylinder by very large adjustable bearings, and is directly connected to the power drive and feed head by a universal joint, which absorbs slight misalignments, eliminating any possible chatter. This outfit is guaranteed to bore an absolutely straight, true hole without taper and the time required on slow speed is 9½ minutes a cylinder, regardless of how much metal is bored out. This machine is stated to be so simple that a deaf, dumb and blind man can operate it with 100 per cent. results, and cylinders bored by this machine are unequalled for smoothness by any other device than a cylinder grinder. Extra cutters, ground scientifically correct, will be exchanged for 50 cents each.

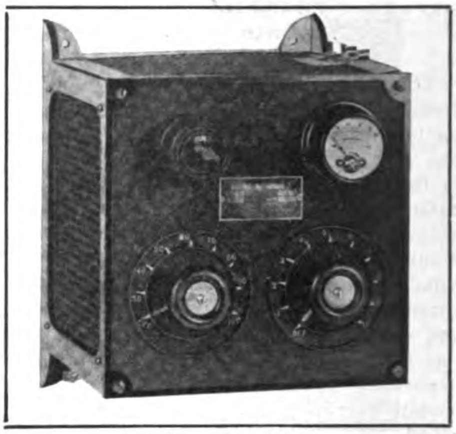
All the other fixtures and attachments are stated to be of equal efficiency to the one illustrated and described. The maker claims that, by owning this one piece of equipment, from $1500 to $4000 in the purchase price of other tools for the same purpose can be saved.

The K. R. Wilson Combination Machine is listed at $365 and is manufactured by K. R. Wilson, 10-16 Lock street, Buffalo, N. Y.



The K. R. Wilson Combination Machine, Showing Cylinder Boring Attachment Ready for Operation.

MAY UNITRON RECTIFIER.



Unitron Rectifier.

Included in the line of electrical equipment for storage battery service being marketed by D. W. May, Inc., 178-182 Central avenue, Newark, N. J., is the Unitron Rectifier, which is especially designed to meet an ever increasing demand for a moderate priced instrument having a capacity of more than 10 six-volt batteries. By the use of the new "Elderkin" transformer it is possible to charge from one to 15 six-volt batteries at from one to six amperes.

The new voltage control units, which are embodied in the Unitron Rectifier, permit perfect ampere regulation and make possible the adjustment of the charging rate in steps of fractional amperes.

The Unitron Rectifier is stated by the manufacturer to be positively the most nearly perfected charging outfit yet made, and it is marketed with a positive guarantee. The list price is $130.

OFFICERS OF DETROIT SALES CO.

The Detroit Consolidated Sales Co., Inc., which was recently formed to distribute the products of the Universal Tool Co. to the wholesale trade in Minnesota, Iowa, Missouri, Arkansas, Louisiana and all states farther east, has elected the following officers:

President, E. H. Harman; vice president, C. H. Hincklev; treasurer, J. F. Nebrick; secretary, C. C. Weisblum.

These officials were nearly all formerly connected with the sales ly all formerly connected with the sales end of the Universal Tool Co. The offices of the new Detroit concern are at 2631 Woodward avenue.

Official Figures of Motor Vehicle Registration

OFFICIAL figures compiled by the American Automobile Association indicate that there were 9,180,316 passenger and commercial motor vehicles registered in the United States during 1920, of which approximately 8,234,490 were for passenger use and about 945,826 were commercially employed. During the same period 271,230 motorcycles were registered. The total receipts from registrations amounted to $99,141,097.

In two states, namely, California and New York, the figures given in the accompanying table cover only the first 11 months of the registration year ending Feb. 28, 1921. The total registrations for the year will, therefore, exceed 9,300,000 cars and receipts will probably reach $100,000,000.

It thus appears that there is now one motor vehicle for about every 11 persons, and that receipts from registrations and licenses amount to more than one-fifth of the total annual expenditure for all roads and bridges in the United States. The gain in registrations over 1919 amounts to 2,114,870, which is the greatest increase ever recorded in a single year. This expansion may be considered remarkable in view of the adverse business conditions during the latter part of the year.

Receipts from registrations and licenses showed a gain of $34,443,842, or 53 per cent. over 1919, the greatest increase ever recorded in a single year. The registrations include in a few cases, notably in Maryland and the District of Columbia, duplicate registrations, but these do not materially affect the grand total of registration.

The race for supremacy between New York and Ohio in the number of motor vehicles is again in New York's favor. The mid-year registrations last summer showed Ohio leading but, during 11 months of the registration year, New York scored 683,919 motor vehicles and Ohio ran second with 620,600 for the entire year. Pennsylvania occupies third place with 570,164 cars; Illinois, fourth, 568,914; California, fifth, 568,892; Iowa sixth, 437,030; Texas, seventh, 427,693; Michigan, eighth, 412,717.

As the California figures are for 11 months the chances are that the total for the year will equal or exceed that for Illinois, and possibly of Pennsylvania.

In receipts from registrations, New York state leads with $8,817,709; Pennsylvania comes second with $8,090,873; Iowa, third, $7,487,830; Ohio, fourth, $6,400,000; Illinois, fifth, $5,780,612; California, sixth, $5,554,265; Michigan, seventh, $5,494,486.

MOTOR VEHICLES REGISTERED AND RECEIPTS.

	Passenger	Commercial	Total	Motorcycles	Gross Receipts
Alabama	61,941	12,696	74,637	1,035	$832,980
Arizona	30,559*	4,000*	34,559	750	191,577
Arkansas	55,582	3,500	59,082		590,820
California	††534,814	34,078	568,892	20,047	5,554,265
Colorado	121,212	7,728	128,940	3,364	818,775
Connecticut	95,150*	23,950*	119,100	4,375	1,852,591
Delaware	16,500*	1,800*	18,300	674	329,980
District of Columbia	†44,855	6,826	51,681	2,648	223,588
Florida	64,185	10,439	74,624	1,275	554,695
Georgia	132,000*	14,000*	146,000	1,382	1,918,512
Idaho	48,850*	2,000*	50,850	763	882,271
Illinois	504,240	64,674	568,914	10,368	5,780,612
Indiana	300,226	32,481	332,707	8,823	2,029,103
Iowa	407,030*	30,000*	437,030	4,000	7,487,830
Kansas	268,159*	26,000*	294,159	2,972	1,399,272
Kentucky	99,417	13,258	112,675	1,546	815,941
Louisiana	65,000*	5,000*	70,000	500	400,000
Maine	55,600	7,600	63,200	1,590	820,000
Maryland	100,313*	12,000*	112,313	5,194	2,124,925
Massachusetts	‡253,245	51,386	304,631	15,143	3,860,232
Michigan	336,946	45,771	412,717	8,011	5,494,486
Minnesota	¶204,300*	19,400*	223,700	7,550	1,067,737
Mississippi	60,000*	4,000*	64,000		*425,000
Missouri	273,308*	23,720*	297,008	3,954	2,111,697
Montana	59,450*	1,200*	60,650	675	416,245
Nebraska	200,000	19,000	219,000	2,100	2,039,330
Nevada	9,963*	500*	10,463	140	103,318
New Hampshire	30,240	4,440	34,680	2,542	542,457
New Jersey	204,125	23,612	227,737	11,041	3,503,936
New Mexico	16,100	6,000	22,100	219	200,000
New York	††559,521**	124,398	683,919	69,349	8,817,709
North Carolina	127,405	13,415	140,860	1,418	1,785,000
North Dakota	88,385	1,455	89,840	898	681,059
Ohio	538,000	82,600	620,600	19,400	*6,400,000
Oklahoma	204,000	9,000	213,000	1,600	230,000
Oregon	93,790*	10,000*	103,790	3,517	2,085,000
Pennsylvania	521,835	48,329	570,164	23,981	8,090,873
Rhode Island	40,768	9,563	50,331	2,223	451,062
South Carolina	83,618*	9,200	92,818	908	527,868
South Dakota	113,000	9,000	122,000	560	768,000
Tennessee	90,214	11,638	101,852	1,151	1,214,000
Texas	397,693	30,000*	427,693	4,293	*3,500,000
Utah	37,012	5,692	42,704	1,115	366,371
Vermont	28,706	2,916	31,622	946	555,381
Virginia	103,000	13,670	116,670	2,233	1,850,000
Washington	‡‡154,350	25,864	180,214	4,969	2,828,896
West Virginia	***69,862	10,802	80,664	1,659	1,223,448
Wisconsin	277,095	16,205	293,300	8,002	3,127,073
Wyoming	22,926	1,000	23,926	327	267,173
Total	8,234,490	945,826	9,180,316	271,230	99,141,097

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*Aproximate. †For fiscal year ending June 30, 1920. ‡For registration year ending Nov. 30, 1920. ¶For the three-year period ending Dec. 21, 1920. **Includes 3560 dealers' licenses. ††For first 11 months of registration year ending Jan. 31, 1921. ‡‡For March 1 to Dec. 31, 1920. ***For 18 months ending Dec. 31, 1920.

DECREE IN CONNECTICUT PATENT SUIT.

It is announced that a final decree has been announced in favor of the Connecticut Telephone & Electric Co., Meriden, Conn., in the matter of patent infringements, which is of special interest from the fact that it is stated to be the first action brought against a jobbing concern to prevent the distribution of ignition repair parts made in imitation of Connecticut parts. It is stated that several permanent injunctions had previously been granted the plaintiff against manufacturers who produced parts that infringed the Connecticut patents, and that two others have since been issued.

The intention of the Connecticut company to protect its interests and those of automobile manufacturers and owners using Connecticut ignition is clearly evident in the policy it has recently adopted and which it is aggressively following, of seeking court relief from the production and distribution of pirate parts, which it insists are harmful to the interests of all concerned.

WORLD'S FIVE-MILE RECORD BROKEN.

Great interest was aroused in racing circles by the recent performance at Daytona Beach, Fla., of a Ford car equipped with a type BB cylinder head, underslinging parts and other special equipment supplied by the Laurel Motors Corporation, Anderson, Ind., in breaking the world's amateur five-mile record.

The distance was made in three minutes and 46 seconds, or at the rate of 80 miles an hour, and the record is all the more remarkable when it is considered that there are two turns in the five-mile course.

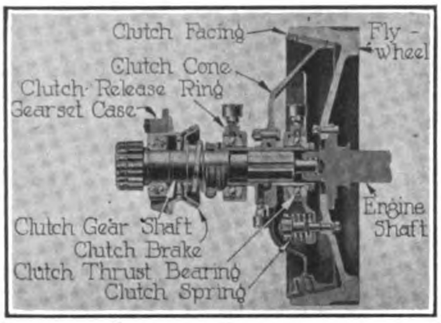
The car is owned by the San Juan Garage Co. of Daytona, Fla., and was driven by "Cassey" Wingate.

COMET CO. HAS RESUMED OPERATIONS.

The Comet Automobile Co., Decatur, Ill., has resumed operations with one-half its working force after a shut down of 15 days for inventory. The business outlook is so encouraging as to indicate that the factory will be under full production within the next 30 days.

The Clutch, Its Components and Their Care

PROBABLY there is no other unit of the car that is subjected to more abuse than the clutch, which is also one of the most important and frequently used, as it is the means of connecting the power of the engine to the other driving units of a car. Slipping the clutch is a common practise with many drivers and little do they realize the damage that it does to the frictioned surfaces.



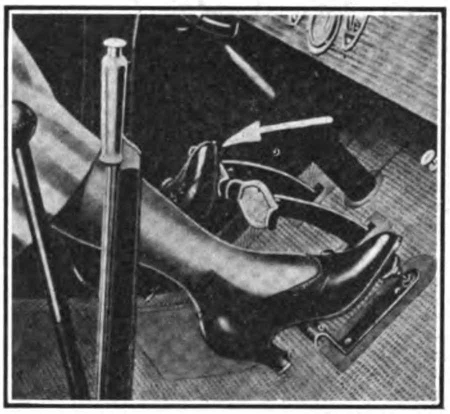
Units of Typical Cone Clutch.

A clutch may be either cone or disc. The cone type is usually covered with a leather facing, but often has a prepared facing of web-like texture which grips the inner cone face of the flywheel. The disc type is made up of alternate discs of plain steel, steel faced on each side, with a frictioned surfaced material, riveted to the discs. The edges of the frictioned discs may be serrated so as to fit corresponding serrations in the clutch housing, while the plain steel discs are strung on three and sometimes four steel rods attached to the clutch shaft. Slipping the clutch has a tendency to wear the frictioned surfaces unnecessarily and will eventually cause the clutch to slip under heavy loads and the consequent racing of the engine.

The components of the cone clutch consist of the flywheel into the inner side of which the leather facing fits; clutch leather facing riveted to the cone; clutch cone through which power from the engine is carried to the clutch shaft; clutch release ring by means of which the clutch is operated from the foot pedal; clutch gear shaft which transmits power from the clutch to the main shaft in the gearset; a clutch brake that is used on many cars to prevent the gears of the gearset from spinning when it is desired to change speeds; a clutch thrust bearing which is usually of the ball type and is used to prevent friction between the points of contact at the forward end of the clutch; clutch springs, usually three in number which supply the proper tension between the flywheel and clutch, and the crankshaft of the engine to which the flywheel is bolted.

The components of the disc clutch consist of the driving discs, fastened to studs screwed into the flywheel, usually three and occasionally four in number; driven discs fastened to the hub of the clutch which transmit the power of the engine through frictioned surfaces; a pressure plate fastened to the hub of the clutch and used to supply an even pressure on the driving and driven discs; a clutch spring which supplies proper tension to keep the clutch plates firmly together; a clutch spider which carries the driven plates; a clutch shaft front bearing, inside the hub of the clutch and fitted with an anti-friction ball bearing; a clutch shaft which transmits power from the driven discs to the gearset; a clutch release; a clutch release fork which connects the clutch pedal to the clutch collar, and the clutch release grease tube through which lubricant is supplied to the clutch release.

It will be seen from the foregoing list of components of the disc type clutch that many parts are used, and as these all work in fixed relation to each other, care should be exercised in its use, even more so than with the cone type clutch, which is composed of less parts. As a majority of the passenger cars are now equipped with a disc clutch, it is of importance that drivers should understand fully its make-up. When operating the car in traffic the clutch should either be kept firmly in place or else held out with the foot. A better method of handling a car in traffic, rather than to try to work through on high, slipping the clutch, is to shift into the next lower speed, leaving the clutch firmly engaged and releasing it only when it is desired to shift back into high.



Position of Left Foot When Riding the Clutch.

Riding the Clutch.

Another practise that is detrimental to the clutch facings is "riding the clutch." Many drivers practise this from habit gained through long experience in driving cars equipped with cone or expanding types of clutches. While this may not seem harmful at first thought, further study will show that it is detrimental to the clutch facings if persisted in. A slight pressure of the foot exerted unconsciously on the clutch pedal causes the discs to separate slightly and, although the car moves at its accustomed speed, slipping at the clutch is taking place. This will soon cause the clutch to slip badly when driving under a load or taking a hill, and the practise is condemned among drivers who wish to keep the component in working condition.

Grabbing Clutch.

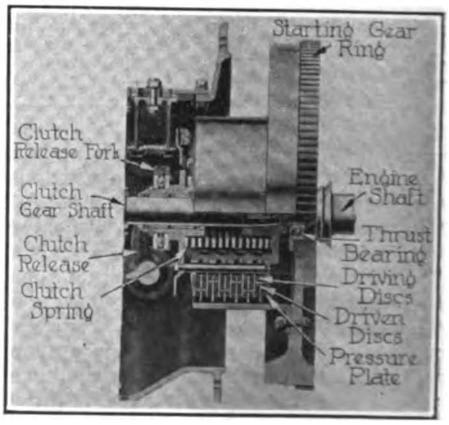
A grabbing clutch is due to too tight an adjustment of the discs in a disc type, or to the facing becoming dry in the cone type. Readjusting the tension supplied by the springs will remedy this defect in the disc type, or washing the facing with gasoline and flowing on a small amount of neatsfoot oil, if the facing is of leather, in the cone type. If the facing of the cone type clutch is of manufactured material and the rivets are causing the "grabbing," the cone requires a new facing. In fitting a new facing the rivets should be countersunk so that the heads will not strike the inner surface of the flywheel. Springs are used in many makes of cone clutches to cause the clutch facing to hold more tightly, and these become weakened and require strengthening. The insertion of small pieces of flat metal under the spring will restore its tension and will prevent further slippage.

Other Defects.

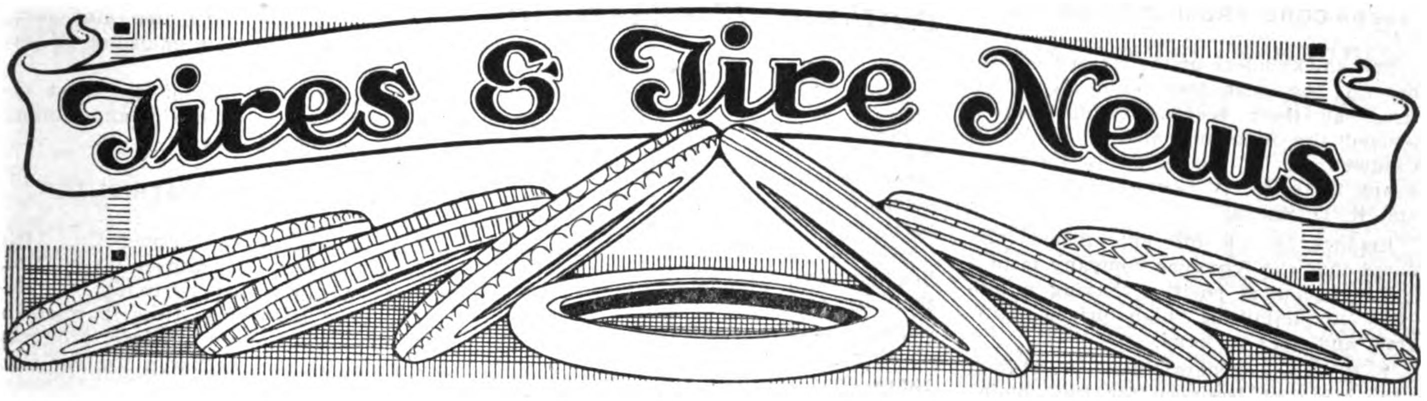
Sometimes the clutch pedal arm or the rocker shaft to which it is attached may become bent or otherwise out of order and prevent the proper operation of the clutch. The clutch lever, which is operated by the foot, actuates a collar which enables the driver to compress the spring, and this releases the clutch. When the pedal is up the spring holds the parts of the clutch firmly together.

This lever may be pivoted just under the floor boards and the lower end act directly on the collar, or it may be attached to a shaft on which is a rocker arm operating the collar; but the result is the same in either case: Pressing the lever releases the clutch and removing the foot allows the spring to hold the parts together. These parts require frequent lubrication, or a dragging clutch may result.

Sticking of the lever, or an inclination to operate sluggishly, indicates that lubrication has been neglected. The leather facings of the cone clutch and the frictioned surfaces of the dry disc type require occasional renewal. Many manufacturers supply new plates with facings already attached, the old plates being turned in for credit.



Multiple Dry Disc Clutch Showing Units of Construction.



Hopeful Outlook for the Industry

John J. Watson, Jr., president of the Lee Tire and Rubber Co., New York City, takes a hopeful view of the outlook for the automobile tire industry. Mr. Watson is credited with stating that the United States will require between 28,000,000 and 30,000,000 automobile tires during the present year. He said, in part:

"It is estimated that production of automobile tires during the spring of 1920 exceeded 150,000 a day. The production during November and December of the same year fell to about 35,000 a day, less than the daily production of the larger tire companies during the spring of that year.

"Some of the best authorities estimate that in 1921 there will be produced about 1,000,000 new cars and trucks. Of those now in use it is probable that from 500,000 to 750,000 will go into the scrap heap this year, so that the increase in 1921 will be probably 500,000. On this basis the country would require about 4,000,000 tires for new cars and with the 8,000,000 old cars in use it would require approximately 24,000,000 tires to supply renewals."

PHILLIPS RESIGNS FROM ESSEX.

R. H. Phillips, sales manager of the automobile accessories and mechanical goods department of the Essex Rubber Co., Trenton, N. J., resigned on Feb. 1. He had been with the Essex over 12 years.

Mr. Phillips' resignation was brought about by his recent election as secretary and treasurer of the National Tire Co., Inc., and the Reliable Tire & Rubber Co., Inc., of Trenton, N. J., succeeding Albert Numbers. These two companies have been in business over five years and their goods are sold extensively in this country and abroad.

BRAHAM HAS BECOME ASSOCIATED WITH DELION CO.

John J. Braham, Jr., of Brooklyn, N. Y., who until recently was connected with the sales department of the Keystone Tire & Rubber Co., New York City, recently joined the selling force of the Delion Tire & Rubber Co. Mr. Braham was elected at the annual meeting of the board of directors of the company a vice president. He will continue to reside in Brooklyn and will make his headquarters in New York at the company's branch, 203 West 72nd street. Mr. Braham and Mr. Seats represented this company at the 21st banquet of the Rubber Association of America, held in New York.

James Newton Gunn, a Prominent Executive of the United States Rubber and United States Tire Companies, Has Been Chosen to Head Lincoln Highway Association.

BROWN ELECTED PRESIDENT OF GRAND RAPIDS TIRE CO.

L. A. Brown, formerly district manager of the United States Rubber Co., has been elected president of the Grand Rapids Tire & Rubber Corporation, Grand Rapids, Mich., a concern of comparatively recent formation, but which has a modern plant erected and completed with the latest facilities for manufacturing high grade cord tires, with a capacity of 1000 tires and 5000 heavy grey tubes per day.

The company's manufacturing policy provides for the production of cord tires exclusively, and it will market the product under the trade name, Corduroy Cord. The company is stated to be adequately financed and will be under production by April 1.

Gunn Elected President Highway Ass'n.

At the recent annual meeting of the directors of the Lincoln Highway Association, James Newton Gunn, president of the United States Tire Co., vice president of the United States Rubber Co. and a director of the Lincoln Highway Association, was unanimously chosen as president to succeed F. A. Seiberling, who was unable to accept the office for another year on account of the pressure of his business and personal affairs. Mr. Gunn has been in close touch with the aims and purposes of the association and the work accomplished, and is deeply interested in its further progress, as indicated by his action, together with that of his business associate, C. B. Sieger, president of the United States Rubber Co., in making possible the financing of the Ideal section of the Lincoln highway. In accepting his new office Mr. Gunn said: "I know that the work of the association should be very much more effective and important now than ever before, and with the opportunities we have under the new conditions in political and industrial life we should be able to accomplish a great good in stimulating the interest and constructive work in highway development throughout the entire country."

Mr. Seiberling continues as a vice president and member of the executive committee of the highway association and W. A. Rutherford of the B. F. Goodrich Rubber Co. becomes a director.

WARNER CHANGES LINE OF BUSINESS.

It is reported that S. L. Warner, who has been vice president and general manager of the National Tire & Rubber Co., East Palestine, O., ever since that concern was organized in 1917, has resigned to become general manager of the Clearfield Sewer Pipe Co., a subsidiary of the Robinson Clay Products Co., Akron, O., operating a large plant and mines at Clearfield, Pa.

Mr. Warner was formerly with the Robinson Clay Products Co. in an executive capacity at the general offices at Akron.

SYRA-CORD PROSPECTS BRIGHT.

The stockholders of the Syracuse Rubber Co., Inc., manufacturer of Syra-Cord tires, at their recent annual meeting elected the following directors: E. R. Caldwell, R. P. Byrne, R. L. Caldwell, Frank Shane, J. B. Losey, F. G. Mauthe and K. D. Smith.

Reports by the different officers indicated that the Syracuse company is in a strong technical position, having practically no liabilities, high priced materials and tires on hand.

J. B. Losey, general manager, states: "Prospects of business for the coming year seem bright. We have a fine lot of spring orders on hand and are lining up many new and promising distributors."

The directors elected the following officers: President, E. R. Caldwell; first vice president, R. P. Byrne; second vice president, Frank Shane; secretary and treasurer, R. L. Caldwell; assistant treasurer, J. B. Losey.

F. H. Ayers, Newly Appointed Director of Sales, Fisk Rubber Co.

Lynskey-Neal-Lynsky, the well known Pittsburgh, Pa., tire dealer, was recently appointed distributor of Syra-Cord tires in that territory. William H. Neal, the manager, reports that the outlook for the tire business in his field is very bright.

GIANT CO. TAKES OVER CUPPLES DISTRIBUTION.

Ernest H. Wood, distributor of Cupples tires at Kansas City, Mo., has sold his business to the Giant Tire & Rubber Co., 1314 McGee street. The latter company is headed by H. P. Lindley.

FLETCHER JOINS FEDERAL.

Richard E. Fletcher, formerly of the Fletcher-Means Co., El Paso, Tex., has sold his interest in that concern and has joined A. J. Engquist of the Federal Tire Co., distributor of Federal tires in the southwestern territory.

National Tire Association Formed

The National Tire Dealers' Association was organized at Chicago during Show Week, following a three days' session of delegates from 10 cities where local associations had already been established. Cleveland was selected for the national headquarters, and Philip O. Deitsch of that city was named secretary.

The purpose of the association, according to the constitution, is "to advance and safeguard the business interests of tire dealers and to promote a cooperative relationship between the manufacturer, tire dealer and buying public." Membership in the association is restricted to local associations, and a tire dealer in business in a town where there is no association must affiliate with an organization in the nearest city in order to avail himself of the advantages of membership in the national body.

A resolution was adopted defining the legitimate tire dealer. "Whereas," it says, "we believe that the policies of a great many manufacturers have been unethical with reference to their interpretation of legitimate tire merchants, therefore, be it resolved that this association consider a tire merchant to be one who sells tires at retail and whose policies are not dictated by any manufacturer. The definition of a tire merchant shall be as of firms having a permanent place of business, making their major profits from the sale of tires, tubes and tire accessories; also repair men and vulcanizers and such owners of garages who carry a stock of tires and tubes for resale."

Another resolution was adopted relating to the mutilation of used tires, to prevent repair and resale.

The following cities were represented at the conference: Milwaukee, Cleveland, Chicago, Minneapolis, Kansas City, Baltimore, Memphis, St. Louis, St. Paul and Cincinnati, together with individual tire dealers, not organized, from Jackson, Tenn.; Melvin, Ill.; Walworth, Wis., and Little Rock, Ark.

Officers were elected as follows: President, Thomas F. Whitehead, Chicago; vice president, R. F. Valentine, Cleveland; treasurer, Henry Stenzel, Milwaukee. The directors in addition to Messrs. Whitehead, Stenzel and Deitsch are Edward P. Farley, Minneapolis, and A. B. Clark, Kansas City, for one year; Joseph Roberts, St. Louis; R. J. Walters, Baltimore, and R. R. Woolley, Cincinnati, for two years.

FISK CO. MAKES NEW APPOINTMENTS.

The Fisk Rubber Co., Chicopee Falls, Mass., recently announced the appointment of F. H. Ayers as director of sales and William Wield as sales manager. Mr. Ayers has been sales manager for the last four years, and has completed 17 years of service with the company. Mr. Wield has been assistant sales manager for the past three years.

C. H. Gage and L. N. South have been chosen assistant sales managers, and K. S. Chamberlain manager of export sales.

This gives Fisk one of the most efficient sales organizations of any similar concern in the industry.

McCLAREN TIRE DISTRIBUTOR.

The Bayha Tire & Rubber Co., 14th and McGee streets, Kansas City, Mo., has been appointed istributor of McClaren cord and fabric tires in western Missouri and Kansas. These products are made by the McClaren Rubber Co., Charlote, N. C.

ANNUAL MEETING OF PENNSYLVANIA RUBBER CO.

At the annual meeting of the stockholders of the Pennsylvania Rubber Co., held Feb. 7, the following directors were elected for the ensuing year: Herbert Du Puy, Charles M. Du Puy, Seneca G. Lewis, George W. Daum, A. H. Price.

William Wield, Recently Appointed Sales Manager of Fisk Rubber Co.

The directors subsequently re-elected the following officers: Chairman, Herbert Du Puy; president, Charles M. Du Puy; vice president and general manager, Seneca G. Lewis; assistant general manager, George W. Daum; treasurer, A. H. Price; general sales director, James Q. Goudie; secretary, George W. Shiveley; assistant treasurer, C. G. Morrill; purchasing agent, H. H. Salmon.

NEW MANAGER FOR HOUSTON LEE BRANCH.

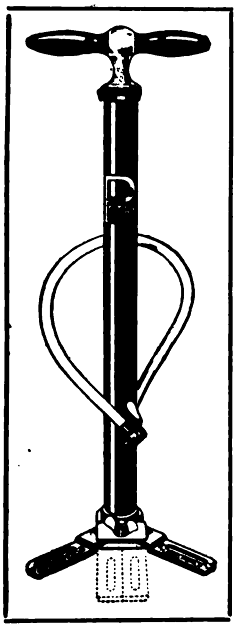
O. F. Peterson of Fort Worth, Tex., has been appointed manager of the Houston branch of the Lee Tire Sales Co. of Texas.

NEW TIRE SHOP AT SAN ANTONIO.

The United States Tire Co. has opened a tire shop at 211 North Flores street, San Antonio, Tex., under the management of H. J. Eisenberg.

The Petry, New Type of Air Pump

The N. A. Petry Co. Inc., Philadelphia, Pa., has just placed on the market a new tire pump which is stated to be radically different from other types of hand pumps, in that it embodies five distinct features that make for easier operation and quicker service. Of these points of difference, the spreading foot base has perhaps aroused the most interest.



This improvement over the ordinary base now in vogue places the pump sufficiently away from the motorist to allow a natural pumping position. A full, long stroke is possible without touching the body.

Equally important is the exclusive Petry valve. It is not merely "commercially" air tight, but is guaranteed to be air tight. This valve is stated to be put to a factory test of an air pressure of 100 pounds under water before being passed for shipment; it has withstood a pressure of 150 pounds per inch.

The handle feels right when the motorist pumps, because many tests were made to develop a shape that would fit the hand. The Petry handle does its part to make pumping easier, giving ample thumb room and a round, firm grip.

A handle lock is the fourth feature. With the lock snapped in place the handle tee and plunger are rigidly held, so that the pump may be readily removed from car. The piston is convex shaped to divert the lubricating oil to the sides of barrel for ease of lubrication and greater pressure on the leather cup washer.

The Lox-On connection at the end of the hose with the time valve deflating pin also lessens pumping effort and can be used only on a pump having an absolutely tight check valve. The deflating pin keeps the tire valve open and saves the pumper the effort necessary to unseat the tire valve with each stroke, usually 20 pounds pressure. The hose is 27 inches long and five-ply highest grade rubber tubing, securely fastened at each end by a specially designed clamp that will hold the hose tight.

The finish is baked black enamel with high lustre. All brass parts are polished and lacquered.

The Petry pump is made complete in the Petry factory at 328-334 North Randolph street, Philadelphia, and carries the usual Petry guarantee to make good. The list price is $5 for 17-inch or 20-inch barrel, with attractive discount to the trade.

SUGGESTIONS TO TIRE MANUFACTURERS.

The well known advertising concern, the Proctor & Collier Co., 528 Walnut street, Cincinnati, O., has issued in pamphlet form, for more general distribution, a reprint from a recent suggestive article in its house organ, "The Day's Work," entitled "What Must a Tire Manufacturer Do to Survive?" The publisher does not claim that this discussion offers a brief for distributor or dealer, as it hits only a few of the high spots, and it is not intended in any way as a criticism of the manufacturer, but is simply offered as an effort to place before manufacturers an analysis of the tire selling situation as the dealer and distributor see it.

The Proctor & Collier Co. will be glad to send copies of the pamphlet to all who are interested in the tire business, and expresses itself as desirous of discussing with any representative tire company the particular plan and method of operation it would suggest as needed to meet the present unusual situation.

BUCYRUS RUBBER PLANT SOLD.

The directors of the Bucyrus Rubber Co., Bucyrus, O., at the recent annual meeting of its stockholders announced the sale of the plant, its equipment and machinery to the C. M. French Rubber Co. of Cleveland. The stockholders approved the sale.

The old board of directors was reelected as follows: Phil Heater, W. J. Schwenck, Jacob Colter, Robert S. Carroll, Daniel Kalb, M. R. Lewis, Phil Browarsky, A. J. Richards, H. A. Paxton, W. A. Blicke.

Following this election the board organized with the choice of the following officers: President, Phil Heater; vice president, Jacob Colter; secretary, W. J. Schwenck; treasurer, W. A. Blicke.

OFFICERS OF INDIA TIRE & RUBBER COMPANY.

At the annual meeting of the India Tire & Rubber Co., Akron, O., J. M. Aldefer was re-elected president. Other directors chosen were J. K. Williams, D. A. Grubb and P. C. Searles.

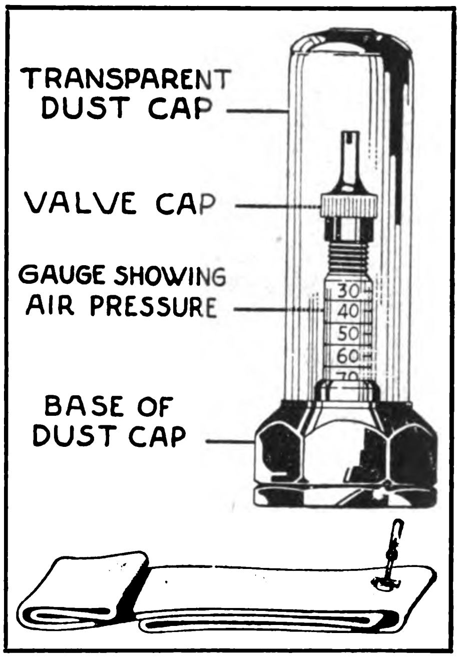
FIRESTONE CO.'S INVENTORIES.

The Firestone Tire and Rubber Co., Akron, O., whose Jan. 1 inventories stood at $37,273,873, against $26,969,535 on Jan. 1, 1920, had materials on hand, in transit and in process valued at $21,168,140, against $11,217,872, finished goods valued at $16,105,733, against $15,751,662.

Service membership in the American Acceptance Council, New York city, has been taken by the Mansfield Tire & Rubber Co., Mansfield, O.; Charles Hoffman, treasurer.

Tirometer Touring Tube and Valve

It is said that 90 per cent. of the premature tire troubles and a loss of one-third of the mileage of tire casings are caused by under-inflation, yet many motorists keep right on neglecting to see that their tire equipment is in proper condition or still adhere to the antiquated perfunctory test of tire inflation by kicking the casing or simply judge from the tire's appearance.



The Currie Brothers Co. of Atlanta, Ga., is placing on the market a type of tube which is designed to obviate such neglect. This is called the Tirometer Heavy Touring Tube, which, instead of having the ordinary tire valve equipment, has a valve which, as may be seen from the accompanying illustration, includes an air pressure gauge that accurately registers at all times the air pressure of the tire. The transparent dust cap is stated to be practically unbreakable and permits the instant reading of the air pressure.

REORGANIZATION OF FORT WAYNE COMPANY.

The Fort Wayne Tire & Rubber Co., Fort Wayne, Ind., has reorganized with L. R. Welker as its new president and C. M. Billings, secretary and treasurer.

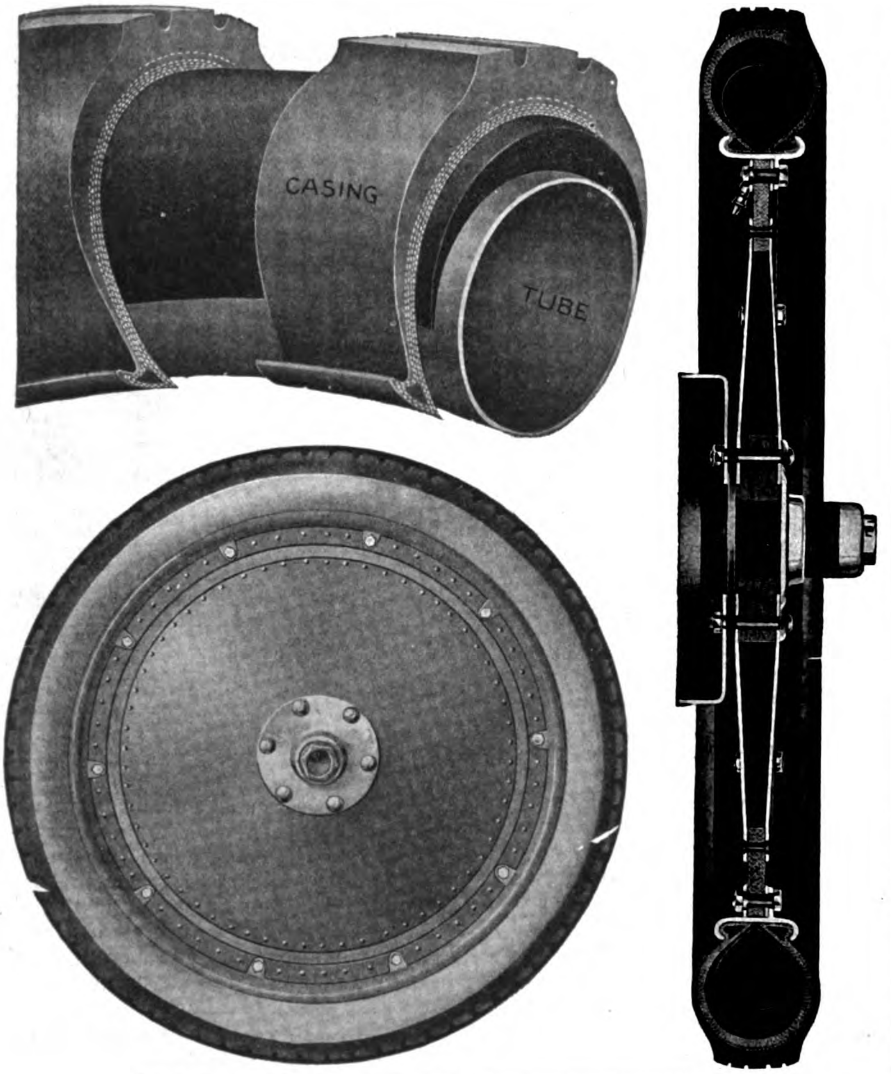
The new board of directors includes Albert E. Thomas, P. F. Hunt, Bluffton; Dr. G. L. Shumaker, North Manchester; August Chenoweth, Warsaw; J. P. Gerhardt, Garrett; Albert Feigert, Wren, O.; E. D. Engler, Decatur.

At a meeting of the directors, A. B. Jones, formerly vice president of the B. F. Goodrich Co., was elected president, succeeding F. A. Seaman, who was temporarily acting as president. Mr. Seaman was elected vice president.

Two Interesting Products of Hall Co.

Two products of the Hall Syndicate, Inc., 1310 Commonwealth Trust building, Philadelphia, Pa., which are attracting considerable interest in the trade at the present time, are shown in the accompanying illustrations.

The Hall Flexible Wheel has a demountable rim, either straight or clincher, and can be applied to any car without changing the hub or the use of extra parts; the bolts of the old hub are used.



Two Products of Hall Syndicate, Philadelphia, Which Are Attracting Attention: Top, at Left, Tire Cut Away to Show Hall Felt Liner; Below, at Left, Hall Flexible Wheel; Right, Cross Section of Hall Flexible Wheel.

The wheel is made up of two steel discs and a ⅝-inch thickness of thoroughly vulcanized fabric held, between the steel rings on the outer edge and the steel discs, by rivets placed about 1¼ inch apart all around the circumference. The outer rings have threaded bushings inserted into which are the bolts which hold the demountable rim in place without the use of lugs. This is accomplished by the use of specially constructed rims which have a vertical member with holes to bolt it against the steel rings riveted to the fabric. The axle is held in suspension.

The fabric disc is claimed to prevent shock and vibration from reaching beyond the rim of the wheel, thus making riding very easy. When the wheel hits a rut the shock is absorbed or insulated by the fabric disc and does not reach the axle or chassis units of the car. By test it has been found to entirely withstand side strain such as is caused by running against a curb, etc. The fabric disc is made of a good grade of cotton fabric of many plies vulcanized in steam jacketed molds, with a thin layer of rubber on each side to protect it. One inch of this fabric in single ply is stated to have the tensile strength of 300 pounds, and this fabric disc thus has the strength of a great many tons. The fabric is not affected by weather conditions or moisture.

The wheel is very attractive and gives the car a high-grade appearance, besides being easily kept clean. The wheels are made in three sizes, 30 inches, 32 inches and 34 inches, and in any desired color.

Hall Felt Liner.

The Hall Felt Liner is made of pure wool felt, which is a perfect insulator of heat, thereby preventing the tires from heating up when driving over hot roads at high speed. The felt liner separates the inner tube from the heated tire and keeps the air from getting hot and expanding—the cause of many blowouts. The volume of air necessary in the inner tube is claimed to be reduced, which in turn reduces the strain on the fabric and prevents blow-outs along the side walls. By supporting the inner walls of the tire against stone bruises, which cause the fabric to break or crack, the inner tube is prevented from pinching and causing tires to go flat. The felt liner is thick and very hard to penetrate. The weight is but 2½ pounds for the 30-inch tire. The use of this liner is stated to eliminate tire trouble and to lengthen the life of tires by many thousand miles.

The Hall Syndicate, Inc., is now under production at its plant, 1730 Glenwood avenue, Philadelphia, Pa., with a capacity of 200 wheels a day.

Financial Notes of the Tire Industry

The preliminary report of the United States Rubber Co. for the past year shows a striking gain in earnings compared with 1919. The net profit, after all charges and allowances for federal, British and Canadian taxes, was $21,275,524, or the equivalent, after preferred dividends, of $19.82 a share on the $81,000,000 common stock. In the previous year the net profit was $17,730,237, equivalent after preferred dividends to $17.59 a share on the $72,000,000 common stock then outstanding.

Total sales last year were $255,744,635, the largest in the history of the company. In 1919 the sales amounted to $225,589,465, and in 1918 to $215,398,425. The balance sheet shows current assets of $195,505,243 and current liabilities of $153,452,426. The report states that inventories were written down $11,020,605, but actual supplies on hand were much larger at the close of 1920 than at the end of 1919. The current report places inventories at $122,873,231, whereas inventory in the previous report was put at $87,633,699.

B. F. GOODRICH EARNINGS.

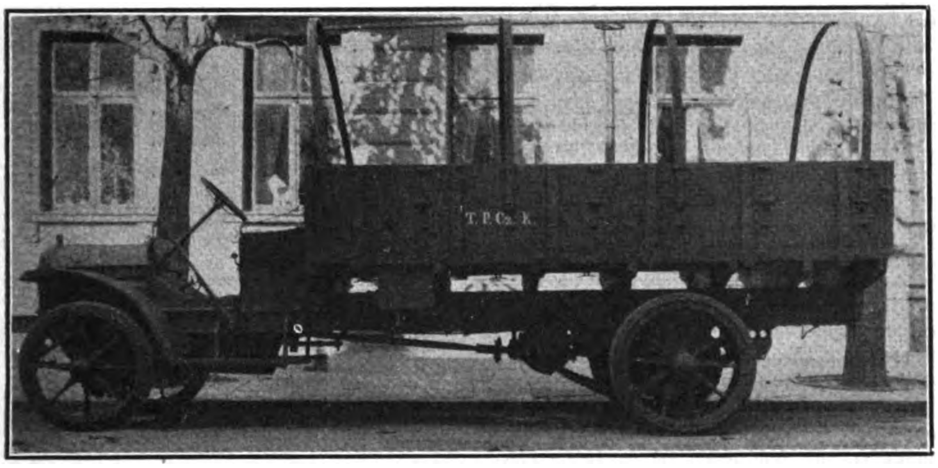
The net sales for the year of the B. F. Goodrich Rubber Co., Akron, O., are reported to amount to approximately $150,000,000.

At the recent meeting of the directors a dividend of 3½ per cent. was declared on the preferred stock, 1¾ per cent. payable on April 1, 1921, to stock of record March 22, and 1¾ per cent. payable July 1 to stock of record June 21. The directors voted, subject to the approval of the stockholders at the annual meeting in April, to retire 11,880 shares of preferred prior to July 1, 1921, in accordance with requirements of the charter, to set up out of surplus a reserve of $10,000,000 to provide for all possible contingent losses on raw material commitments for future delivery, and to take action with regard to the May dividend on the common stock at meeting of directors to be held in April.

EXPORT DEPARTMENT
W.

Auto Exports for 1920 Beat Record

Exports of passenger automobiles from the United States for last year far surpass all records, according to the National Bank of Commerce. In a statement the bank says that in the first 10 months 112,376 were sent abroad as compared with 67,145 in 1919, the highest previous year, and 28,306 in the fiscal year ending June 30, 1914, the highest pre-war year.



White Three-Ton Truck, the Gift of the American Red Cross to Polish Red Cross.

"Shipments to all parts of the world showed remarkable gains, the numbers sent to the United Kingdom and British India being especially noteworthy," it is pointed out. "These sales have not only benefited American industry, but the widespread use of these cars will also facilitate the development of further trade in American automobiles, accessories and parts."

The largest exports were to these countries, the bank's figures show: United Kingdom, 18,114 cars; British India, 10,848; Canada, 7369; British South Africa, 5510; Cuba, 5286; New Zealand, 5099; Brazil, 4968; Sweden, 4887; Dutch East Indies, 3439; Argentina, 3372; Uruguay, 3287; Norway, 3000.

AMERICAN CARS POPULAR IN URUGUAY.

In a recent report on the Uruguayan automobile market, made by a British official, it was stated that the automobile trade in Uruguay is American, and that the British manufacturers cannot hope to compete in the cheaper or medium priced cars. The report also states that out of a total of approximately 13,000 automobiles in Uruguay 60 per cent. are of American make, 15 per cent. British and 25 per cent. from the rest of Europe. In the city of Montevideo private cars number 5500, taxis 1580 and commercial cars 260. The official gives the reasons for the preference for American cars as economy of gasoline and oil, speed, flexibility, lighting, self-starting and appearance of body. He emphasizes the fact that the American car has the proper width of wheel track, whereas the British car is four inches too narrow. In summing up the Uruguayan market, he states that the sales of motor cars will show a steady increase both for city and country use.

IMPROVED TRANS-ANDEAN AUTOMOBILE ROAD.

The National Bureau of Roads and Bridges for the Argentine Republic, South America, has assigned a sum of 100,000 pesos ($42,000) to be spent on the construction of a better trans-Andean highway from Mendoza, Argentina, to Chile. The Province of Mendoza is to take over part of the new work and has already begun repairs on the existing road.

Polish Red Cross to Have White Truck

A three-ton White truck has just been donated to the Polish Red Cross by the American Red Cross for use in its warehouse in the Warsaw district.

This gift is a veritable God-send to the Poles because it is the finest piece of rolling stock in that society's relief work. Complete efficiency records are being kept on the operation of this automobile under Polish management, and these records will be compared with similar ones made on trucks operated by American relief organizations in Warsaw. There is a great deal of friendly rivalry between the auto experts—each side wanting to show the best results.

AUTOMOBILE MARKET IN ERITREA.

On the shore of the Red sea, in the Italian colony of Eritrea, there promises to be a market for motor vehicles. Highways are being built, or planned, which will offer a field for the sale and use of motor vehicles on the inland plateau between Asmara, Keren, Agordat and other trade centers. It is apparent that the Italians are going ahead with the opening up of this colony in a way which will demand the construction of both highways and railways. There are, as yet, very few motor vehicles in use in Eritrea. There are more than 300 miles of completed motor roads.

FOREIGN TRADE WITH NEW BRUNSWICK.

The total imports at St. John, New Brunswick, during the fiscal year ending March 31, 1920, amounted to $26,990,916, over $10,000,000 in excess of 1918, which was the heaviest importing year in the history of the city. Of these imports, $113,298 were for passenger automobiles, $44,449 for freight cars and $8882 for other vehicles.

India rubber and gutta-percha products were valued at $18,847, gasoline at $28,473, lubricating oils at $18,263 and coal oil at $8428.

The Fifth Rubber Trade Fair will be held in the Royal Agricultural hall, London, June 3-17.

Vehicles and Tires in New Zealand

The importation of motor vehicles, tires, covers and tubes into New Zealand has been a very important item in the increase noted in that dominion's foreign trade, and the first nine months of 1920 were no exception—in fact showed a greater increase than for any like period in the history of New Zealand.

The total imports of motor vehicles and chassis during the period mentioned were 8469, of which the United States supplied more than one-half, 4872, and Canada 3215.

Motor vehicles entering New Zealand pay a duty of 10 per cent. ad valorem from the United Kingdom and possessions, with 10 per cent. additional from all other countries, and a one per cent. war tax that is collected on all imports.

In rubber tires, covers and tubes for motor vehicles American manufactures lead, but not to the same extent as in motor vehicles, imports from the United States amounting in the first nine months of 1920 to $2,330,723, from Australia $1,130,809, from Canada $902,624, from the United Kingdom $580,417, France $710,957, Italy $495,833, Japan $4205, and from Belgium $7168.

It is estimated that if the good roads campaign succeeds in giving New Zealand up-to-date public highways, it will save the motor car owners about $3,750,000 a year on tires. Motor tires, tubes and covers enter New Zealand duty free from all countries, with the exception of the one per cent. war tax that is collected on all imports.

LUBRICATING OILS IN JAPAN.

Japanese industries, which are steadily developing, require large amounts of lubricating oils and greases, and as the production in Japan is limited, the greater part must be imported from abroad. In 1919 lubricating oils to the value of $1,585,648 and greases to the value of $135,683 were imported, principally from the United States.

AUTO IMPORTS TO BRAZIL.

Complete statistics covering the importation of automobiles into Brazil since January, 1907, show that the total number received in that country between that time and July 1, 1920, to have been 24,475, representing a value of $24,723,430. Of these 15,109 came from the United States, 2018 from France, 2277 from Germany, 1282 from Italy and 586 from England.

MOTO-METERS TO BE MADE ABROAD.

George H. Townsend, president, and E. V. Hennecke, sales manager of the Moto-Meter Co., Inc., Long Island City, N. Y., have returned from their recent trip to England and France. They were successful in establishing a branch factory in each of these countries to meet the steadily increasing demand for Boyce Moto-Meters in the foreign field.

The Benjamin Electric, Ltd., of Tottenham, London, will have charge of Moto-Meter manufacture in England. The French factory at 50 Avenue de la Grande Armee, Paris, will be conducted by F. Repusseau et Cie.

Both factories are already in operation.

AUSTRIAN ARMS FACTORY MAKING AUTOMOBILES.

It is reported by William Ford Upson, representative of the United States Department of Commerce at Vienna, Austria, that the Austrian Arms Manufacturing Co., with factories in the city of Stepyr, Upper Austria, is now manufacturing high-grade six-cylinder passenger cars and trucks. The end of the war found this concern with an equipment capable of producing 1,000,000 rifles and other small arms a year. Now it is making a few sporting rifles of the Mannlicher model, and shot guns, and has recently turned its efforts to the production of motor vehicles. Thus far the company has produced about 400 automobiles, but expects to turn out 4000 in 1921, and to increase this to 10,000 in 1922, and after that to 20,000 machines a year. About 6000 men are now employed, while during the war it kept 15,000 at work.

It is understood that these cars are sold principally in England, France, the Netherlands, Germany, Poland and Rumania.

NON-STOP RUN IN JAPAN UNDER ARMY OBSERVATION.

It is stated that an Overland touring car recently had the distinction of being selected for the first non-stop motor car test run ever held in Japan.

This car, furnished by the Shima Automobile Co., Ltd., recently left Shimonoseki at the western end of the main island of Japan, and was driven to Aomori, at the northeastern end, a total distance of 1378 miles. The run was made in 136 hours and 40 minutes. This time included 32 hours and 45 minutes in stop-overs for entertainments along the route so that the actual driving time was 103 hours and 55 minutes. No attempts were made for speed. It was intended to demonstrate the durability and reliability of the motor vehicle.

The run was held under the auspices of two Japanese newspapers, the Osaka Mainichi Shinbun and the Tokyo Nichi-Nichi Shinbun. The most significant feature of this run was the deep interest on the part of officers of Japan's army motor corps, who accompanied the car throughout the journey. Major Mizutani of the corps highly recommended the reliability and easy riding qualities of the car, which had the Triplex spring suspension.

Although this was heralded as a "non-stop" run, the interest and hospitality of the people along the way was too overwhelming to be ignored.

Trade Opportunities in the Foreign Field

Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce and its district and co-operative offices upon written request by opportunity number.

34,367—A commercial agent in Egypt is planning to open show rooms for the exhibition and sale of tractors, trucks, oil engines, agricultural machinery, motor cars, tires, etc., and desires to secure the representation of firms with a view to advertising and selling American goods.

34,405—A commercial agent in Spain desires to secure an agency for the insurance of automobiles. References.

34,411—A machinery importing firm in Spain desires to secure an agency from manufacturers and exporters for the sale of iron and steel sheets, ingots and castings, steam engines, turbines and locomotives, automobiles and motor trucks, electrical supplies, mineral oils, petroleum, etc. Quotations should be given c. i. f. Spanish ports. Correspondence should be in Spanish or French. References.

34,413—A commercial agent in Italy desires to secure an agency for the sale of electrical fixture articles, electrical apparatus, coal, metals, paper, provisions, shoes, chemical products, oils and greases, leather belting, leather articles, automobile parts and accessories, kitchen utensils and hardware. Quotations should be given c. i. f. Genoa. To arrange for opening of credit with American banks. References.

34,438—A commercial agent in Siam proposes to carry on business in that country as importer and distributor and desires to secure an agency for the sale of motor boat engines, motor trucks, automobiles and automobile supplies. No reference offered.

34,459—A commercial agent from the Canary Islands is in the United States for a short time and desires to secure an agency for the sale of fertilizers, sulphate of ammonia of 25 per cent.; nitrate of potash, corn, wheat, construction material, dry goods, automobiles, paper and leather. References.

34,468—A manufacturing company in Belgium desires to secure an agency for the sale of medium priced automobiles. Quotations should be given c. i. f. Belgian port. Reference.

AUTO OWNERS COMBINE IN ARGENTINA.

Private motor car owners have formed a limited liability corporation in Buenos Aires, Argentina, with a capital of 1,000,000 pesos ($964,800) in order to secure independence of the profiteering elements. The organization is to arrange to furnish its members with garage service, oil, gasoline and supplies at cost prices.

Calendar of Coming Events

Feb. 16-19—Trenton, N. J., Annual Automobile Show, Trenton Automobile Trade Association, Armory.

Feb. 16-19—Evansville, Ind., Annual Automobile Show, Dealers' Automobile Club.

Feb. 16-19—Madison, Wis., Ninth Annual Show, Passenger Cars, Trucks, Tractors and Accessories. Stermle Ordnance Building. Don E. Mowry, Secretary, Cantwell Building.

Feb. 18-28—San Bernardino, Cal., Show, Passenger Cars, Trucks, Tractors and Accessories. Fred M. Renfro, Manager, Chamber of Commerce Building.

Feb. 19-26—Newark, N. J., Passenger Car. Truck and Accessory Show, Newark Auto Trade Association, First Regiment Armory. Claude E. Holgate, Manager.

Feb. 19-26—Albany, N. Y., Annual Automobile Show, Albany Automobile Dealers' Association, Armory. J. B. Wood, Manager.

Feb. 19-26—San Francisco Cal. Fifth Annual Show, Passenger Cars, Trucks, Tractors and Accessories, Exposition Auditorium. G. A. Wahlgren, Manager, 215 Humboldt Bank Building.

Feb. 20-26—Pittsfield, Mass., Automobile Show, Benefit Company F, State Armory. James J. Callahan, Manager.

Feb. 21-26—Salt Lake City, Utah, Automobile Show, Intermountain Automotive Trade Association. W. D. Rishel, Manager.

Feb. 21-26—Grand Rapids, Mich., Passenger Car, Truck and Tractor Show, Automobile Business Association, Furniture Exhibition Building. M. D. Elgin Manager.

Feb. 21-26—Louisville, Ky., Passenger Car Show, Louisville Auto Dealers' Association, Armory.

Feb. 21-26—Manchester, N. H., Annual Automobile Show, New Hampshire Automobile Dealers' Association, Armory. C. E. Norris, Manager.

Feb. 21-26—Deadwood, S. D., Eighth Annual Automobile Show, Auditorium, Passenger Cars, Trucks, Tractors and Accessories.

Feb. 21-26—Bethlehem, Pa., Seventh Annual Show, Passenger Cars and Accessories, Coliseum, Broadway and Montclair streets. J. L. Elliott, Manager, 1038 Norway Place.

Feb. 21-26—Elmira, N. Y., 11th Annual Passenger Car Show, Elmira Auto Club, State Armory. H. S. Bryan, Manager, 210 East Water Street.

Feb. 22-24—Amarillo, Tex., Automobile Show, Amarillo-Panhandle Automotive Association.

Feb. 22-24—Galesburg, Ill., Automobile Show Galesburg Automotive Dealers' Association, Armory.

Feb. 22-25—Sioux Falls, S. D., Convention, South Dakota Retail Hardware Association, H. O. Roberts, Secretary, Metropolitan Life Building, Minneapolis, Minn.

Feb 22-25—Des Moines, Ia., Convention and Exhibition, Iowa Retail Hardware Association. A. R. Sales, Secretary-Treasurer, Mason City, Ia.

Feb. 22-25—Saginaw, Mich., Automobile Show, Automobile Dealers' Association.

Feb. 22-26—Binghamton, N. Y., Annual Automobile Show, Binghamton Dealers' Association, Armory. R. Moffit, Manager.

Feb. 23—Ann Arbor, Mich., Mid-Western Conference on Highway and Highway Transport Education, University of Michigan.

Feb. 23-26—Clinton, Ia., Passenger Car Show, Auto Dealers' Association, Coliseum. Harry G. Fitch, Manager.

Feb. 23-26—Newton, Kan., Annual Automobile Show, Harvey County Motor Trade Association, Auditorium. Henry Marks, Manager.

Feb. 23-26—Malone, N. Y., Annual Automobile Show.

Feb. 24-25—Salt Lake City, Utah, Annual Meeting, Intermountain Automotive Trades Association.

Feb. 26-March 5—Buffalo, N. Y., Annual Automobile Show, Buffalo Automobile Dealers' Association, 74th Regiment Armory. C. C. Proctor, Manager.

Feb. 28-March 5—Duluth, Minn., Annual Automobile Show, Duluth Automobile Trade Association, Armory.

Feb. 28-March 5—Portland, Me., Automobile Show, Portland Auto Dealers' Association, Exposition Building. Howard B. Chandler, Manager.

Feb. 28-March 5—Bethlehem, Pa., Truck and Tractor Show, Coliseum, Broadway and Montclair Streets, J. L. Elliott, Manager, 1038 Norway Place.

March 1-5—Quincy, Ill., Third Annual Auto Show, Passenger Cars, Trucks and Accessories. J. W. Hart, Secretary, Whig Journal.

March 1-5—Wichita, Kan., Automobile Show, Wichita Motor Trade Association. Wichita Exposition Building. Henry B. Marks, Manager.

March 1-5—Wilmington, Del., Automobile Show.

March 2-10—Des Moines, Ia., Passenger Car Show, Des Moines Automobile Dealers' Association, Coliseum. C. G. Van Vliet and D. Schooler, Managers.

March 3—New York City, Regular Monthly Meeting, Automotive Service Association of New York.

March 5-12—Atlantic City, N. J., Annual Automobile Show, Automobile Trades Association of Atlantic City, Million Dollar Pier; A. H. Generosky, Manager.

March 5-12—New Haven, Conn., Annual Automobile Show, New Haven Automobile Dealers' Association, Arena.

March 5-12—Atlanta, Ga., Annual Automobile Show, Atlanta Automobile Association, Auditorium; Virgil Shepard, Manager.

March 5-12—Pittsburgh, Pa., Annual Automobile Show, Automotive Association, Inc., Motor Square Garden; J. J. Bell, Manager.

March 5-12—Brooklyn, N. Y., Automobile Show, Brooklyn Motor Vehicle Dealers' Association, 23rd Regiment Armory. George C. Lewis, Chairman.

March 7-12—Nashville, Tenn., Annual Automobile Show, Nashville Automobile Trade Association, Page Building.

March 7-12—St. Joseph, Mo., Passenger Car, Truck and Tractor Show, St. Joseph Automobile Dealers' Association, Auditorium.

March 7-12—Syracuse, N. Y., Passenger Car Show, Syracuse Automobile Dealers' Association, Armory. Howard H. Smith, Manager.

March 7-12—Indianapolis, Ind., Automobile Show, Indianapolis Auto Trade Association. Indiana State Fair Grounds. John B. Orman, Manager.

March 7-12—Springfield, Mass., Annual Automobile Show, Springfield Automotive Association, Auditorium. Harry W. Stacy, Manager.

March 7-12—Indianapolis, Ind., 22nd Semi-Annual Show, Passenger Cars, Trucks, Accessories and Farm Lighting Outfits. John B. Orman, Manager, 338 North Delaware Avenue.

March 7-12—Paterson, N. J., Fifth Annual Show, Passenger Cars, Trucks, Tractors and Accessories, Fifth Regiment Armory. H. MacGinley, Manager.

March 7-12—Scranton, Pa., 11th Annual Show, Passenger Cars, Trucks, Tractors and Accessories. Hugh B. Anderson, Manager, Board of Trade Building.

March 10-11—Wheeling, W. Va., Annual Automobile Show, Wheeling Automobile Dealers' Association, Auditorium; G. M. Ford, Manager.

March 10-12—Pendleton, Ore., Annual Automobile Show, Pendleton Automobile Association; Happy Carmon, J. B. Knight, Managers.

March 12-18—Richmond, Va., Show, Richmond Automotive Trade Association, Gray's Armory. J. A. Kline, Manager.

March 12-19—Boston, Mass., 18th Annual Automobile Show, Boston Automobile Dealers' Association, Mechanics' Building. Chester I. Campbell, Manager, 5 Park Square.

March 12-19—Newark, N. J., Annual Automobile Show, New Jersey Automobile Exhibition Co., First Regiment Armory.

March 14-19—Trenton, N. J., Sixth Annual Passenger Car and Truck Show, Trenton Automobile Trade Association, Second Regiment Armory. Frederick Perry, Jr., Manager, West, State and Willow Streets.

March 14-19—Omaha, Neb., Passenger Car and Truck Show. Omaha Automobile Trade Association, Inc.

March 14-19—Washington, D. C., Annual Automobile Show, Washington Automotive Trade Association, Convention Hall; Rudolph Jose, Chairman.

March 15—Fort Worth, Tex., 24th Annual Southwestern Exposition and Fat Stock Show. Passenger Cars, Trucks and Tractors. M. Sasson, Jr., Secretary.

March 16-19—Greenville, S. C., Annual Automobile Show, Greenville Dealers' Association, Textile Hall.

March 19-26—Detroit, Mich., Annual Automobile Show, Detroit Automobile Dealers' Association, Morgan-Wright Building.

March 20-26—Torrington, Conn., Show, Company M, State Armory. J. J. Callahan, Manager, Box 1186, Pittsfield, Mass.

March 21-26—Cedar Rapids, Ia., Annual Automobile Show, Linn County Motor Trades Bureau, Auditorium; E. L. McKibben Manager.

March 23-26—Ottumwa, Ia., Annual Automobile Show, Wapello County Motor Trades Bureau, Davis Building; Frank T. Lynch, Manager.

March 25—York, Pa., Passenger Car, Truck and Tractor Show, York Auto Dealers' Association.

March 28-April 2—Annual Automobile Show, Columbia Automobile Trade Association, State Fair Building; J. M. Green, Manager.

April 2-9—Bridgeton, N. J., Annual Automobile Show, Bridgeton Automotive Association.

April 3-9—Denver, Col., Annual Automobile Show, Auditorium.

April 3-9—Gloversville, N. Y., Annual Gloversville-Johnstown Automobile Show, State Armory. J. J. Callahan, Manager.

April 4-9—Seattle, Wash., Annual Automobile Show, Seattle Auto Dealers' Association, Arena-Hippodrome. W. J. Coyle, Manager.

April 11-16—Buffalo, N. Y., First Annual Motors and Sportsmen's Show.

April 27-29—Atlantic City, N. J., Ninth Annual Meeting, Chamber of Commerce of the United States.

May 9-10—Amarillo, Tex., Convention, Panhandle Hardware & Implement Association. Troy Thompson, Secretary-Treasurer, Delhart, Tex.

May 30—Indianapolis, Ind., 500-Mile Race, Speedway.

June—London, England, International Rubber Exhibition.

July-October—Lima, Peru, Peruvian Centennial.

July 4-9—Mackinac Island, Mich., Summer Meeting, Automotive Equipment Association.

July 4-15—London, England, London Fair and Market, Royal Agricultural Hall. International Trade Exhibitions, Ltd., Broad Street House, New Broad Street, London, E. C., England.

July 23—Strasbourg, France, French Grand Prix.

Aug. 13—Belgium Grand Prix.

September—Bandoeng, Java, Dutch East India, Second Industrial Fair, Automobiles and Trucks, Netherlands-India Industrial Fair Association.

Sept. 4—Italian Grand Prix.

Oct. 5-16—Paris, France, Automobile Show, Grand Palais.

Oct. 12-14—Chicago, Ill., Annual Convention National Implement and Vehicle Association. H. J. Sameit, Secretary, 72 West Adams Street.

Nov. 14-19—Chicago, Ill., Annual Convention and Business Exhibit, Automotive Equipment Association, Coliseum.

Shaler Summarizes Anti-Glare Law

The C. A. Shaler Co., Waupun, Wis., well known maker of automobile lamp and lens equipment, recently issued a booklet giving, in convenient form, a concise summary of the standard head lamp which is now in effect in a number of states and is under consideration in many others, as well as in the Canadian provinces and European countries, and has been approved by the American Automobile association, the National Traffic Officers' association, the Society of Illuminating Engineers, the Society of Automotive Engineers, etc. The summary is as follows:

1. **Two Head Lamps Required**—All passenger cars and trucks must use two head lamps of approximately equal candle power.

2. **Size of Electric Bulbs**—Each state usually specifies the maximum candle power of the bulb which is permissible under any conditions and then, by laboratory tests, determines the maximum sized bulbs which can be used with each make of lens without exceeding the limits of glare specified under No. 4.

3. **Minimum Permissible Road Illumination**—A, at 100 feet ahead of the car and between 1½ feet above the road and the level of head lamps, the illumination must be 4800 candle power or more; B, at 100 feet ahead of the car and seven feet to the right and somewhere below the level of the head lamps, the illumination must be 1200 candle power or more.

4. **Elimination of Glare**—A, at 100 feet ahead of the car and at points five feet higher above the road, the illumination must be less than 2400 candle power; B, seven feet to the left of the above points the illumination must be less than 800 candle power.

It will be noted that this law insists not only upon a glareless light, but there must be, at the same time, sufficient light on the road ahead for the safety of the driver. With this idea in view the Shaler experts have designed the Shaler Roadlighter, which is stated to be distinguished from other anti-glare lenses by the fact that instead of merely complying with all head lamp laws by stopping glare, which could easily be done without any lens at all, it distributes all of the light from the head lamps over a carefully chosen area of the road.

Shaler Roadlighter Lens, Which Has Been Officialy Tested for Anti-Glare.

It throws a light on the road that looks as if it came from a pair of regular head lamps plus a pair of spot lights. The distance light is as strong or stronger than with plain glass, and there is an especially brilliant illumination of the edges of the road that enables the user of this lens to see plainly, even while passing other cars whose head lamps glare. This remarkable efficiency is due to the fact that instead of simply bending the light down and fanning it out sideways as is done with other anti-glare devices, the Shaler Roadlighter divides the light into three overlapping beams, which are thrown toward the road at different angles so as to give a broad, smooth light for the first 100 feet and a narrower, intense light far in the distance.

The efficiency of the Shaler as a glare-stopping device would seem to be proved by its having received the highest candle power rating allowed by law in every official state test.

Although the big demand for the Shaler anti-glare product in a few of the states which recently adopted the standard head lamp law is stated to have consumed the entire output of the Waupun factory up to the present time, and prevented its more general introduction, ample production is now assured and prompt deliveries are being made.

The retail price of the Shaler Roadlighter, Ford size and smaller, is $2.75 and $3.50 for all larger sizes.

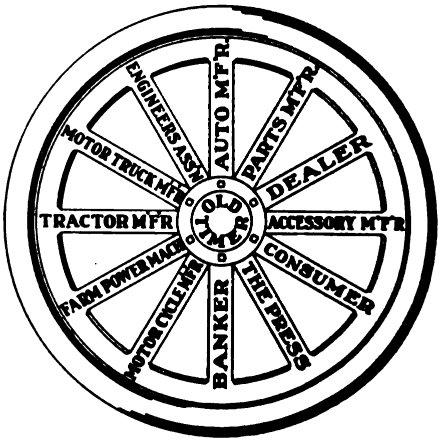
MECHANICAL CONVENTION AT PIERCE-ARROW FACTORY.

Pierce-Arrow distributors' service men from all over the country recently attended a mechanical convention which was held at the factory of the Pierce-Arrow Motor Car Co., Buffalo, N. Y., under the auspices of the service department. The object of this meeting was to qualify the distributors, through their mechanical service men, to become thoroughly acquainted with the design and construction of the latest Pierce-Arrow models of passenger cars and trucks and thus put them in a position to give effective service in keeping the vehicles in satisfactory operation for their owners. And these conventions proved so valuable from the first that they have now become annual features, at which service men, distributors and fleet owners are given a thorough course of instructions, They become better acquainted with the factory, its methods and its organization and so become one with it in method, ideals and spirit.

The programme this year was varied and full of action and interest, being divided between lectures, shop demonstrations and road tests.

Old Timer's Emblem Suggested by Alvin

One of the most pleasing social features of Chicago Show Week was the first annual banquet of the Old Timers' club, held in the Gold room of the Congress hotel. This organization was formed at the 1920 shows and grew during the year to a body of 6000 members without officers and with no set policy. At this 1921 banquet every available seat, 625 in all, was occupied. Congressman Clifford Ireland of Illinois was the toastmaster and the speakers included Elwood Haynes, who was made Honorary Member No. One; David Beecroft, Albert Champion, the newly elected president; Forrest J. Alvin of Cincinnati and Samuel E. Hibbin of Chicago.



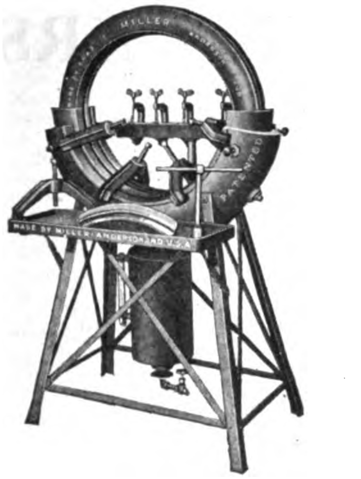
Officers for the ensuing year were elected as follows: President, Albert Champion, Flint, Mich.; secretary, F. Ed. Spooner; vice presidents, Howard Marmon, Indianapolis; Martin L. Pulcher, Detroit; John Younger, Cleveland; Gregory Flynn, New York City; W. L. Hughson, San Francisco; Thomas J. Hay, Chicago; C. G. Sinsabaugh, New York City; Richard Kennerdell, Franklin, Pa.; Alfred Reeves, New York city; Lloyd R. Maxwell, Chicago.

Headquarters have been opened at 420 Book building, Detroit, occupying a portion of the offices of F. Ed. Spooner, who is secretary and general manager of the organization.

Old Timer Emblem Suggested.

Forrest J. Alvin, general manager of the United States Motor Truck Co., Cincinnati, O., is the originator of a clever device which has been sent to the ofcials of the club as a suggestion for an emblem.

The design, as will be noted from the accompanying reproduction, is in the form of a wheel with "Old Timer" as the hub. The 12 spokes are represented as 12 important factors in the automotive industry, as follows: Engineers' association, Motor Truck Manufacturer, Farm Power Machinery, Motorcycle Manufacture, Banker, The Press, Consumer, Accessory Manufacturer, Dealer, Parts Manufacturer, Automobile Manufacturer and Tractor Manufacturer.



Advance 1921 Model of Miller All-in-One Vulcanizer.

MILLER'S ALL-IN-ONE VULCANIZER.

The Miller All-In-One Vulcanizer, sectional and retreader, being marketed by Charles E. Miller-Anderson Rubber Works, Anderson, Ind., is stated to represent the result of 26 years of untiring efforts in the designing, perfecting and manufacturing of vulcanizers and other products for tire factories and rubber repair shops. The accompanying illustration is the advance 1921 model.

This vulcanizer is a full one-half circle with extra deep cavity and steam space extending up the side walls to heat the entire surfaces so that bead molds can be used. All kinds of work, such as rim cuts, blow outs, bead curing, retreading or rebuilding can be done to perfection with sand bags or air bags.

The inside surface of the vulcanizer is accurately machined as well as all other parts, assuring a fine shaped tread and a true and smooth surface for the bead molds to rest on. The company can furnish cast iron or aluminum bead molds as preferred by the purchaser. The cavity clamps are very strong with extra large screws. They are quick to operate, having a hinged joint which permits instant placing on or removal from mold to any number desired. The greater number of screws the easier it is to get correct, well distributed pressure with sand bags which work perfectly. The clamps are arranged so that as many as may be desired may be used, five being furnished as regular equipment.

A convenient and substantial tool shelf is built on the side of vulcanizer where clamps, wrench, pads, bead molds and other necessary tools can be conveniently placed.

There is an extra long air cooled flange at either end of cavity to prevent marking the tire. All kinds of fancy treads can be duplicated by using a special matrix compound that is furnished at a small extra cost.

These outfits can be had in any style to suit the purchaser, for steam line with or without boiler, stand or any attachments. They are regularly furnished with ribbed tread design. Five pressure clamps, pressure plate, clincher and straight side bead molds are furnished as regular equipment.

The Charles E. Miller-Anderson Rubber Works, Meridian, 14th and Main streets, Anderson, Ind., will send a 108-page catalogue free for the asking, listing outfits for tire factories and rubber repair shops.

COMPTON MADE ASSISTANT SALES MANAGER.

Wayne Compton has been promoted from the position of manager of sales of corporations to assistant sales manager of the Spreckels Savage Tire Co., San Diego, Cal. Mr. Compton has been with the Spreckels company for several years, coming up from a salesman to the position he now holds.

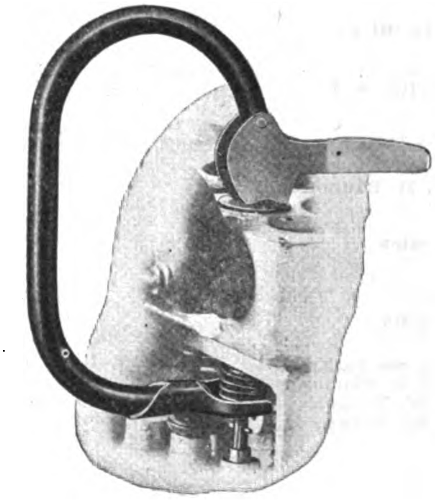
Other promotions recently announced by the Spreckels Savage Tire Co. are George W. Greene from assistant superintendent to superintendent, and Ralph E. Brown from chemist to assistant superintendent.

LOOMIS BEARDSLEY ADDING TO LINE OF VALVE-LIFTING TOOLS.

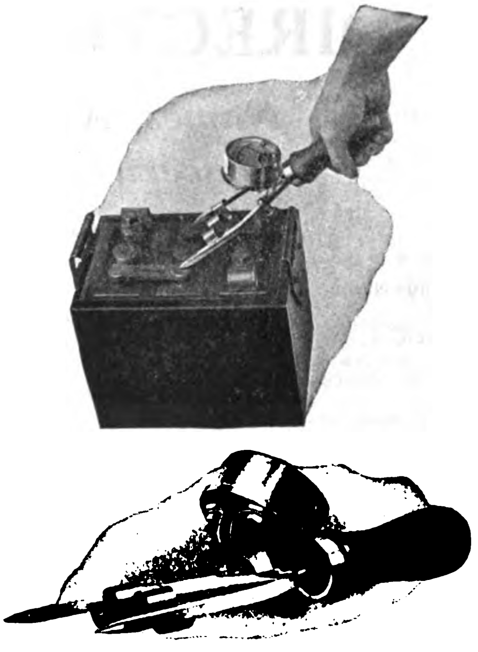
The Loomis-Beardsley Manufacturing Co., 1112 Mt. Vernon avenue, Columbus, O., announces that it has had such success in the sale of its Ford and Dodge valve lifting tools, it has decided to make these lifters for other makes of cars, using the same principle which has proved so efficient heretofore. The company states that it is now ready for production on equipment for the following cars: Hudson Super-Six, Hupmobile, Chalmers, Maxwell, Overland Four, Oldsmobile Eight, Marmon, Packard Twin Six, Studebaker, Continental Motors (two types, 9N and 7 R), Kissel, Allen and a new model Dodge.

These all sell at $1.50 each, the Ford at $1.25 and the adjustable model, which is suitable for use on nearly all cars, at $2.50.

The accompanying illustration shows the Ford model Never Slip valve lifter in position on the motor and this denotes the principle which is employed in the other models.



Ford Model Never Slip Valve Lifter, Made by Loomis-Beadsley Manufacturing Co., Columbus, O.



Weston Model 453 Heavy Discharge Battery Tester and Prod.

WESTON HEAVY DISCHARGE BATTERY TESTER.

The Model 453 Heavy Discharge Battery ester, which is manufactured by the Weston Electrical Instrument Co., Newark, N. J., is intended for testing the voltage of each cell of the battery while a relatively heavy current is flowing. It consists of a well designed substantial prod upon which is mounted a direct current voltmeter having a range of 3-0-3 volts.

The prod has two prongs securely fastened in a wooden handle, which are spaced so that they can be pressed into the cell terminals of the standard automotive batteries. Connected between the prongs is a special alloy conducting strip of approximately 0.01 ohm resistance, through which approximately 200 amperes will flow when two volts are applied across the prod.

The voltmeter is a Weston Model 301 with a legible and easily read scale. The instrument and prod are furnished in nickel finish only.

The list price of the tester complete is $18; for the prod only, $8.50.

MOTOR CARS IN JAMAICA.

The following summary compiled from the records of registration of motor vehicles in the island of Jamaica, British West Indies, is interesting for purposes of comparison:

Number registered since first records: 1917-18, 1994; 1918-19, 2102; 1919-20, 2601. Number discharged from register as exported or destroyed: 1917-18, 406; 1918-19, 456; 1919-20, 467. Number shown by registers as apparently liable to taxation: 1917-18, 1578; 1918-19, 1640; 1919-20, 2134.

During the year 1919-20 taxes were paid on 1285 motor cars and vans and 11 traction engines.

DIRECTORY OF PASSENGER CARS

Names, Addresses and Personnel of Manufacturing Concerns with the Trade Names, Models, Types, Capacities and Prices of Vehicles.

Allen Motor Car Co., Columbus, O.

Trade Name	Model	Type	Price
Allen	43	5-Pas. Tour	$1,595
	43	Sedan	2,345
	43	Art Craft	2,045
		Chassis	1,260

Gen. Man., C. R. Miller.
Sales Man., R. G. Ewell.
Ad. Man., F. I. Lackens.
Export Man., Frank Harshaw.

American Motor Corp., Plainfield, N. J.

Trade Name	Model	Type	Price
American	C	5-Pas. Tour.	$2,395
	C	7-Pas. Tour	2,475
	C	Roadster	2,395
	C	Sedan	3,495
	C	Coupe	3.295
	C	4-Pas. Sport	2,595

President, Robert Bursner.
Vice Pres., Proctor W. Hansl.
Vice Pres., Guy Morgan.
Treasurer, Proctor W. Hansl.
Secretary, George G. Gates.
Sales Man., C. M. Graham.
Ad. Man., H. O. Nadler.
Export Man., J. H. Giles.
Pur. Agent, T. C. Miller.
Prod. Man., Hiram Browne.
Gen. Man., Guy Morgan.

Anderson Motor Co., Rock Hill, S. C.

Trade Name	Model	Type	Price
Anderson	A	7-Pas. Tour.	$2,195
	B	Coupe	3,200
	C	5-Pas. Tour.	2,145
	D	Roadster	2.195
	E	Sedan	3,200
	G	Sport	2,175

President, J. G. Anderson.
Vice Pres., J. W. Anderson.
Treasurer, C. J. Henry.
Secretary, C. J. Henry.
Sales Man., W. A. Anderson.
Ad. Man., W. A. Anderson.
Export Man., K. L. Camp.
Pro. Man., W. E. Hall.
Pur. Agent, J. L. Sealy.

Apperson Automobile Co., Kokomo, Ind.

Trade Name	Model	Type	Price
Apperson	821	4-Pas. Sport	$3,500
	821	7-Pas. Tour.	3,500
	821	Anniv. Tourster	4,250
	821	Anniv. Tour.	4,250
	821	Sedanette	4.500
	821	Sedan	4,500

President, Edgar Apperson.
Vice Pres., T. E. Jarrard.
Treasurer, A. G. Dawson.
Secretary, A. G. Dawson.
Sales Man., R. M. Kelvie.
Ad. Man., R. M. Kelvie.
Export Man., George H. Strout.
Pur. Agent., A. C. Donnelly.
Prod. Man., H. H. Crites.

Argonne Motor Co., Jersey City, N. J.

Trade Name	Model	Type	Price
Argonne		Touring Car	$4,000

Auburn Automobile Co., Auburn, Ind.

Trade Name	Model	Type	Price
Auburn	6-39-H	Touring Car	$1.895

Austin Automobile Co., Grand Rapids, Mich.

Trade Name	Model	Type	Price
Austin	12	Touring Car	$4,250

Automotive Products Corp., New York City, N. Y.

Trade Name	Model	Type	Price
Alsace	..	Touring	$1,585

Balanced Valve Motor Co., Milwaukee, Wis.

President, W. M. Baumheckel.
Vice Pres., G. B. Rusco.
Secretary, G. E. Piper.
Treasurer, E. W. Eberhardt.
Chief Eng., W. M. Baumheckel.

Barley Motor Car Co., Kalamazoo, Mich.

Trade Name	Model	Type	Price
Roamer	Six-54E	......	......
	475 E	......	......

Beggs Motor Car Co., Kansas City, Mo.

Trade Name	Model	Type	Price
Beggs-Six	20-T	......	......

President, S. M. Beggs.
Vice Pres., G. C. DeLooze.
Treasurer, E. R. Sandusky.
Secretary, J. W. Beggs.
Sales Man., E. R. Sandusky.
Ad. Man., E. R. Sandusky.
Export Man., E. R. Sandusky.
Pur. Agent, J. W. Beggs.
Prod. Man., J. W. Beggs.

Bell Motor Car Co., York, Pa.

Trade Name	Model	Type	Price
Bell	18	5-Pas. Tour.	$1,495

Biddle Motor Car Co., Philadelphia, Pa.

Trade Name	Model	Type	Price
Biddle		Touring Car	$2,985

Birch Motor Car Co., Inc., Chicago, Ill.

Trade Name	Model	Type	Price
Birch	Light Six 66	5-Pas. Touring	$1,695
	Light Six 66	3-Pas. Roadster	1,695
	Light Six 66	4-Pas. Sport	1,745
	Light Six 66	7-Pas. Sedan	2,495
	Light Six 66	2-Pas. Roadster	1,695
	Light Six 66	5-Pas. Sedan	2,450
	Light Six 66	2-Pas. Cabriolet	2.100

Bradley Motor Car Co., Chicago, Ill.

Trade Name	Model	Type	Price
Bradley	H	5-Pas. Touring	$1,265

Brewster & Co., Long Island City, N. Y.

Trade Name	Model	Type	Price
Brewster	91	Panel Qu. Brougham	$10,700
	91	Country Brougham	10,500
	91	Landaulet Town	10,700
	91	Landaulet Touring	10,600
	91	Tour. Landaulet Special	10,500
	91	Limousine	10,600
	91	Landaulet Limousine	10,900
	91	Enclosed Drive Double	10,500
	91	Enclosed Drive Single	10,500
	91	Open Phaeton	9.000
	91	Club Runabout	7,900

President, William Brewster.
Vice Pres., J. K. Choate.
Treasurer, T. B. Brewster.
Secretary, T. B. Brewster.
Sales Man., F. H. Buell.
Ad. Man., F. H. Buell.
Export Man., F. H. Buell.
Pur. Agent, A. Borlatti.
Prod. Man., J. P. Ripling.

Briscoe Motor Corp., Jackson, Mich.

Trade Name	Model	Type	Price
Briscoe	4-34	Touring	$1.285
		Roadster	1,285
		Sedan	1,885

President, H. F. Wardwell.
Vice Pres., J. R. Findlater.
Treasurer, John Fletcher.
Secretary, L. E. Latta.
Sales Man., J. R. Findlater.
Ad. Man., W. S. Sherwood.
Export Man., C. L. Thurston.
Pur. Agent, F. B. Wedow.
Prod. Man., J. C. Cunningham.

Buick Motor Co., Flint, Mich.

Trade Name	Model	Type	Price
Buick		Roadster	$1,795
		5-Pas. Touring	1,795
		3-Pas. Coupe	2,585
		5-Pas. Sedan	2,895
		4-Pas. Coupe	2,985
		7-Pas. Touring	2,065
		7-Pas. Sedan	3,295

Bull Tractor, Madison Motors Corp., Anderson, Ind.

Trade Name	Model	Type	Price
Madison		Touring	$1,550

Bush Motor Co., Chicago, Ill.

Trade Name	Model	Type	Price
Bush	4-E	Touring	$1,245
	4-E	Roadster	1,245
	6 De Luxe	Touring	1,575
	6 De Luxe	Roadster	1,575

President, John H. Bush.
Vice Pres., B. C. Wray.
Treasurer, M. B. Bush.
Secretary, M. B. Bush.
Sales Man., J. H. Bush.

Cadillac Motor Car Co., Detroit, Mich.

Trade Name	Model	Type	Price
Cadillac	59	7-Pas. Touring	$3,940
	59	4-Pas. Phaeton	3,790
	59	2-Pas. Roadster	3,790
	59	4-Pas. Victoria	4,540
	59	4-Pas. Sedan	4,950
	59	7-Pas. Suburban	5,190
	59	5-Pas. Limousine	5,290
	59	5 Pas. Town Brougham	5,690
	59	5-P. Imperial Limousine	5,390
	59	125 inch chassis	3,360
		132 inch chassis	3,460

President, R. H. Collins.
Assist. Treas., D. C. Smith.
Sales Man., Lynn McNaughton.
Ad. Man., John Cleary.
Pur. Agent, Harry Main.
Prod. Man., G. H. Lang.
Chief Eng., B. H. Anibal.

Carroll Automobile Co., Lorain, O.

Trade Name	Model	Type	Price
Carroll	6	Touring	$3,985
	6	Roadster	3,985

President, Charles Carroll.
Treas., A. E. Cameron.
Secretary, H. E. Bracker.
Vice Pres., C. W. Brainard.
Vice Pres., F. M. Stephenson.
Pur. Agent, J. W. Butler.

Vice Pres., T. C. Metzger.
Sales Man., Charles Carroll.
Ad. Man.. Charles Carroll.
Prod. Man., G. Paddock.
Chief Eng., G. Paddock.

J. I. Case Threshing Machine Co., Racine, Wis.

Trade Name	Model	Type	Price
Case	V	7-Pas. Touring	$2,650
	V	4-Pas. Sport	2,650
	V	4-Pas. Coupe	3,400
	V	7-Pas. Sedan	3,750

President, Warren J. Davis.
Vice Pres., E. J. Gittins.
Treasurer, Warren J. Davis.
Secretary, William F. Sawyer.
Gen. Sales Man., E. J. Gittins.
Ad. Man., George A. Dechant.
Export Man., W. W. Ramsey.
Prod. Man., M. H. Pettit.
Vice Pres., W. B. Brinton.
Pur. Agent, E. E. Russell.
Gen. Supt., George W. Smith.
Chief Eng., D. P. Davis.
Chief Eng.. W. F. MacGregor.

Chalmers Motor Co., Detroit, Mich.

Trade Name	Model	Type	Price
Chalmers	6-30	5-Pas. Touring	$1,795
	6-30	7-Pas. Touring	1,945
	6-30	Sport	1,995
	6-30	Roadster	1,795
	6-30	Sedan	2,745
	6-30	4-Pas. Coupe	2,595

Champion Motors Corporation, Philadelphia, Pa.

Trade Name	Model	Type	Price
Champion	Special	5-Pas. Touring	$1.595
	Tourist	5-Pas. Touring	1,350

President, Harry Crowther.
Vice Pres., J. K. Barlett, Jr.
Assist. Treas., M. C. Stengel.
Sales Man., L. M. Crowther.
Pur. Agent, L. M. Crowther.

Chandler Motor Car Co., Cleveland, O.

Trade Name	Model	Type	Price
Chandler	6	Touring	$1,895
	6	Roadster	1,895
		Dispatch	1,975
		Sedan	2,995
		Coupe	2,895
		Limousine	3,395

President, F. C. Chandler.
Vice Pres., W. S. Mead.
Vice Pres., J. R. Hall.
Treasurer, Samuel Regar.
Secretary, Isadore Grossman.
Sales Man., Mr. Dunlap.
Ad. Man., Mr. Dunlap.
Export Man., W. S. Mead.
Pur. Agent, G. E. McGinness.
Prod. Man., J. R. Hall.

Chevrolet Motor Co., New York City, N. Y.

Trade Name	Model	Type	Price
Chevrolet	490	5-Pas. Touring	$820
	490	Roadster	795
	490	Sedan	1,375
	490	Coupe	1,325
	F B 50	Touring	1,345
	F B 20	Roadster	1,320
	F B 40	Sedan	2,075
	F B 30	Coupe	2,075

Man. Ad. Div., J. H. Newark.

Cleveland Automobile Co., Cleveland, O.

Trade Name	Model	Type	Price
Cleveland	40	Touring	$1.435
	40	Roadster	1,435
	40	Coupe	2.345
	40	Sedan	2,445

President, J. V. Whipbeck.
Vice Pres., Sid Black.
Treasurer, J. I. Krall.
Sales Man., Sid Black.
As. Sales Man., W. B. Westcott.
Pur. Agent, R. C. Hodge.
Prod. Man.. E. Karlson.
Secretary, J. I. Krall.
Ad. Dept., R. A. Tammers.
Export Man., H. P. Stewart.

Climber Motor Corporation, Little Rock, Ark.

Trade Name	Model	Type	Price
Climber	S	Touring	$2,750
	K	Touring	1,550

Cole Motor Car Co., Indianapolis, Ind.

Trade Name	Model	Type	Price
Cole	870	7-Pas. Tourster	$3,250
	870-A	Californian	3,600
	871	4-Pas. Roadster	3,250
	872	4-Pas. Sporster	3,250
	878	Sportsedan	4,350
	879	Sportosine	4,450
	883	Sportcoupe	4,250
	884	Tourosine	4,450
	885	Toursedan	4,450

President, J. J. Cole.
Vice Pres., S. J. Kuqua.
Treasurer, J. F. Morrison.
Secretary, J. F. Morrison.
Sales Man., J. E. Roberts.
Ad. Man., H. R. Hyman.
Pur. Agent, J. H. O'Brien.
Prod. Man., H. H. Nissly.
Export Man., Pablo Homs.

Columbia Motors Co., Detroit, Mich.

Trade Name	Model	Type	Price
Columbia	C C	5-Pas. Touring	31,795
	D D	4-Pas. Sport	1,945
	E E	2-Pas. Roadster	1,945
	H H	4-Pas. Coupe	2,895
	C S	5-Pas. Sedan	2,895

President, J. G. Bayerline.
Vice Pres., William Metzger.
Vice Pres., W. L. Daly.
Vice Pres., T. A. Bollinger.
Secretary, A. T. O'Connor.
Treasurer, A. T. O'Connor.
Sales Man., W. L. Daly.
Ad. Man., William C. Hunt.
Export Man., Emil Leidich.
Pur. Agent, E. F. Kellum.
Prod. Man., C. H Bankhard

Comet Automobile Co., Decatur, Ill.

Trade Name	Model	Type	Price
Comet	6-53	5-Pas. Touring	$2,350

President, G. W. Jagers.
1st Vice Pres., C. F. Jamison.
2nd Vice Pres., R. H. Campbell.
Treasurer, Elmer White.
Sales Man., G. Vernon Beck.
Ad. Man., G. Vernon Beck.
Pur. Agent, R. H. Campbell.
Prod. Man., E. B. Madden.

Commonwealth Motors Co., Chicago, Ill.

Trade Name	Model	Type	Price
Commonwealth	42	5-Pas. Touring	$1,595
	42	Sportster	1,785
	42	Sedan	2,465

President, C. C. Darnall.
Treasurer, D. G. Kingery.
Secretary, F. A. Miller.
Sales Man., O. N. McCool.
Ad. Man., W. L. Kroneberger.
Export Man., F. A. Miller.
Pur. Agent, W. M. Carleton.
Prod. Man., R. H. Quayle, Jr.

Consolidated Motor Car Co., Middlefield, Conn.

Trade Name	Model	Type	Price
B. E. L.	A	Runabout	$585
	B	Touring	$985
	M	Touring	1,485
	B. E. L.	Air-Cooled Runabout	395

President, Albert Lazaro.
Treasurer, Bert E. Lazaro.
Secretary, Frank T. Kenney.

Cortland Cart & Carriage Co., Sidney, N. Y.

Trade Name	Model	Type	Price
Hatfield	A-42	5-Pas. Touring	$1,695
	B-42	Sedan	2,595
	C-42	4-Pas.	1,795

President, L. I. Hatfield.
Vice Pres., W. T. Sherwood.
Treasurer. L. I. Hatfield.
Secretary, H. M. Hatfield.
Sales Man., L. I. Hatfield.
Ad. Man., L. I. Hatfield.
Export Man., J. Gossmer.
Pur. Agent, L. I. Hatfield.
Prod. Man., Marcus Failing.

Crawford Automobile Co., Hagerstown. Md.

Trade Name	Model	Type	Price
Crawford	21-6-40	Touring	$3,000
	21-6-40	Roadster	3.000
	21-6-40	Sedan	4,500

President, M. P. Moller.
Vice Pres., Henry H. Holzapfel.
Treasurer, George D. Crawford.
Secretary, George D. Crawford.
Sales Man., Abel A. Miller.
Ad. Man., Abel A. Miller.
Export Man., Abel A. Miller.
Pur. Agent, G. D. Crawford.
Prod. Man., Abel A. Miller.
Engineer, William F. Bikle.

Crow-Elkhart Motor Corporation, Elkhart, Ind.

Trade Name	Model	Type	Price
Crow-Elkhart	L 55	4 Cyl. Touring	$1,295
	L 54	4 Cyl. Sport	1,345
	L 53	4 Cyl. Roadster	1,295
	S 65	6 Cyl. Touring	1,545
	S 64	6 Cyl. Sport	1,595
	S 67	6 Cyl. Sedan	2,395
	S 63	6 Cyl. Roadster	1,545

James Cunningham Son & Co., Rochester, N. Y.

Trade Name	Model	Type	Price
Cunningham	V-4	Passenger Car	On application

President. A. J. Cunningham.
Vice Pres., James C. Dryer.
Treasurer, John W. Fulreader.
Secretary, F. E. Cunningham.
Sales Man., C. A. Baird.
Ad. Man., C. A. Baird.
Export Man., C. A. Baird.
Pur. Agent, A. J. Cunningham.
Prod. Man., F. E. Cunningham.

Curtis Motor Car Co, Little Rock. Ark.

Trade Name	Model	Type	Price
Curtis	4-45		

Cyclomobile Manufacturing Co., Toledo, O.

Trade Name	Model	Type	Price
Cyclomobile		2-Pas.	$425

Daniels Motor Car Co., Reading, Pa.

Trade Name	Model	Type	Price
Daniels	D 19	Brougham	$6,750
	D 19	Landau	7,250
	D 19	Landaulet	7,100
	D 19	7-Pas. Sedan	6,800
	D 19	4-Pas. Sedan	6,950
	D 19	Suburban	7,025
	D 19	Winter Roadster	6,500
	D 19	Coupe	6,250
	D 19	Open Cars	5,350
	D 19	Landaulet Suburban	7,600

President, George E. Daniels.
Vice Pres., N. E. Parish.
Treasurer, W. L. Davis.
Secretary, W. L. Davis.
Sales Man., H. E. Spofford.
Pur. Agent, G. R. Miller.
Supt., S. Atteby.

George W. Davis Motor Car Co.. Richmond, Ind.

Trade Name	Model	Type	Price
Davis	51	5-Pas. Touring	$1,895
	52	4-Pas. Sport	2,125
	53	4-Pas. Special Sport	2,150
	54	5-Pas. Sedan	2,795
	55	4-Pas. Coupe	2,795
	56	3-Pas. Roadster	2,125
	57	3-Pas. Special Roadster	2,150

President, George W. Davis.
Vice Pres., Scott A. Lewis.
Treasurer, W. H. Cummins.
Secretary, Walter C. Davis.
Sales Man., Walter C. Davis.
Ad. Man.. Walter C. Davis.
Export Man., Clayton Jordan.
Pur. Agent, W. H. Cummins.
Prod. Man., Earl Winchester.

Detroit Electric Car Co., Detroit, Mich.

Trade Name	Model	Type	Price
Detroit Electric	88	Brougham	$4,000

President, W. C. Anderson. Secretary, James D. Wilson.
Vice Pres., A. C. Downing. Sales Man., A. C. Downing.
Vice Pres., George M. Bacon. Pur. Agent, C. L. Crawford.
Treasurer, F. P. Price. Chief Eng., George M. Bacon.

Disbrow Motor Co., Cleveland, O.

Trade Name	Model	Type	Price
Disbrow	A		$2,950

Dispatch Motor Car Co., Minneapolis, Minn.

Doble-Detroit Steam Motors Co., Detroit, Mich.

Trade Name	Model	Type	Price
Doble-Detroit			$5.000

Dodge Brothers, Detroit, Mich.

Trade Name	Model	Type	Price
Dodge		Touring	$1,285
		Roadster	1,235
		Sedan	2,150
		Coupe	1,900

Gen. Man., F. J. Haynes. As. G. Man., A. T. Waterfall.
As. Secretary, H. V. Popeny. Pur. Agent, R. H. Allen.
Act. G. S. Man., C. W. Matheson. Prod. Man., A. Z. Mitchell.
Ad. Man., G. H. Phelps. Chief Eng., Russell Huff.
Export Man., H. M. Robins.

Dorris Motor Car Co., St. Louis, Mo.

Trade Name	Model	Type	Price
Dorris	6-80	7-Pas. Touring	$4,785
		4-Pas. Tourist	4,785
		4-Pas. Coupe	5,800
		7-Pas. Sedan	6,690

President, G. P. Dorris. Gen. Man., Webster Coleburn.
Vice Pres., I. C. Mackermann. Sales Man., J. T. Rumble.
Vice Pres., Webster Coleburn. Pur. Agent, J. C. MacCarthy.
Treasurer, J. F. Culver. Prod. Man., A. B. Horton.
Secretary, C. F. Culver. Export Rep., George H. Smith.

Dort Motor Car Co., Flint, Mich.

Trade Name	Model	Type	Price
Dort	15	5-Pas. Touring	$1,085
		Roadster	$1,085
		Sedan	$1,765
		Coupe	1.765

President, J. D. Dort. Gen. S. Man., John D. Mansfield.
Vice Pres., D. M. Averill. Ad. Man., H. C. Daniels.
Treasurer, F. A. Aldrich. Pur. Agent, Dan A. Greene.
Secretary, F. A. Aldrich. Prod. Man., L. M. Taylor.
Gen. Man., D. M. Averill. Export Man., E. J. Poxson.

Duesenberg Motors Corporation, Indianapolis, Ind.

Trade Name	Model	Type	Price
Duesenberg		Touring	

Du Pont Motors, Inc., Wilmington, Del.

Trade Name	Model	Type	Price
Du Pont	A	Roadster	$3,400
	A	Touring	3,400
	A	Sedan	4,900

President, E. Paul Du Pont. Ad. Man., Parke Ross.
Vice Pres., A. M. Maris. Pur. Agent, Wm. B. Walker, Jr.
Treasurer, Parke Ross. Works Man., C. J. Marks.
Secretary, Charles V. Bishop. Export Man., Parke Ross.
Sales Man., Parke Ross.

Elgin Motor Car Co., Argo, Ill.

Trade Name	Model	Type	Price
Elgin	K	Touring	$1,775
	K	4-Pas. Scout	1,895
	K	Sedan	2,685
	K	Coupe	2,685

President, C. S. Rieman. Ad. Man., A. L. Chambers.
Vice Pres., J. P. O'Shaughnessy. Pur. Agent, L. T. Miller.
Vice Pres., J. M. Snitzler. Prod. Man., J. G. Anderson.
Treasurer, W. G. Knoedler. As. Gen. Man., C. F. Jamison.
Secretary, W. G. Knoedler. Export Man., F. O. Whiting.
As. Sales Man., L. F. Johnston.

Elkhart Carriage & Motor Car Co., Elkhart, Ind.

Trade Name	Model	Type	Price
Elcar	D-4	Touring	$1.495
	H-4	Sportster	1.495
	K-4	Coupe	2 095
	G-4	Sedan	2.195
	D-6	Touring	1.795
	H-6	Sportster	1.795
	K-6	Coupe	2,395
	G-6	Sedan	2,495

President, W. B. Pratt. Sales Man., G. B. Pratt.
Vice Pres., W. H. Patterson. Ad. Man., U. G. Manning.
Vice Pres., U. G. Manning. Pur. Agent, F. L. Shreiner.
Treasurer, J. A. Bell. Prod. Man., A. G. Phelps.
Secretary, G. B. Pratt. Export Man., G. B. Pratt.

Erie Motor Co., Painesville, O.

Trade Name	Model	Type	Price
Erie		Touring	$850

Essex Motors, Inc., Detroit, Mich.

Trade Name	Model	Type	Price
Essex	A	5-Pas. Touring	$1.595
		2-Pas. Roadster	1,595
		5-Pas. Sedan	2.450
		2-Pas. Cabriolet	2.100

Ford Motor Co., Highland Park, Mich.

Trade Name	Model	Type	Price
Ford	T	Runabout	$395
	T	Run. with Starter	465
	T	Touring	440
	T	Tour. with Starter	510
	T	Coupe	745
	T	Chassis	360

President, Edsel B. Ford. Sales Man., W. Y. Ryan.
Vice Pres., F. L. Klingensmith. Ad. Man., C. A. Brownell.
Treasurer, F. L. Klingensmith. Pur. Agent, F. H. Diehl.
Secretary, B. J. Craig. Prod. Man., William Knudson.

H. H. Franklin Manufacturing Co., Syracuse, N. Y.

Trade Name	Model	Type	Price
Franklin	9-B	Touring	$2,600
	9-B	Tour. car with Per. Top	2,950
	9-B	2-Pas. Runabout	2,400
	9-B	2-Pas. Run. with Per. Top	2,750
	9-B	4-Pas. Roadster	2,500
	9-B	Brougham	3,500
	9-B	Sedan	3,600
	9-B	Chassis	2,225

President. H. H. Franklin. Sales Man., S. E. Ackerman.
Vice Pres., John Wilkinson. Pur. Agent, J. E. Walker.
Treasurer, F. A. Barton. Ad. Man., H. H. Goodhart.
As. Treas., C. E. Hull. Prod. Man., William Dunk.
Secretary, F. A. Barton. Service Man., Paul Williams.
Comptroller, R. T. Wennstroen. Chief Eng., L. M. Stellman.

Fritchle Electric Co., Denver, Col.

Trade Name	Model	Type	Price
Fritchle Electric		5-Pas. Coupe	

Friend Motors Corporation, Pontiac, Mich.

Trade Name	Model	Type	Price
Friend	4	5-Pas. Touring	$1.585
	4	3-Pas. Roadster	1.585
	4	Coupe	2.485
	4	Sedan	2.585

President, Otis C. Friend. Sales Man., F. W. Pilton.
Vice Pres., Robert Daily. Pur. Agent, J. H. Harper.
Treasurer, Robert Daily. Prod. Man., C. J. Jackson.
Secretary, Robert Daily. Chief Eng., William Mertins.

Frontenac Motor Co., Indianapolis, Ind.

Trade Name	Model	Type	Price
Frontenac		Racing	

Gardner Motor Co., St. Louis, Mo.

Trade Name	Model	Type	Price
Gardner	G	Touring	$1.195
	G	Roadster	1.195
	G	Sedan	2.145

President, Russell E. Gardner. Sales Man., Rus. E. Gardner, Jr.
Vice Pres., Fred W. Gardner. Ad. Man., W. H. Yeldell.
Vice Pres., Rus. E. Gardner, Jr. Pur. Agent, Chas. Kreichelt.
Treasurer, E. H. Behrle. Prod. Man., Fred W. Gardner.
Secretary, L. A. Moore. Exp. Man., Rus. E. Gardner, Jr.

Gearless Steel Auto Manufacturing Co., Denver, Col.

Trade Name	Model	Type	Price
Super-Steamer			$3.000

Geneva Wagon Co., Geneva, N. Y.

Trade Name	Model	Type	Price
Geneva		Touring	$2.300

Geronimo Motor Car Co., Enid, Okla.

Trade Name	Model	Type	Price
Geronimo		Touring	$1.995

Globe Motors Co., Cleveland, O.

Trade Name	Model	Type	Price
Globe Four		Touring	

President, Charles H. Davis. Secretary, F. W. Staffield.
Treasurer, L. E. Holmden. Chief Eng., R. E. McLain.

Grant Motor Car Corporation, Cleveland, O.

Trade Name	Model	Type	Price
Grant	H	Touring	$1.550
	H	Roadster	1.550
	H	Sedan	2.450
	H	Coupe	2.450

President, B. A. Shaw. Ad. Man., C. C. Campbell.
Vice Pres., G. C. Hubbs. Pur. Agt., G. C. Starkweather.
Treasurer, F. S. Denneen. Prod. Man., F. S. Denneen.
Secretary, Mr. Green. Chief Engineer, J. M. Howe.
Sales Man., Frank S. Stratton. Prod. Engineer, W. G. Stewart.

Halladay Motor Car Co., Newark, O.

Trade Name	Model	Type	Price
Halladay	Manhattan Sp.	5-Pas. Touring Car	$2.285
	Mayflower	Sedan	2.950

President, Thomas E. Huth. Sales Man., G. L. Huth.
Vice Pres., H. Boyd. Ad. Man., G. L. Huth.
Treasurer, Ed. Hulskeizer. Pur. Agent, B. H. Buxton.
Secretary, Ed. Hulskeizer. Prod. Man., E. Settles.

Hamlin-Holmes Motor Co., Chicago, Ill.

Trade Name	Model	Type	Price
Hamlin-Holmes	A	Touring	

Handley-Knight Co., Kalamazoo, Mich.

Trade Name	Model	Type	Price
Handley-Knight	A	Touring	$2,985
	A	Sedan	

President, J. I. Handley. As. to Pres., J. Tallmadge.
Vice Pres., Charles S. Campbell. As. to Pres., D. B. Williams.
Vice Pres., W. E. Upjohn. Pur. Agent, H. L. Dunn.
Treasurer, W. L. Otis. Chief Eng., R. A. De Vlieg.
Secretary, F. L. Mower.

Hanson Motor Co., Atlanta, Ga.

Trade Name	Model	Type	Price
Hanson	54	Touring	$2.365
		Roadster	2.365

Trade Name	Model	Type	Price
		Sport	2,465
		Sedan	2,885

President. George W. Hanson.
Vice Pres., J. A. Sasser.
Treasurer, W. H. Scott.
Secretary, W. H. Scott.
Sales Man., O. R. Randall.
Ad. Man., O. R. Randall.
Pur. Agent, W. H. Scott.
Export Man., O. R. Randall.

Hare's Motors, Inc., New York City, N. Y.

Trade Name	Model	Type	Price
Locomobile	48	7-Pas. Touring	$7,550
		4-Pas. Touring	7,650
		Limousine	9,150
		Landaulet	9,150
		Chassis	6,500
Mercer	Ser. 5	Touring	3,950
		Sportabout	3,950
		Runabout	3,950
		Raceabout	3,675
		Coupe	5,150
		Limousine	5,650

President, Emlen S. Hare.
Vice Pres., H. D. Church.
Vice Pres., O. E. Hunt.
Vice Pres., Henry Lansdale.
Vice Pres., A. L. Riker.
Treasurer, F. R. Hickman.
Secretary, F. R. Hickman.
Sales Man., B. C. Helm.
Ad. Man., C. B. Morse.
Pur. Agent, L. M. Ketzie.
Prod Man., L. C. Cram.
Export Man., E. J. Ross, Jr.

Harroun Motors Corporation, Wayne, Mich.

Trade Name	Model	Type	Price
Harroun	A A 2	Touring Car	$1,195

Harvard Motor Car Co, Washington, D. C.

Trade Name	Model	Type	Price
Harvard	4-20	Touring	$850

Haynes Automobile Co., Kokomo, Ind.

Trade Name	Model	Type	Price
Haynes	47	Touring	$2,935
	47	Tourister	2,935
	47	Speedster	3,500
	47	Brougham	3,950
	47	Sedan	4,250
	47	Suburban	4,250

President, Elwood Haynes.
Vice Pres., A. G. Seiberling.
Treasurer, A. E. Starbuck.
Secretary, A. E. Starbuck.
Gen. Man., A. G. Seiberling.
Sales Man., S. M. How.
Ad. Man., G. V. Radoye.
Prod. Man., Charles Crick.
Pur. Agent, W. G. Kibler.
Export Man., E. W. Headington.

H. C. S. Motor Car Co., Indianapolis, Ind.

Trade Name	Model	Type	Price
H. C. S.		4-Pas. Touring	$2,975
		Roadster	2,925

Holmes Automobile Co., Canton, O.

Trade Name	Model	Type	Price
Holmes	4	7-Pas. Touring	$3,350
	4	4-Pas. Roadster	3,350
	4	7-Pas. Sedan	4,550
	4	Coupe	4,250

President, Arthur Holmes.
Vice Pres., C. H. Rockwell.
Treasurer, George W. Belven.
Secretary, George W. Belven.
Gen. Man., F. H. Golding.
Sales Man., C. H. Rockwell.
Ad. Man., Mr. Bryant.
Pur. Agent, J. E. Hade.
Prod. Man., D. F. Morse.
Chief Draftsman, H. H. Boyer.

Hudson Motor Car Co., Detroit, Mich.

Trade Name	Model	Type	Price
Hudson Super-Six	12-0	7-Pas. Phaeton	$2,400
		4-Pas. Phaeton	2,400
		Cabriolet	3,000
		Coupe	3,275
		Sedan	3,400
		Touring Limousine	3,625
		Limousine	4,200

President, R. D. Chapin.
Vice Pres., Howard E. Coffin.
Treasurer, R. B. Jackson.
Secretary, W. J. McAneeny.
Sales Man., O. H. McCornack.
Ad. Man., G. W. Cushing.
Pur. Agent, A. Barit.
Prod Man., Joseph Whittaker.
Export Man., H. B. Phipps.

Huffman Bros. Motor Co., Elkhart, Ind.

Trade Name	Model	Type	Price
Huffman		Touring	$1,995

Hupp Motor Car Corporation, Detroit, Mich.

Trade Name	Model	Type	Price
Hupmobile	R	Touring	$1,685
	R	Roadster	1,685
	R	Sedan	2,800
	R	Coupe	2,725

President, Charles B. Hastings.
V. Pres., Arthur Von Schlegell.
Vice Pres. Dubois Young.
Chairman, J. Walter Brake.
Treas., Arthur Von Schlegell.
As. Treas., Ralph Lyons.
Sec., Arthur Von Schlegell.
Gen. S. Man., O. C. Hutchinson.
Pur. Agent, Roy Taylor.
Ad. Man., Frederick Dickinson.
Prod. Man., Dubois Young.
Supt. H. N. Nickerson.
Exp. Man., J. Howard Teagan.

Jackson Motors Corporation, Jackson, Mich.

Trade Name	Model	Type	Price
Jackson	6-38	5-Pas. Semi-Sport	$2,550
		4-Pas. Broadway Special	2,885
		5-Pas. California Special	2,985
		4-Pas. Princess Coupe	3,960
		5-Pas. Hollywood	3,960

President, H. A. Matthews.
Vice Pres, W. W. Sterling.
Treasurer, C. L. V. Eselsen.
Secretary, C. L. V. Eselsen.
Sales Man., W. W. Sterling.
Ad. Man., Guy C. Core.
Pur. Agent, Pat. Jors.
Prod. Man., C. S. Halliday.
Export Man., T. C. Foster.

Jones Motor Car Co, Wichita, Kan.

Trade Name	Model	Type	Price
Jones	6-28	7-Pas. Touring	$2,750
		5-Pas. Touring	2,750
		Victoria	2,850
		4-Pas. Speedster	2,750
		2-Pas. Oil Field Special	2,400
		2 Pas. Roadster	2,750

Jordan Motor Car Co., Cleveland, O.

Trade Name	Model	Type	Price
Jordan		7-Pas. Silhouette	$2,875
		5-Pas. Silhouette	2,650
		Playboy	2,650
		7-Pas. Enclosed Special	3,325
		5-Pas. Enclosed Special	3,150
		Playboy Enclosed Special	3,150
		Silhouette Brougham	3,700

President, Edward S. Jordan.
Treasurer, Otto Miller.
Secretary, Paul Zens.
Sales Man., W. D. Riley.

Kentucky Wagon Manufacturing Co, Louisville, Ky.

Trade Name	Model	Type	Price
Dixie Flyer	H S 70	Touring	$1,595
	H S 70	Roadster	1,595
	H S 70	Sedan	2,570
	H S 70	Coupe	2,570

President, Robert V. Board.
Vice Pres., S. K. Miller.
Treasurer, D. Raibourn.
Secretary, Philip Tuley.
Sales Man., S. K. Miller.
Ad. Man., C. V. Franks.
Pur. Agent, C. C. Young.
Prod. Man., C. V. Franks.
Pur. Agent, C. C. Young.
Prod. Man., W. J. Coleburn.
Export Man., E. Palmer.
Chief Eng., J. F. Murphy.

Kenworthy Motors Corporation, Mishawaka, Ind.

Trade Name	Model	Type	Price
Kenworthy	6-55	4-Pas. Touring	$3,785
	6-55	7-Pas. Touring	3,985
	4-80	4-Pas. Touring	4,595
	4-80	7-Pas. Touring	4,785

President, C. Y. Kenworthy.
Vice Pres., F. E. Frain.
Treasurer, A. E. Hill.
Secretary, A. E. Hill.
Sales Man., C. Y. Kenworthy.
Pur. Agent, F. J. Schaefer.
Prod. Man., Kurt Hitke.
Chief Eng., Kurt Hitke.

King Motor Car Co., Detroit, Mich.

Trade Name	Model	Type	Price
King	H	Touring	$2,725
	H	Foursome	2,725
	H	Road King	2,740
	H	Limoudan	4,035

Vice Pres., W. B. Nesbit.
Treasurer, A. D. McCollough.
Sales Man., E. A. Scheu.
Ad. Man., Bob Walsh.
Pur. Agent., J. R. Emmerson.
Prod. Man., R. G. Hendricks.
Export Man, W. R. Vogeler.

Kissel Motor Car Co, Hartford, Wis.

Trade Name	Model	Type	Price
Kissel Kar	Custom Built	4-Pas. Tourister	$3,475
	Custom Built	2-Pas. Speedster	3,475
	Custom Built	Touring	3,475
	Custom Built	Coupe	4,275
	Custom Built	Sedan	4,275
	Custom Built	Urban Sedan	4,650
	Custom Built	Limousine	4,650

President, D. A. Kissel.
Treasurer, W. L. Kissel.
Secretary, W. L. Kissel.
Ad Man., Ralph Kaye.
Pur. Agent, A. K. Menzel.

Kline Motor Car Corporation, Richmond, Va.

Trade Name	Model	Type	Price
Kline Kar	6-55-K	Sport	$2,290
	6-55-K	Auxiliary	2,290
	6-55-K	Roadster	2,290
	6-55-K	Sedan	3,290
		Coupe	3,250

President, Warner Moore.
Vice Pres., J. A. Kline.
Treasurer, W. H. Warren.
Secretary, W. H. Warren.
Sales Man., L. R. Travers.
Ad. Man., J. A. Kline.
Pur. Agent, C. E. Rahauser.
Prod. Man., J. P. Arbolt.
Export Man., L. R. Travers.

La Fayette Motors Co, Indianapolis, Ind.

Trade Name	Model	Type	Price
La Fayette	134	Touring	$5,625
		Torpedo	5,625
		Four-Door Coupe	7,200
		Sedan	7,400
		Limousine	7,500
		Chassis	4,750

President, Charles W. Nash.
Vice Pres., D. McCall White.
Vice Pres., E. C. Howard.
Treasurer, M. J. Moore.
Secretary, M. J. Moore.
Sales Man., E. C. Howard.
Ad. Man., Leo N. Burnett.
Pur. Agent, R. S. Hoot.
Prod. Man., A. C. Auten.
Chief Engineer, J. W. Applin.

La Marne Motor Car Co., Cleveland, O.

Trade Name	Model	Type	Price
La Marne		Touring	$1,485

Laurel Motor Corporation, Anderson, Ind.

Trade Name	Model	Type	Price
Laurel	35	Touring	$895

(Continued in March Issue.)

Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK MARKET.

Week Ending Feb. 19, 1921.

	High	Low	Last	Change
Ajax Rubber	36	27½	28½	—8¼
American Bosch Magneto	57½	52½	55⅜	—2⅜
Amer.-LaFrance Fire Engine	9	8½	8⅞	+ ⅝
Auto Sales, pfd	14	13	14	+1
Bethlehem Motors	4	3¾	4	+ ¼
Case, J. I., pfd	85¾	85¾	85¾	+ ¼
Chandler Motors	75⅜	70	71	+ ½
Emerson-Brantingham, pfd	35½	35½	35½	....
Fairbanks	38	38	38	—1
Fisher Body	85	83	83	+1
Fisk Rubber	14⅞	14¼	14¾	+ ¼
General Motors	14⅝	14	14	— ¼
General Motors, pfd	71¼	71	71¼	+1¼
General Motors 7% deb	78	77	77½	—1
General Motors, 6% deb	66⅜	66¼	66¼	+ ¼
Goodrich, B. F., Rubber	40	37	38	—1⅜
Goodrich, B. F., Rubber, pfd	83	82¾	82¾	+ ½
Hendee Mfg	16	16	16	—1
Hupp Motor	13¾	13¼	13½	+ ¼
International Harvester, new	100½	95	99¾	+4¾
International Har., new, pfd	108½	107½	107½	—1½
International Motor Truck	35¼	34	34¼	— ¼
International Motor, 1st pfd	75	75	75	....
Kelly-Springfield Tire	47⅝	44¾	45¾	....
Kelly-Springfield, 8% pfd	89	89	89	+1
Kelsey Wheel	23½	43	43	+2⅞
Keystone Tire & Rubber	17	14	16⅜	+2½
Lee Rubber & Tire	21⅝	21	21	— ½
Martin-Parry	17½	17½	17½	+ ¼
Maxwell Motors	5½	4⅞	5	— ⅜
Maxwell Mot., ctfs. of dep. sta.	1½	1¼	1¼	— ¼
Maxwell Motors, 1st pfd	8¾	8¾	8¾	— ⅛
Max. Mot., do. cts. of dep. sta.	6½	6½	6½	—1½
Max. M., 2nd pfd. ctfs. of d. s.	3⅛	3⅛	3⅛	—1⅞
Mullins Body	27	27	27	—1½
Pierce-Arrow	27⅞	24½	26⅞	+1⅞
Republic Motor Truck	23⅜	21½	21½	....
Saxon Motor	5⅜	4⅞	5⅜	+ ⅜
Stewart-Warner Speedometer	35¾	33	33	—1
Stromberg Carburetor	39⅝	37⅛	37⅛	— ⅞
Studebaker	62⅝	56	60⅛	+4⅜
Times Square Auto Supply	11¾	10¾	11	+ ¼
United States Rubber	71⅞	68¾	69⅝	+ ⅜
United States Rubber, 1st pfd	103	102½	102½	— ½
White Motors	42	38¾	39	....
Willys-Overland	8⅛	7½	7⅝	— ⅛
Willys-Overland, pfd	37½	35	35	—1

AKRON CRUDE RUBBER PRICES.

	Jan. 3		Feb. 1	
	Bid	Asked	Bid	Asked
Amer. R. & T. com	..	70	40	65
Amer. R. & T. pfd	..	45	..	45
Firestone Tire & R. com	75	80	84	85
Firestone Tire & R. 6% pd	76	80	84	85
Firestone Tire & R. 7% pfd	66	70	78	80
General T. & R. com	..	400	..	150
General T. & R. 7% pfd	..	90	80	90
B. F. Goodrich, com	34	36	40	41
B. F. Goodrich, 7% pfd	70	71	82	84
B. F. Goodrich, 5 yr., 7% pfd	80	81	90½	91½
Goodyear T. & R. com	19	21	21½	22
Goodyear T. & R. 7% pfd	42	44	46	47
India Rubber com	..	130	100	130
India Rubber com., 8% pfd	..	80	..	80
Mason T. & R. com	14	16	19½	20
Mason T. & R. 7% pfd	60	63	66	67
Marathon T. & R. com	..	4	2	4
Miller Rubber com	71	73	88	92
Miller Rubber 8% pfd	90	105	88	90
Mohawk Rubber	90	105	140	200
Portage Rubber com	19	22	21½	22
Portage Rubber 7% pfd	40	49	43	44
Republic Rubber com	1¼	1½	1⅛	1⅜
Republic Rubber 7% pfd	..	40	40	45
Republic Rubber 8% pfd	20	22	14	15
Rubber Products	..	100	..	100
Star Rubber com	..	100	..	100
Star Rubber 8% pfd	..	100	..	100
Swinehart T. & R. com	..	40	..	100
Swinehart T. & R. 7% pfd	..	70	..	70
Phoenix Rubber com	..	20	..	20
Phoenix Rubber pfd	..	90	..	90
Standard Tire com	..	125	..	125
Standard Tire pfd	..	90	..	90

CRUDE RUBBER, NEW YORK PRICES.

	Jan. 5 Cts. Per Lb.			Feb. 5 Cts. Per Lb.		
Ceylons						
Smoked sheets, ribbed, spot	.16	@	—	.16½	@	—
Smoked sheets ribbed, Feb.-Mar.	16½	@	—	.17½	@	—
Smoked sheets ribbed, Feb.-June	17	@	—	.19	@	—
Smoked sheets plain, spot	.14	@	—	.16	@	—
First latex pale crepe	.17	@	—	.18½	@	—
Amber crepe, No. 1	.13	@	—	.16	@	—
Amber crepe, No. 2	.12	@	—	.15	@	—
Amber crepe, No. 3	.11	@	—	.14	@	—
Clean brown crepe	.11	@	—	.14½	@	—
Light clean brown crepe	—	@	—	.16	@	—
Roll brown crepe	.11	@	—	.12½	@	—
Grand Central crepe	.11	@	.11½	.13	@	—
Africans						
Loando Niggers	—	@	—	.08	@	—
*No. 1 Benbuella	.11	@	—	.08	@	—
*No. 2 Benbuella	.08½	@	—	.07	@	—
Lapori Ball	—	@	—	.13	@	—
*No. 2 Benbuella	.08½	@	—	.07	@	—
Paras						
Up-river fine	.17½	@	—	.18	@	—
Up-river medium	.14	@	—	.14	@	—
Up-river coarse	.13	@	—	.13	@	—
Caucho ball	.13	@	—	.14½	@	—
Islands fine	.16	@	—	.17	@	—
*Maderia fine	—	@	—	.21	@	—
Cameta	.12	@	—	.11	@	.11½
Islands coarse	.12	@	—	.11	@	—
Centrals						
Corinto prime	.14	@	—	.14	@	—
Esmerelda prime	.14	@	—	.14	@	—
Miscellaneous						
Guayule wet	—	@	—	—	@	—
*Balata block Panama	.28	@	—	.28	@	—
Balata sheets	.69	@	—	.69	@	—
Palembang	.06½	@	—	.06½	@	—
Bangermassin	.06	@	—	.06	@	—
Columbian Block Balata	.46	@	—	.46	@	—
Prime Pontianac	.06	@	—	.06	@	—

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*Nominal.

DIVIDENDS DECLARED.

	Rate	Period	Payable	Stock of Record
Advance Rumely	1½%	Quart.	Apr. 1	....
American-Bosch Magneto	$1 25	Quart.	Apr. 1	Mar. 15
Buda Co., pfd	1¾%	Quart.	Mar. 1	Feb. 18
Case, J. I., Thresh. Mch., pfd	1¾%	Quart.	Apr. 1	Mar. 15
Deere & Co., pfd	1¾%	Quart.	Mar. 1	Feb. 15
Firestone T. & R. Co., 7% pfd.	1¾%	Quart.	Feb. 15	Feb. 1
Fisher Body	$2.50	Quart.	Feb. 1	Jan. 20
Fisher Body, pfd	1¾%	Quart.	Feb. 1	Jan. 20
Franklin, H. H., Mfg., pfd	1¾%	Quart.	Feb. 1	Jan. 20
General Electric	2%	Quart.	Apr. 15	Mar. 9
Haynes Automobile, pfd	1¾%	Quart.	Mar. 1	Feb. 20
Hood Rubber, pfd	1¾%	Quart.	Mar. 1	Feb. 21
Hupp Motor Car	2½%	Quart.	Feb. 1	Jan. 15
International Har. pfd	$1.75	Quart.	Mar. 2	Feb. 10
Kelly-Springfield Tire	$1.00	Quart.	Feb. 1	Jan. 14
Kelly-Springfield Tire	3%	Stock	Feb. 1	Jan. 14
Kelly-Springfield T., 8% pfd.	$2 00	Quart.	Feb. 15	Feb. 1
Lee Rubber & Tire	50c	Quart.	Mar. 1	Feb. 15
Martin-Parry	50c	Quart.	Mar. 1	Feb. 15
Miller Rubber, pfd	2%	Quart.	Mar. 1	Feb. 10
Motor Wheel, pfd	2%	Quart.	Feb. 15	Jan. 31
Mullins Body	$1.00	Quart.	Feb. 12	Jan. 17
Mullins Body, pfd	$2.00	Quart.	Feb. 12	Jan. 17
Nash Motors	$10 00	......	Feb. 1	Jan. 20
Nash Motors, pfd	$1.75	Quart.	Feb. 1	Jan. 20
Packard Motor Car, pfd	1¾%	Quart.	Mar. 15	Feb. 28
Peerless Truck & Motor	*50c	Quart.	Mar. 31	Mar. 1
Rainier Motor, pfd	2%	Quart.	Mar. 1	Feb. 21
Scoville Mfg.	5%	......	Apr. 1	Mar. 24
Scoville Mfg., pfd	†1/10%	Extra	Apr. 1	Mar. 24
Smith, A. O., pfd	$1 75	Quart.	Feb. 15	Feb. 1
Stewart-Warner Speedometer	$1 00	Quart.	Feb. 15	Jan. 31
Studebaker, com. and pfd	$1 75	Quart.	Mar. 1	Feb. 10
Timken-Detroit Axle, pfd	1¾%	Quart.	Mar. 1	Feb. 22
U. S. Rub. com. and pfd	$2 00	Quart.	Jan. 31	Jan. 15
Westinghouse E. & Mfg	$1.00	Quart.	Jan. 31	Dec. 31

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*Declared $2 for year, payable in four quarterly installments.
†Payable in 4¼% Fourth Liberty bonds.

The ACCESSORY and GARAGE JOURNAL

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Spirit of Optimism Very Much Alive at Boston Show

Business Transacted and Prospects in Sight Beyond Sanguine Expectations--Enthusiastic Expressions from Representative Dealers.

“THE great doors of Mechanics' building are closed—the show of shows is over—the $2,000,000 exhibit is a thing of the past—but the spirit of optimism which was aroused in not dead but, on the contrary, very much alive.”

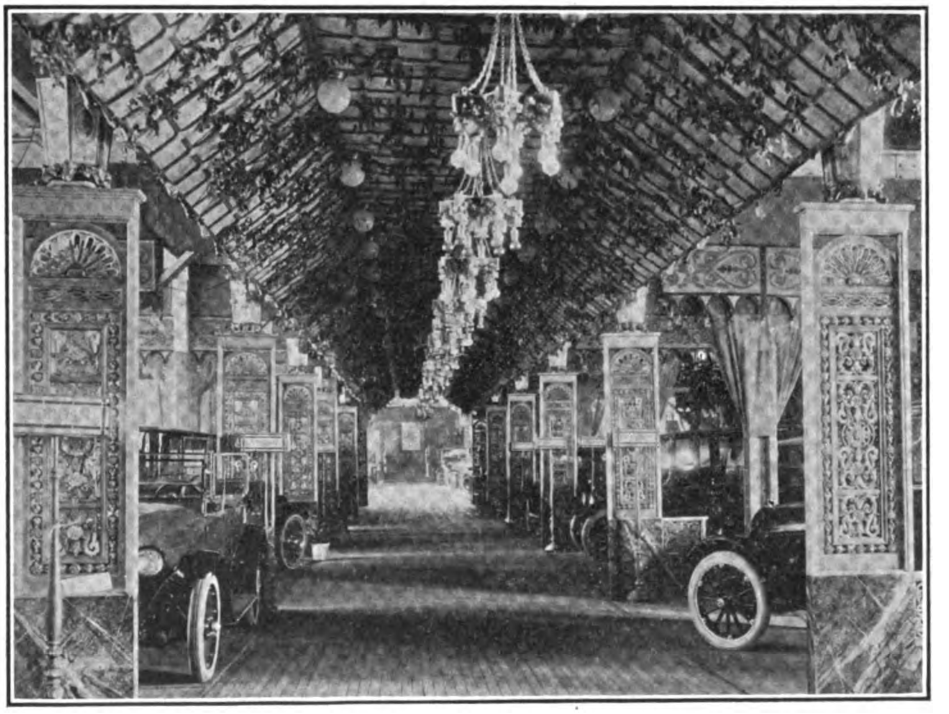
Manager Chester A. Campbell of the Boston Automobile Show thus epigrammatically expresses the passing of New England's great event of the season and he goes on to summarize its effect on the industry in the following words:

“For months past the public have been wavering. They wanted cars and had the wherewithall to buy them, but the ever present pessimist, which often works his way even into the automobile business, had whispered, 'Wait—Prices unsettled—Few orders—Wait I say.' And so the buyer waited. All he needed was the grasp of the hand to enable him to step from indecision to decision—but the darned old pessimist halted him in his tracks and that hesitation blocked the way to the buyer's decision.

“But the show—it did the job. It just threw all the conservatism and pessimism of old New England to the winds—it fairly shrieked its words of optimism and the enthusiasm and interest which resulted will go on for time indefinite. Over 2200 agents registered during the week; over 3000 salesmen were on their toes, chuck full of pep; over 200 headliners from the great factories were there to catch the fever of so-called 'staid old New England' and carry that contagion back to their own organizations, where cooperation and encouragement has been so lacking between the factory and dealer.

“The show broke the buyers' strike and, the sales made, the prospects for new business were most encouraging. It was a great show—even if I do say so.”

That this estimate is not exaggerated may be gathered from a glance at the enthusiastic personal statements from many of the representative New England distributors and dealers which appear in the following pages. Almost without exception the tone is optimistic and encouraging in the extreme not only as regards actual business transacted during show week, but also as to the prospects for future business. The peak of the business depression has evidently been passed and the industry can now safely descend the slope and pass on to the



View of Boston Show Along the Main Entrance to Mechanics' Building, Showing Details of Luxurious Decorative Setting.

level of normal production and returning good times.

A number of these expressions of opinion call attention to the fact that the demand for new cars already exceeds the amount on hand and in truth in one case, at least, it is stated that a number of orders were not booked because immediate delivery could not be assured. This savors in this respect of the conditions noted throughout the country a year or two ago. But the manufacturers are now, for the most part, ready and eager to speed up to the limit and will undoubtedly be in a position to supply any normal demand at a few weeks' notice.

Spirit of Business in Evidence.

Returning to the more specific details of this marvellous 19th annual Boston show, the atmosphere of business was clearly in evidence at all times; it could not be overshadowed even by this, the richest decorative setting in the country's shows annals, or by the sweet strains from band and orchestra and the expressions of admiration and lively chatter of the gayly gowned habitues of society. Rather, these all combined to make up what might be characterized as an exhibition ideal in all respects and one that was fully satisfying to exhibitor and spectator alike.

In regard to the exhibits themselves:

It has been some years since radical departures in design and finish have been made in the automobile field. The standardized car with respect to model and materials seems to have been reached. This year there were exceptions to this proposition in the case of two or three makes of motors. But in general the models bore the same general appearance of their recent predecessors, and the 1921 series were notable mainly in refinement and additional equipment.

As usual, the booths contained a large number of stripped chassis. Some had the sectional views of the engine with an entire half cut away, showing the pistons, connecting rods and shaft turning slowly by electric power.

A striking feature of the event was the large number of special jobs that were unusually colorful in body finish and upholstery. Many of these exhibits were finished in highly polished nickel, which flashed the reflection from the electric illumination and added to the brilliancy of the scene.

As last year, the exhibited types of cars show a majority of the closed models. The permanent top appears to be regular equipment in many makes, though the body of open design with the one-man top is holding its own in popularity. The open sport car was also much in evidence and the increase in the two and three-passenger cars was noticeable.

Of the great number of closed types shown the sedan predominated, with the limousine a close second. A number of luxuriously equipped town cars and landaulets attracted much attention, and aided by the assiduous attention of versatile and voluble demonstrators these exhibits afforded an interesting study for visitors who wished to make an extended inspection of the models.

General View of Exhibits of Passenger Cars in Grand Hall, Mechanics' Building.

The disc wheel, that came into popular favor a few years ago, continues to appeal to a large number of motorists, if the number of cars so equipped indicates the buyer's wish. In addition to giving an appearance of strength to the car, booth attendants pointed out, this equipment serves to an advantage in keeping the spokes free from dirt and makes cleaning of the car less arduous.

Visitors to the Boston show have come to expect a display set off to the best advantage through the use of artistic drapings and effecive backgrounds, nor were they disappointed this year as they walked down the main aisle of Exhibition hall. The richest colors in royal purples, dull golds and green lacquers were artistically combined, while distant views through windows painted in the French style were shown on the side walls. The center aisle of Grand hall was spanned with delicate arches, the stage at the extreme end having a facade in glass and marble brilliantly illuminated.

Arrangement of Exhibits.

The principal arrangement of the exhibits was in the main the same as in former years, the veteran attendant finding the standard makes of cars in their familiar places.

The passenger car exhibit completely filled the entire main floor of the building with a large number of models shown in Paul Revere hall on the second floor and in the halls behind the galleries.

Trucks Were of Particular Interest.

Of particular interest to the business man, the contractor and to city and town officials was the exhibition of the trucks, trailers and tractors that filled the huge basement of the Mechanics' building. The department contained a great array of practically every type of commercial, farm and fire motor vehicles that is manufactured.

The models ranged from the 1000-pound delivery to the giant six and eight-ton trucks. Several pieces of automobile fire apparatus suitable for city or suburban service were among the exhibits. Ambulances, hearses and trolley "trouble" vehicles were also displayed.

It is evident also that the truck manufacturer is increasing the number of his models with the idea of providing a size to suit any demand of business delivery. It should be said, however, that the light delivery type has increased in greater proportion than the heavy duty vehicle.

Tractors Were in Evidence.

Mention likewise should be made of the tractor exhibits which, while naturally few in comparison with the other displays, nevertheless created considerable comment. The Automotive Corporation showed its automatic tractors and the Sowers Tractor and Implement Co. was kept busy explaining the mechanical features of the Beeman Garden tractor, the Cletrac, the J-T tractor and other farm implements. The New Britain Machine Co. also showed a New Britain tractor with plow and other tools.

Accessories Outshow All Previous Displays.

The accessory department this season outshone to a great degree all previous accessory displays. The galleries of the Mechanics' building were crowded with car equipment of almost every type now on the markets. The booths lined both sides of the narrow aisle that circled the halls. Many of the booths contained equipment demonstrated by mechanical devices that proved to be unusually attractive to hundreds of visitors, who included the department in their passing around the show.

Four Days Devoted to the Salon.

The Salon in the Copley-Plaza grand ball room was open for four days of show week. Here were displayed, with the handsome decorations of the hall as a fitting background, the finest products in the way of high class standard and custom body work that the automobile designers of the entire world can offer. Here a parallel could be drawn between the cream of all countries in motor vehicle ideas and construction and it is safe to say no American had cause to feel shame by the comparison.

Representative Dealers Boost Boston Show

Sales Were Encouraging.

We were very much pleased and encouraged by actual sales made, prospects created and all-around interest shown by dealers and prospective purchasers at the recent automobile show.

Not only were actual sales made, but the number of prospects received were far beyond our expectations. It is the writer's opinion that the business as a whole, both passenger cars and trucks, will have a healthy, steadily increasing volume from now on.—WM. HOLLINGSWORTH, AJAX MOTORS SALES CO.

Business Better Than Since Last July.

Our business in actual sales was better during the show week than any week since last July. Prospects are much better; in fact, it seems that we should actually get more business this coming month than for the corresponding period last year.—H. E. WHITTEN, BOSTON FEDERAL TRUCK CO.

Much Pleased with Conditions.

We were very much pleased with conditions as we found them at the Boston Automobile Show. The orders placed with us during the week ran ahead of last year in both retail and wholesale sales. The feeling among our dealer organization was especially optimistic.

Part of the results obtained were undoubtedly caused by the Olds Motor Works introducing at this time two new models—a four and an eight-cylinder motor, both of which are proving decidedly popular with the buying public. Local conditions have materially improved in the last few weeks, and everything points to a good season's business.—HARRY C. DUNN, General Manager, BOSTON OLDSMOBILE CO.

Attendance Larger Than Ever.

I believe the attendance at the Boston Automobile Show was as great as at any show we have had. At any rate it appeared to me so. We had tremendous crowds every day of the week, and I am under the impression that most of the dealers at the show did business. I do not think that the average business done was as great as last year, but nobody expected it. On the whole, I would say that the show had been a huge success.

I believe that it is a good thing to have a show, I believe that it is a good thing to stimulate trade, and I don't know of any other business that you can sell tickets for admission to people to buy merchandise.—W. J. CONNELL, President, CONNELL & McKONE CO.

Results Were Most Gratifying.

The results of the Boston Automobile Show were most gratifying to us. Not only was there a lot of real interest shown by visitors from metropolitan Boston, but the enthusiasm was apparent in the crowds which came from every part of our New England territory.

The retail business of our organization amounted to $137,500 for the week, or slightly in excess of last year.

The attitude of our dealers was decidedly encouraging, so that everything considered we believe that the outcome of all this optimism will be a very satisfactory sale of automobiles from now on. —B. C. HAMILTON, Sales Promotion and Publicity, CHANDLER MOTORS OF NEW ENGLAND, INC.

Show One of the Busiest.

The writer has exhibited cars for the past 10 years and think we are safe in stating that the show just past was the busiest one our exhibition ever had. This may be due to the fact that our car was reduced in price Jan. 3, which had a great deal to do with the interest taken in it.

The exact number of sales during the week was twice as many as last year, as we could promise immediate delivery, and we also closed a number of good agencies. On the whole we were very well satisfied with the results and while there was a number of people just looking, who probably have used cars for exchange, they are in the market for new automobiles and left their names with us as well as probably other cars in our class price.—F. A. DUTTON, Treasurer and Director of Sales, F. A. DUTTON MOTOR CO.

Showing Typical Accessories Exhibits in Departments F and G.

Show Highly Successful.

From the Ford Motor Co.'s standpoint the Boston show was highly successful, more actual orders having been written this year than at any previous one.

The crowds at the show were tremendous and indications from all sources would tend to signify that business will be entirely satisfactory, particularly on low priced cars.—R. R. JONES, Manager, Cambridge Branch, FORD MOTOR CO.

Sold More Cars.

We sold two more cars at retail at the show this year than we did last year. The wholesale business from our dealers, however, was not as great.

We found the buying public more discriminating and holding more to standard make of cars than to new makes that they are not familiar with—the public realizing that this business is coming to a "survival of the fittest," has undoubtedly brought about such a condition.

We are now securing as many orders daily as we did last year, and our March sales to date surpass our March sales in 1920. We have 178 orders on our books for April and the first of May delivery, against 87 cars in stock, or 91 cars shy for delivery. The factory is not able to speed up production over night to take care of such a condition and the result is an imminent shortage. We are now taking orders on most of our models for three and four weeks delivery.—F. A. ORDWAY, Vice President, HENLEY-KIMBALL CO.

Number of Purchasers Remarkable.

We were more than pleased with the results obtained at the Boston Automobile Show. We not only closed up considerable business during the week, but we also obtained the names of enough prospective purchasers to keep us busy for many weeks.

With the existing business conditions, it seems remarkable that there are so many purchasers of automobiles. This is probably the cumulative effect of restriction in buying during the past five months; but, whatever the reason, we predict there will be an actual shortage of cars before the end of April.—F. A. HINCHCLIFFE, HINCHCLIFFE MOTOR CO.

Great Interest in Trucks.

Never before have we seen public interest centered to such an extent in trucks as during the Boston show. Aside from closing several spot cash sales during the week for heavy duty trucks, we obtained a wonderful list of prospects, with the result that our salesmen are now cashing in and each day are closing sales with prospects obtained at the show.

The new ¾-ton worm drive Clydesdale Clipper created no end of attention and much favorable comment from all sources. Never before have we received so many direct inquiries from prospects in outlying territory and from Maine, New Hampshire and Vermont as during the past week.

We are fully satisfied that the corner has been turned and that truck sales will show a substantial and marked increase from now on. We can safely round it up in one small package by saying that public interest and attendance at the Boston show exceeded our fondest expectation by 100 per cent.—RALPH G. CALEF, Manager, HOLLAND SYSTEM TRADING CORPORATION, CLYDESDALE TRUCK DEPARTMENT.

Sold a Number of Trucks.

The Boston show, from a point of attendance, was one of the greatest the writer has ever attended. The business was not as great at this show as at some of the previous shows, yet we were able to sell a number of trucks and at the same time get quite a number of good prospects who will purchase trucks later in the year. We would liken this show to the one in 1915, from a point of business. We also believe that the worst is over, and that business in all lines, including the truck, will go forward at a good healthy growth in the future.—P. S. AULTMAN, Manager, KELLY-SPRINGFIELD MOTOR TRUCK CO.

Accessories Business Increased 33 Per Cent.

The business produced at the Boston Automobile Dealers' Show was fully as good as we had anticipated, and our business in the store on accessories and Ford parts is at least 33 per cent. more than it was last year during the same period.

We are looking forward to an excellent business and we find that people are buying high grade articles which are not absolute necessities. This to my mind speaks well for the future.—GEO. W. MACBRIDE, Treasurer, GEO. W. MACBRIDE &‹CO., INC.

Satisfactory in Tractor Prospects.

The Boston show was a very satisfactory one for us in many ways. We made several direct sales and got in touch with several hundred live prospective users who are in the market for a tractor of this sort and are waiting for spring work to open up and for a demonstration to be given them on their places.

The interest at this time confirms our belief that land is bound to be worked, crops raised and farms of various sizes and classes are looking for machinery to do their work efficiently.—E. T. GLASS, NEW BRITAIN MACHINE CO.

Sold Twice as Many Cars.

Our Boston show business was a complete success and more than twice as many cars were sold than in any previous years, and 10 times as many prospects interested.

The future outlook is very encouraging to us. Our new family of cars has appealed to the buying public. They are assured of the style and the quality is already established, and we are offering real value to an owner.

We have more orders booked at the present time than the factory can furnish us cars for in the next four months.

The entire future outlook is very encouraging.—W. H. GLEASON, Vice President, UTTERBACK-GLEASON CO., INC.

Great Opportunity to Meet Trade.

We are very much satisfied with our efforts to get from the exhibit which we made at the show the most satisfactory results.

Reviewing the situation now that the show is over, we feel very much satisfied with what we have accomplished. Even though we did but very little actual business, we found an opportunity there to talk with a great many of our very best prospects and getting an idea of their views on the situation as far as the possibility of purchases in the near future are concerned. Most of them talked very encouragingly.

Some new prospects were developed, but naturally few, as we are covering the territory very carefully and feel that we are very well posted on most of the possibilities there are in this section, as our salesmen are working with all the energy at their command.

Naturally the commercial vehicle people have not the opportunity at the Boston Automobile Show of closing business in any such way as the passenger car dealers have, and the show has never been a place where any great amount of business was done.

The most it amounts to with us is advertising and, as we have said before, it gives us an opportunity of meeting our trade and to meet them on rather different ground and talk from a slightly different angle than when you call on a man during business hours while he is very busy with his own affairs and usually has but little time to give to salesmen representing motor truck interests.—G. H. HUDSON, Branch Manager, WALKER VEHICLE CO.

Wholesale Business Extremely Promising.

Although there was no great rush in retail buying, we were indeed fortunate in securing quite a number of orders from persons we had never seen before; in fact, new sales entirely. Wholesale business, much to our surprise, was extremely promising.

Taking the show as a whole we were more than satisfied with the outcome, as there was displayed a distinctly strong interest in air cooling, and we obtained a larger number of bona fide names and addresses than ever done before at any show.—JAMES C. TATE, Treasurer, HOLMES MOTORS, INC.

Sales Exceeded 1920.

We are glad to be able to state that our sales record for the automobile show —and pre-show—weeks of 1921 exceeded our sales for the similar period of 1920 by such a margin that we can confidently predict a record breaking March for this year.

In connection with the automobile show this year we ran a special advertising campaign which, combined with the show, has netted us several thousand more live prospects than we have ever had before. We are expecting big things from the future.

From every indication the Commercial Motor Vehicle show was a success. As to the exact number of sales I am not in a position to state, but I have reason to believe that they were gratifying to all of the executives. Without doubt they had one of the best exhibits that the commercial dealers have ever had in New England and the attendance was all that could be asked for. Indications point to a very successful and profitable coming year's business. I can only quote "1921 will reward the fighters."—L. B. SANDERS, DUNBAR, SANDERS, INC.

Most Successful from Business Standpoint.

This year the Boston show was the most successful from a business standpoint, in our experience. We sold during the week of the show 74 cars and trucks, a total business of $363,997.

The outlook for the next few months, at least, would seem to us extremely bright in the automobile industry, and we are hoping that the improvement in condition will continue throughout the year.

Our sales at the show included 24 bona fide orders with deposits for Packard Twin Sixes, and our sales of the new Single Six car, which is meeting with tremendous public approval because of its low price and economy of operation, would certainly have been three times the 27 we did sell, had we been able to promise earlier delivery. Our sales at the present time are far in excess of the supply.—ROBERT B. PARKER, Vice President and General Manager, PACKARD MOTOR CAR CO. OF BOSTON.

Enjoyed Mighty Good Business.

We certainly enjoyed a mighty good business at the show, fully up to previous years results and much better than we expected this year in view of the depression in automobile business through the past few months.

Not only did we secure both wholesale and retail orders for immediate delivery, but we also found a greater number of deeply interested prospects than ever applied to us for information at our exhibits.

Our retail salesmen are enthusiastic over the show results and all agree from present indications that 1921 business will be well up to the standard of previous years.

It is true that in a few sections of our New England territory depression still exists, especially in northern Maine: their results from potato crops have been unsatisfactory. Encouraging reports come from there, however, and we believe by the middle of summer nearly normal conditions will prevail throughout New England.—A. H. SOWERS, Treasurer and General Manager, LEXINGTON AUTOMOBILE CO.

Buyers' Strike Is Over.

The Boston Auto Show proved conclusively to us that the buyers' strike is over, although actual sales did not reach the mark observed during the last few years. The buyers that did appear at the show appeared to have a keener sense of value, and were more inclined to carefully consider the comparative values of cars than previous years, when the big question with them was the delivery date.

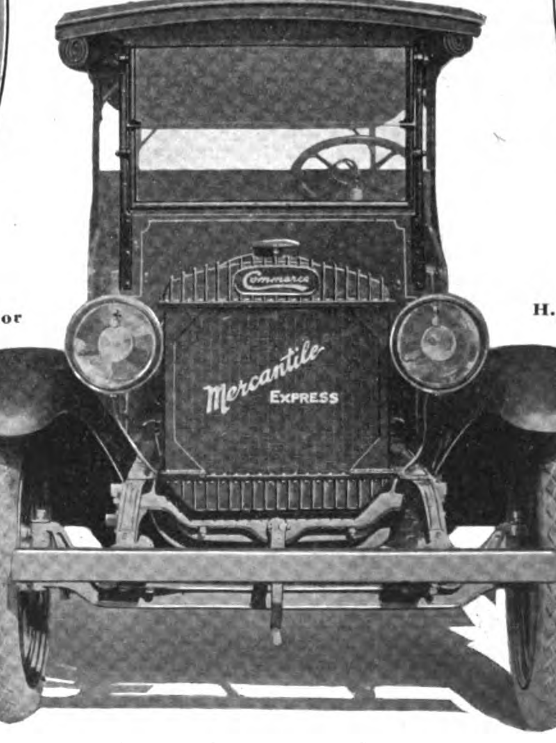
(Continued on Page 86.)

Merchandising Motor Trucks in New England Exemplified by Commerce Motor Co.

THE recently formed Commerce Motor Co. of New England, Inc., located at 20 Brighton avenue, Boston, in the heart of the automobile district, affords a representative instance of the manner in which the merchandising of motor cars is handled in New England, admittedly one of the nation's most fertile fields for this class of business. This concern handles, through its branch agencies, Commerce trucks, which are made by the Commerce Motor Car Co., Detroit, Mich. It is housed in a fireproof building, containing 7500 feet of floor space and the structure is ideal in design and arrangement of floor space for a modern show room and service station. The particular type of vehicle to be specialized on is the new Commerce Mercantile Express, which is a light express model with a capacity of three-quarters of a ton, but other Commerce products will be handled by the Boston concern. That a big business in the smaller car will be done is shown by orders already received. Perhaps a record sale to date was made by the Worcester, Mass., dealer, who sold the first truck sent him in less than an hour after receiving it, and other sales of a similar nature are also recorded, all of which speaks well for the future.

W. E. Kelton, President, Commerce Motor Co. of New England, Inc.

Not only does the new distributing concern get a flying start in its merchandising campaign through the orders booked from individuals, but it has also closed several fleet installations, noticeable among which are several orders from the United States Postoffice Department for use in the New England states. Many of the trucks ordered for this work are already in service, and others are slated for early delivery.



The Commerce Mercantile Express, a Speedy, Light Delivery Truck Designed Especially for City, Suburban and Farm Service.

W. E. Kelton is president of the new organization and H. F. Talbert is the treasurer. That these two men, both of whom are thoroughly versed in the merhandising of motor trucks, should have chosen to enter a joint business, guarantees the success of the organization with which they have affiliated. Mr. Kelton has for more than 16 years been identified in a selling way with very large automobile interests, and Mr. Talbert, long known in the agency and garage business, brings a wealth of financial knowledge and a thorough training in the economic side of the business to the organization. The combination augurs well for the going power of the corporation.

Both of the officials fully realize the value of service to the customer as a strong factor in the success of any business, and one of the specific conditions insisted on in appointing agents is that ample service be given to the buyer of a Commerce truck. Regardless of whether the purchaser buys the one vehicle, or a fleet, it is the same to the distributor, who insists that adequate service shall be given to all.

H. F. Talbert, Treasurer, Commerce Motor Co. of New England, Inc.

The dealer is expected to stock parts for the trucks in varying amounts, depending wholly on his territory, and the Boston office will be prepared at all times to give extra service in the way of sending out parts by special delivery, or by personal messenger if the occasion is drastic enough to warrant. A minimum charge will be made for all service not covered by the manufacturer's guarantee, and this will be based, so far as possible, on the assumption that even though the guarantee may have expired, the manufacturer is willing to adjust the matter by meeting the customer more than half way.

With full understanding of the hectic conditions of the last few years, the new organization realizes that the morale of the truck business should be constantly seeking a higher plane on which to function, and intends, in the words of President Kelton, "To treat the customer at all times as though he were a prospective buyer, rather than one who has already purchased."

Keeping Customers Sold.

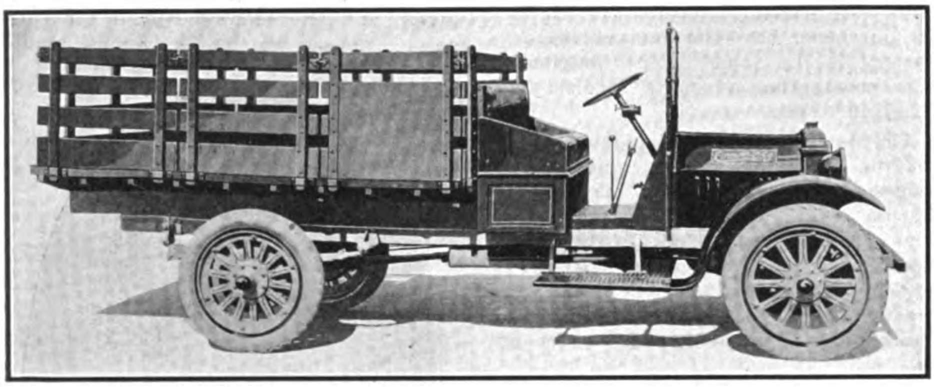
This company practically guarantees to the dealer who follows its rules, that the man who once purchases a Commerce truck will always be a buyer of that particular vehicle, by reason of the exceptionally fair treatment which he will be given, and the plans outlined for this service appear worthy of the best traditions of general business life.

Mr. Kelton has some unique views on the subject of service and strikes a modern chord when he says, "The time has come for the automotive industry to realize that real service in the true sense of the word must be thrown in as good measure to the purchaser of a car or truck. The automotive industry, the second largest in the world, will reach new high levels only by attention to the important detail of service.

"To my way of thinking the time is coming soon when this service will be given in much the same way that typewriters, adding machines, cash registers and dictaphones are cared for. In a measure that is just what we are planning to have our agents do, and all that have lined up with us have expressed a willingness to so cooperate. The old platitude that 'service is service only as it serves,' is an apt expression of the kind of service that we intend to give, and the customer who buys our product will be convinced of the truth of the assertion."

Incidentally, while on the subject of service, the company will also take care of its dealers in a way that should make for complete cooperation. Traveling sales engineers will be employed who will call on each dealer and sub-agent at certain stipulated periods and will not only be prepared to handle any cases of readjustment that may come up, but will also go out with the agents' salesmen and call on prospects with a view to selling them a truck.

In addition to this, the traveling representative will carefully go through the stock of parts carried by the dealer and will see that he is carrying at all times the proper amount. This representative will aid the dealer in every way that can be desired and will be able at all times to answer any question relative to the business.



The Combination Stake and Platform Body Makes Splendid Chassis Equipment for General Farm Haulage.

Mercantile Express Made up of Standard Units.

The Commerce Mercantile Express was designed to be the fastest, finest and lowest priced car in its class. It is sold to the customer with complete equipment and the cab top and body are optional. The speed truck has been solely designed and manufactured to be used with pneumatic tires, and the manufacturer disclaims all responsibility if solid tires are used. Fully appreciating the good features of the solid tire, it is pointed out that the high speed at which the vehicle will be operated does not admit of using the less resilient type of wheel equipment, and this fact is impressed on the purchaser.

The officials of the Commerce Truck Co. of New England, Inc., after a careful survey of the merchandising field, are optimistic regarding truck sales during the current year. They see a potential market, that with proper development, will assume proportions of great magnitude, and orders already booked for immediate delivery tend to show that they have the right viewpoint. With unbounded faith in the trucks they represent, a responsive territory for their exploitation and distribution, and a selling season of unlimited scope, the newly formed organization gets away on high speed at a pace which should do much to place it in the front rank of distributors.

Motor Omnibuses Here to Stay

(By T. J. FAY, President, Fay Motor Bus Co., Rockord, Ill.)

PERHAPS the most discussed and unsettled problem of the day is transportation, not only in suburban territory, but also in cities; people are moving away from the congested districts and want home and yard room, but present street car service is inadequate to allow the building up of the outlying city districts. The factories are taking advantage of cheaper ground, allowing them space to build daylight and sanitary buildings; then again comes the question of transportation.

There are 13,300 city and interurban railroad companies operating in the United States, 5500 of which are in the hands of receivers, and very few of the remaining 7800 paying interest on their bonds, and of this number few ever did make a dollar out of their actual operating profits. Of course we know that some billions were cleaned up on watered stock, but somebody has got to pay, and "to be sure" that somebody is the public. Street cars will have to be put on a firm paying basis if they are going to exist. Fares will have to be increased even more than they are at present.

In the meantime the inevitable progress of improved invention has crept in, until the time will soon come when the motor car will supersede the electric car. The streets will be cleared of ugly rails, switches, poles and wires and no longer will we hear the continual rumble of steel wheels and have traffic blocked by long street car stops. It is a fact that today 60 per cent. of the people of the United States travel by motor. This statement can be verified by a glimpse at any busy street in any city in our country. Only a few years ago the electric street car was the best means of transportation, but today motor car, with big pneumatic cord tires, can carry a several ton load evenly and smoothly over the ordinary city streets, very often covering a distance of from 7000 to 20,000 miles without a single change of tire.

For the past two years I have been operating bus lines and during that time have carried almost 2,000,000 people, and have never had a serious injury, which disproves the theory so often advanced concerning the danger of motor conveyances with so many motor cars on the streets.

In the city of Rockford, Ill., where we operate a larger fleet, we carry people to and from work in less than one-half the time they can be carried on the street cars. From the city limits my scheduled operation to the factory district is 25 minutes, while it takes one hour and 25 minutes on the street car. We charge a fare of 10 cents. The street cars charge seven cents. Therefore, for three cents a man can stay home 50 minutes longer. From Rockford to the end of the street car line at Camp Grant, "my largest operation," my operating time is 20 minutes, while the street car requires 45 minutes.

For the past few days we have had a terribly cold wave, the thermometer registering 21 degrees below zero, with heavy snow drifts. We have gone through without an accident; neither have we missed a single trip, while the street cars have not been able to run on their schedule. Most of the interurban lines in this section have been unable to carry out their schedule, yet my buses are operating regularly between Rockford and Rochelle, a distance of 35 miles, in two hours and 15 minutes, making stops at five towns between these points.

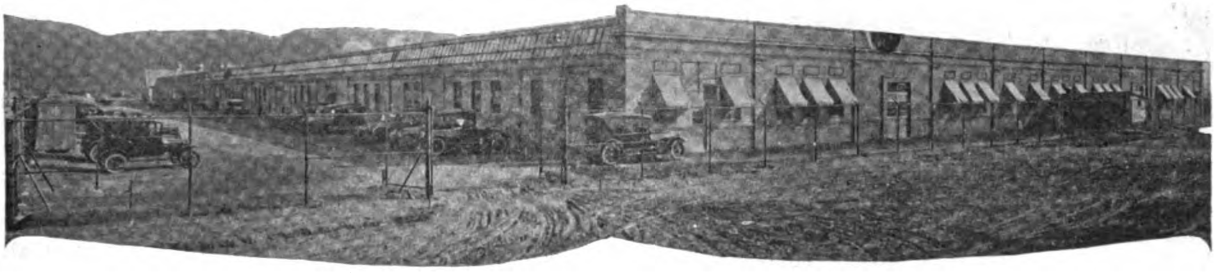
I realize that practically every bus line started in the country has failed, but at first every movie theater and almost every other new enterprise failed, although the very failures have brought experience and organization until it is possible and practical to build bus lines and give adequate service for almost every phase of transportation.

Care and experience must be used in the selection of the type and size of the chassis and body. One must have a large enough organization to handle the checking, dispatching, proper garage facilities, repair shop, incentives for the drivers to care for the buses. It is a big business and must, if successful, be handled by a large organization, but the possibilities are greater, I believe, than any other business in the United States.

For the first several months of my operation I paid dearly. There was a long time when my best friends begged me to drop the bus business, since I was financially embarrassed to such an extent, but I knew my losses were mostly my mistakes, those of inexperience, but I realized what they were and that they could be remedied, which I have done, without one cent of additional capital.

Stevens Duryea Continues Policy of Manufacturing to a Principle

(By S. G. SWIFT.)



General View of New Stevens Duryea Plant at Chicopee, Mass.

THE well-known New England car manufacturing concern of Stevens Duryea has always dignified the automotive industry as being the epitome of all mechanical art, rather than as the successful attempt of merchandising a product made to sell to a general market. When, therefore, the war clouds hovering over the country made it increasingly hard to obtain first grade materials, those responsible for the perfection attained refused to lower the barrier of ideals sufficiently to admit of using inferior stock, and discontinued manufacture, rather than sacrifice in any measure the high standard that has ever characterized the Stevens Duryea car.

Following the signing of the armistice the company once more turned its thoughts to resumption of car manufacture and it was decided to get under production again as soon as the state of the materials market and other conditions should warrant, and as plans matured it was evident that a new factory was necessry. The old one had been good enough for the times, but efficient manufacture demanded larger and better quarters, and eventually a 32-acre plot of land, midway between Springfield and Holyoke, in the city of Chicopee, was purchased, and a one-story brick and steel building erected. This structure contains all that is modern in the way of machines and equipment. It is 600 feet long by 310 wide and has a roof of saw-tooth construction which admits of ample light.

It is heated with a vertical tube boiler that works in conjunction with a Carrier air conducting system, which washes and purifies the hot air as it leaves a battery of radiators. This air is distributed through long radiator pipes to the different departments. The system is also adaptable for summer weather, and will insure a supply of artificially cooled and washed air through the warm months.

The main office occupies the entire end of the building and offers an interesting perspective as one glances the length of it, appearing to come together at the far end. This office, while well appointed is not elaborate, as the company considers that all unemployed assets should be built into the product, and one cannot but agree with the idea.

All of the machines are located in the main building with the exception of those used for nickeling and case hardening, which with the blacksmith shop and dynamometer room, are housed in a smaller building at the rear of the plant. The location, which is about two miles from the former factory, was decided on as being central to Springfield and Holyoke, the population of both cities contributing its quota of machinists, upholsterers and decorators to the personnel of the plant.

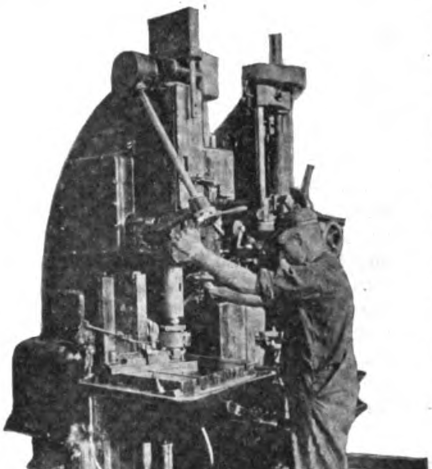
All Bodies Custom Built.

The body department naturally plays an important part in turning out the yearly production of 1000 vehicles. This department builds and finishes each body in an individual style and manner. Divided for the purpose of this article into classes, the types manufactured are the touring car, vestibule limousine and the touring sedan. An open sport model has also been developed which has all of the comfort noted in the others combined with the snappy, sporting features for which there is a certain current demand.

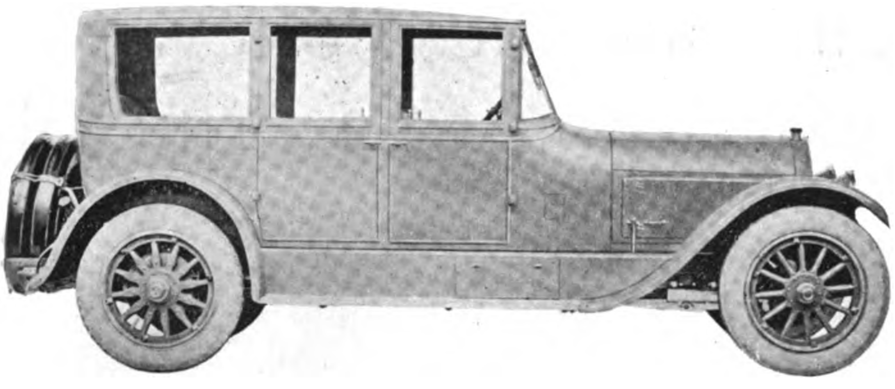
Where the upholstery is of leather, only the best of carefully selected and treated hides are used, and there is no such article as split leather in the whole department. Nothing but the finest quality of curled horse hair is used in the upholstering, and the spring suspension of the seats is of the finest coil steel, especially manufactured for use on exclusive designs.

New Cars Built with Aluminum Bodies.

The frames of the different types manufactured are all of carefully selected materials, and the body metal is aluminum. Metal trimmings for doors and windows, and door locks and hinges are



A Type of Milling Machine Employed in Stevens Duryea Construction—Testers About to Start on Usual 500-Mile Road Test.



Rich in Its Simplicity This Luxurious Limousine Is Especially Roomy.

all cut from the raw material and made by hand. There isn't a piece of sheet metal in the body of the car, with the exception of the aluminum, all other parts being cut from heavy gauge stock, which is somewhat unusual when one looks at the trim and finish on the ordinary car in comparison.

Tops Hand Tailored to Each Automobile.

The top making department is situated next to the space allotted to the body builders, as the two work in conjunction. Every top seen on a Stevens Duryea car was tailored to that particular job. Strictly speaking it was tailored onto the body, and is as much a part of it as though the two had been built as a unit. This department, equipped with 15 power driven Singer sewing machines, is staffed with men, many of them elderly, who have made a life work of the art, for art it is, of building tops, and they know their business.

Bodies Painted with 14 Coats.

Painting is the next step in the construction of the finished body. This work is in charge of a man who for 20 years has specialized in the painting of Stevens Duryea cars. There is only one satisfactory way to paint a body that shall measure up to the standards set by the company, according to this workman. The first operation calls for a thorough cleaning of the surface with steel wool and a solution in which gasoline is a base. This is followed by a metal primer coat. Coach body filler is next applied. The body is then treated to a coat of liquid putty, and when this dries, five coats of rough finish are laid on.

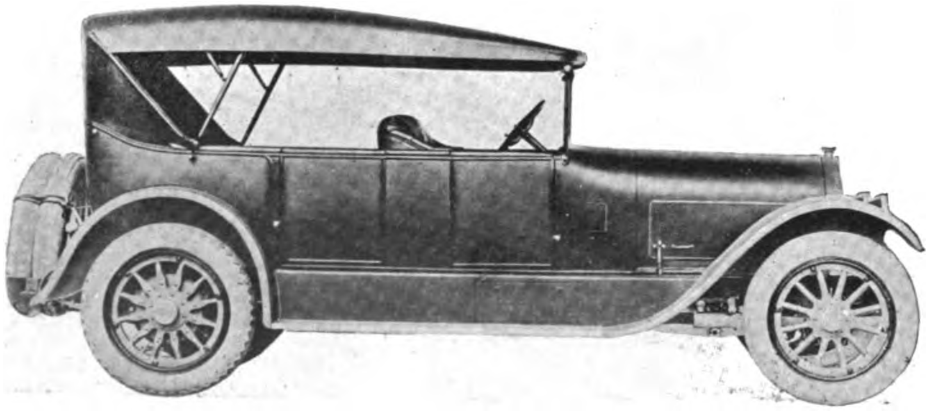
After this comes a coat of chrome yellow, which is scoured off when dry with pumice stone. This last treatment is the forerunner of two more color coats, which in turn are followed by three coats of color varnish, which is dried by natural heat in a specially constructed room kept at the exact degree of temperature necessary to dry the varnish smoothly. Another finish coat of varnish is given the machine after chassis and body have been hung up. And the result—a satin finish that defies the exploring finger to find a high spot in the entire surface of the car.

Chassis Design.

The chassis of the new car follows closely the lines of previous models, and such changes as have been made insure greater power and economy, together with improved riding qualities. The rear springs have undergone a change, being 3½ inches longer than formerly, and three-quarters elliptic instead of half, thus giving extra action and doing away with small vibrations.

The throw is controlled by four Gabriel snubbers, and the result of these innovations is seen in the manner in which the car rides, as the body seems to hang at a dead level, the axles moving up and down with the action of the springs.

An inspection of the current model will at once disclose familiar Stevens Duryea characteristics. Although low and strictly modern in its lines, the body still retains many features noted in former models, such as for example, the high seat backs, straighter than many others, the molding, back of the rear doors, and the leather covered trimmings. The radiator, the five-spoke steering wheel, the left hand gear shift and brake lever, leaving the center of the front compartment unobstructed, the six-cylinder motor, the unit power plant supported at three points, the multiple dry disc clutch—all are essentially Stevens Duryea.



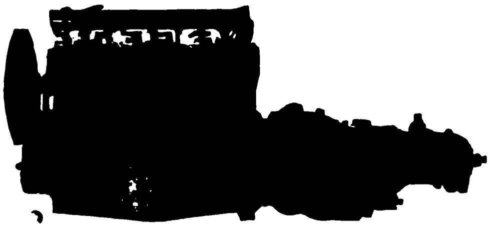
The Touring Car Commands Attention.

Engine Shows Several Refinements.

In 1904, the unit power plant supported at three points, first adopted in 1897, had been developed to the point of completely enclosing the engine, clutch and transmission in a rigid unit housing. This is today a basic principle of Stevens Duryea design, and the rigid aluminum housing that encloses crank shaft, clutch and transmission, insures the perfect alignment of their bearings at all times and under any road conditions.

The entire unit is flexible with respect to the frame and practically independent of it. The engine always delivers the maximum percentage of its power to the rear wheels because sources of loss, such as flexible joints between engine clutch and transmission, bearings out of alignment, twisting caused by unevenness of the road and squeezing of the lubricant from between the cramped surface bearings are avoided.

The multiple dry disc has been a Stevens Duryea advantage since 1904.



Left Hand View of Power Plant.

This clutch is compact, indestructible and requires little or no adjusting. It releases instantly, allowing perfect shifting of the gears. It takes hold positively but gently, reducing the strain on every part of the driving mechanism, lessening tire wear and adding immeasurably to the comfort of the passengers.

Stevens Duryea is said to have brought out the first American six in 1905. It was a complete success from its inception, and demonstrated again the far sighted wisdom of building around a principle.

That the six-cylinder principle holds as good today as ever, is witnessed by the fact that it has successfully withstood the recent tendency to increase the number of cylinders. With the admitted advantages of fewer parts, lighter weight, perfect balance and greater accessibility, continued six-cylinder supremacy, as exemplified by Stevens Duryea is not surprising.

The model E power plant is fundamentally the same as the model D, which has proved itself all the most exacting owner could wish, with its smooth, quiet power, instant responsiveness to the driver's every whim, delightful flexibility and quick acceleration. Numerous refinements, however, have made the model E power plant even more powerful and flexible, and there is a marked economy in gasoline consumption.

The ignition is a two-spark magneto system. Two hot sparks simultaneously ignite the mixture in each cylinder in two places at once. The complete charge is burned and its full expansive force utilized. None is wasted by sluggish or incomplete combustion. Quicker acceleration, smoother running at low speeds and greater efficiency results.

The highly perfected type of carburetor is especially adapted to present day fuels. This is coupled up with a short intake manifold, heated both by water jacketing and hot exhaust gas, the latter being controlled by the amount of throttle opening.

The exhaust manifold carries the hot gasses down at the front of the engine and thence underneath the car and away from the floor boards instead of back immediately under them, as is the usual practise in many types of motor vehicles.

The cooling water is thermostatically controlled, keeping the engine constantly at an efficient temperature. A motometer on the instrument board registers the temperature of the water leaving the water jackets.

Starting and lighting are provided for by a two-unit system. The starting unit of ample power, insuring rapid spinning of the motor, is operated by a convenient button on the control panel.

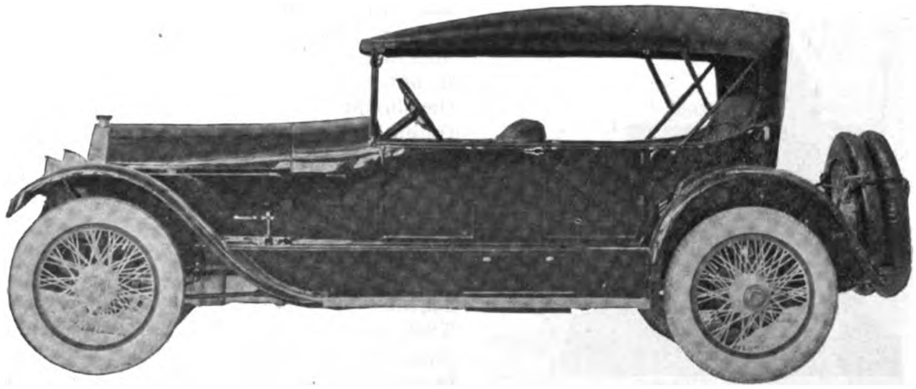
Right Hand View of Power Plant.

A most important advantage of Stevens Duryea construction is the square and taper square connections in the drive line, which eliminates keying together the different units through which the rear wheels are driven and avoids wear or twisting or shearing of these important parts, and this principle is largely responsible for the long life of Stevens Duryea motor cars. The component parts fit so perfectly and are so absolutely united by this form of construction, that, in effect, the crank shaft turns the rear wheels directly.

The same sturdy and reliable steering gear is employed. It is so smooth and easy acting that the car may be swung quickly aside with one hand.

All Steel Forgings Tested for Tensile Strength.

The raw materials that go into Stevens Duryea cars are the best that money can buy. The essential advantages of the steels used is that practically all such steels are of special alloy and heat treated, a sample of each piece being subjected to the most searching physical and chemical tests. The use of such steel gives greater strength for a given weight than can otherwise be obtained. In the use of all other materials no compromise is permitted at any point—only the best will suffice.



The Well Balanced Four-Passenger Close Coupled Sport Touring Type.

Multiple Machine Operations Not the Rule with Stevens Duryea.

The machine shop is one of the distinctive features of the plant. The system, followed in many factories, of completing a part by multiple operations doesn't obtain. The company believes that the only way by which parts can be machined to exact measurement is by the single operation, and all machines are designed with this feature in mind with the single exception of the Bausch multiple drill, which bores all the bolt ways in the aluminum crank case at one operation.

One out of every three parts, large or small, that go to make up the mechanical unit of Stevens Duryea cars is inspected, and never was test more rigid, nor closer limits set. Delicate instruments scaled to measure one-ten thousandth of an inch, quickly detect the slightest variation from standard requirements, and the system of passing small parts that show a measurement just under or over the limits set is not allowed. Every part must be exact, and this is one of the basic principles that make the assembled engine need very little adjusting, the different moving parts functioning perfectly.

Cylinders Ground to Closeness of .0002 of An Inch.

In looking at the different operations the writer was especially interested in the process of cylinder grinding. This work is done on a Heald style 65 cylinder grinder. and the work produced is undoubtedly the equal of any commercial cylinder grinding job done anywhere. A workman who has specialized for 20 years in the work has charge of the delicate operation, which attains a closeness of .0002 of an inch for diameter. The method of measuring for accuracy is by means of a dial indicator, which is kept when not in use in a master cylinder, which allows the operator to keep the instrument set at an exact figure. The finish obtained is far superior to that seen in many operations of similar nature, and is as near perfect as it is humanly possible for it to be.

Another operation that is of unusual interest is that of fly wheel balancing. The wheel balanced on knife edges, is bored and rebored on the back side until it exactly balances, and when exactly true will not turn so much as a quarter inch from any position.

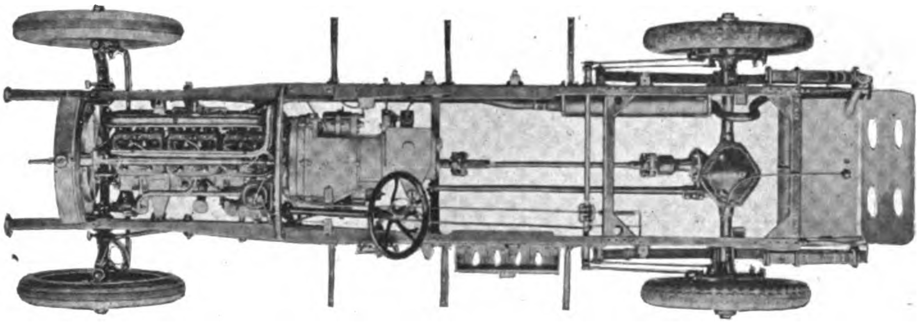
Production of Each Department Centrally Controlled.

The production of the factory is controlled by a centrally located department, which lays out the work in such manner that no one department produces a greater proportion of work than another. This department knows at all times just what each department is doing, and while of recent inception, has already worked to a decided advantage for all concerned.

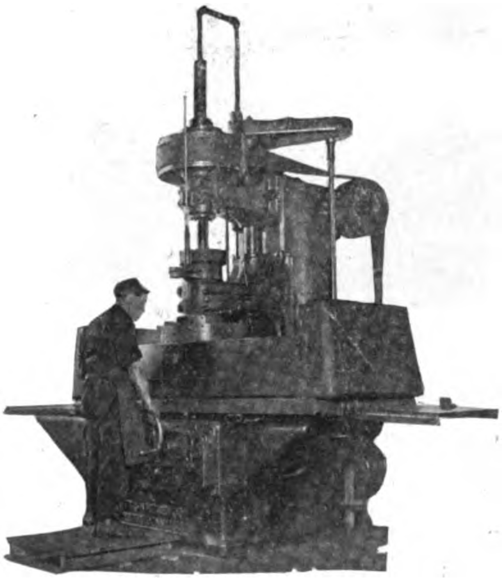
Multiple Tests Assure Satisfactory Performance.

The layout of the machine department is ideal in that all parts work through the different operations in a straight line to the engine and chassis assembly departments, which work in conjunction with each other.

The engine assembly is one of the most carefully conducted operations in a factory where extreme attention to de-



The Accessible Assembled Chassis Ready for Attaching the Body.



Cylinders Finished to .0002 of An Inch.

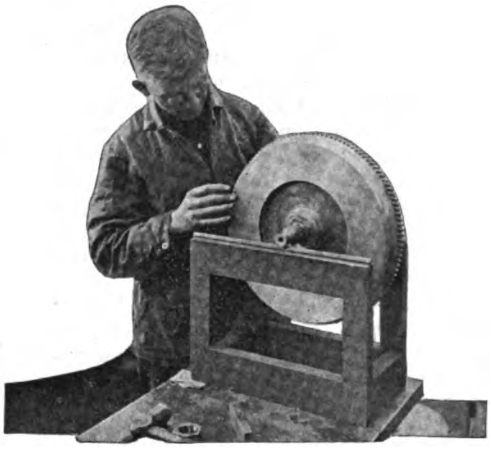
tail is paramount. Only men of long experience, with general all-round knowledge of the business are allowed to work in this department, which is fitted with many special features which make for precision. The various parts, after assembly, are placed under a belt and are "lapped in" by running in a bath of oil. When the parts have become properly seated the engine is mounted on cement blocks, as shown in the illustration, and coupled to an electric dynamometer is run under its own power for 24 hours.

Following this test the bearings are tightened, and any minor adjustments necessary are made. The chassis is then mounted on test tires and a test body is placed on the car, which is then ready for a 500-mile road test.

Tester Is Aristocrat of Automobile Mechanics.

The tester is the aristocrat of all automobile mechanics. He knows all there is to know about handling new cars, and must necessarily be familiar with every part of the machine. He has a seeming sixth sense which has been developed by years of close attention to the business, and is a veritable wizard at detecting any slight irregularity in the performance of his machine. He knows the meaning of the slightest vibration which is not as it should be, and can tell to the instant just how near perfect the timing is.

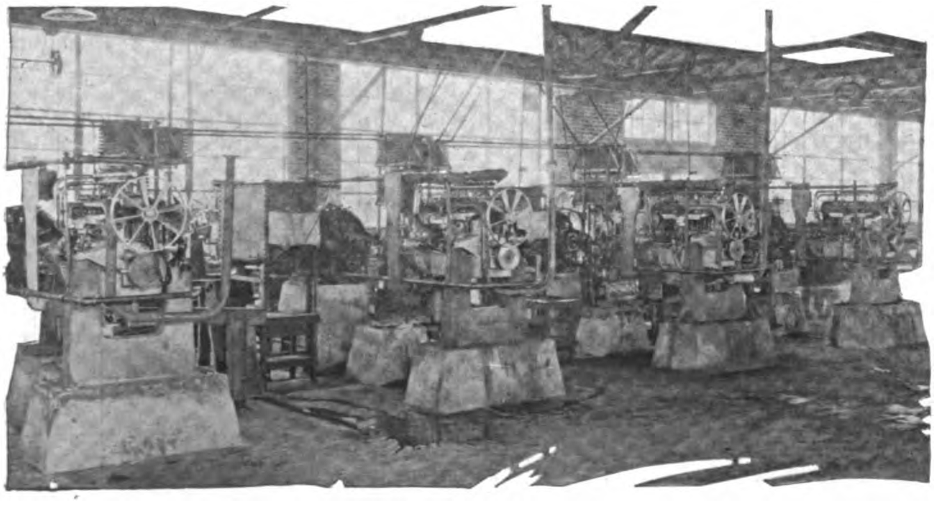
These men, with their odd looking machines, the body of which, as seen in the picture, closely resembles a racing car, think nothing of weather or road conditions, and drive the full 500 miles over country that at times would try the courage of men of lesser experience. They make practically all adjustments en route, and when they drive into the factory yard at night, mud splashed and tired from a strenuous day, there is nothing much to be done to the machine in the way of adjustments. A few bearings to be tightened the least bit, perhaps, or some slight spring corrections, but otherwise the engine is mechanically perfect, for these testers know their business. They work hard to deserve the faith which is reposed in them, and deserve all the credit they get.



Inspecting Flywheel for Balance.

After returning from its 500-mile trial trip the test body is removed and the chassis cleaned. It then gets its color varnish, after which it goes to the "hang-up" department, where it is attached to the body. Here, at its best is seen the result of the production control, for so closely has each operation on both body and chassis been figured that the finished body and the finished chassis come to the hang-up department simultaneously, both having been completed at the same time. The work of hanging the two units is accomplished very handily by means of a padded hoist, and the car is then road tested for a final time. The finished job is then ready for its final coat of varnish and the final inspection as a finished product. Tire racks, floor coverings, lamps and other accessories are attached at this time, and the machine is ready to be sent to the dealer, though, as a matter of fact, most of the cars produced thus far have been driven from the factory by their owners.

All Main Bearings Are Lined Up by Special Machine.



Department Where Engines Are Tested by Dynamometer in Groups of Ten.

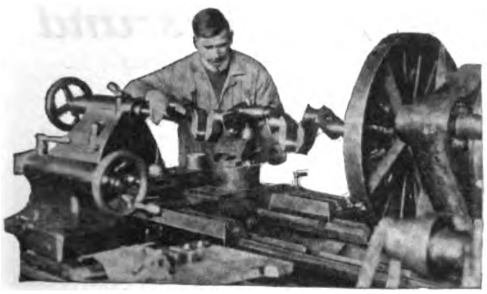
Extreme Care Exercised in Appointing Dealers.

A Stevens Duryea dealer's franchise is recognized as a distinct asset by the better class dealer, who considers himself fortunate in being associated with an enterprise which has established and conformed to the high standard set by this company. The company in turn, believes emphatically that a high grade car must be distributed and sold by a high grade dealer, and that success, to be permanent, depends largely on proper and dignified representation.

Regardless even of unusual sales ability, dealers appointed must be men of the highest standing. With the unusual demand for territory it has been a question of selecting the proper dealer, as a dealer once accepted must become a permanant part of Stevens Duryea.

All territories allotted are for the territory adjacent to the city in which the agency is quartered, and each agent is expected to work his field exhaustively, with the understanding that he can secure additional territory just as soon as result of his intensive sales campaign in the original field justifies. The franchise issued by the company is unique in that it has no cancellation clause incorporated. It differs from some also in the handling of small dealers, each of whom gets a contract direct from the factory, instead of from the distributor in whose territory he may be located, and thus practically does away with the sub-dealer.

The paramount idea of all sales programmes adopted by the Stevens Duryea company is to assure closer cooperation between the factory and the owner, and to develop the personal note, sounded in all that the company says and does, to the highest degree of harmony.



How the Crank Shaft Is Machined.

Success in the automotive field is gained by hard work, study and experience, linked with good and careful judgment. It is the result of constant striving, year after year, for progress along well defined lines of endeavor. The present status of Stevens Duryea is the cumulative result of almost a quarter century of the same striving that has been responsible for every great success, and is representative of the attainment of the highest ideals. The same honest purpose to achieve and maintain a reputation for leadership which has thorough going excellence as its foundation, and lasting worth as its true aim has produced a car that is representative of the ideals of Stevens Duryea—a product that is substantial and unpretentious, a true aristocrat of the motor car world.

The personal note predominates, to the exclusion of all that is stilted and ceremonious throughout the entire organization the officers of which are all young men. There are no private offices in the new plant, and the president, other officials, clerks and stenographers, all occupy one unusually large, well appointed office, which isn't partitioned off by so much as a fancy railing.

Every one of the several executives is a business man, first, last and always, and it is pleasant to be able to say that the entire personnel appears to have been hand-picked for the work to be done. They measure up to the standard that is Stevens Duryea in a manner that would have pleased the founders of the business.

The officers are: President, R. S. Deering; vice president and general manager, G. M. Berry; treasurer, M. R. Leathers; the department heads—sales and advertising departments, P. W. Hine; service and parts departments, R. T. Jenks; chief engineer, T. L. Cowles; factory manager, George Braithwaite; purchasing department, H. S. Beebe.

SPECIFICATIONS IN BRIEF.

Engine—Horsepower: 47.4 (N. A. C. C.). Cooling: Six, cast in pairs; L head type. Bore and stroke: 4 7/16 inches by 5¼ inches. Lubrication: Pressure and splash; oil circulated by gear pump in lower crank case, pressure gauge on dash.

Cooling System—Centrifugal water pump and belt driven fan; cellular radiator and large water jackets; thermostatically controlled circulation with dash motometer to indicate engine temperature.

Ignition—Magneto and battery; two spark magneto and storage battery for starting.

Carburetor—Latest type with dash control for easy starting and atmospheric adjustment.

Fuel Supply—Vacuum feed; 25-gallon tank on rear, including 3-gallon emergency reserve.

Controls—Spark and throttle levers on sector above steering wheel; foot throttle; clutch and brake pedals adjustable; hand brake and gear shift levers on left side.

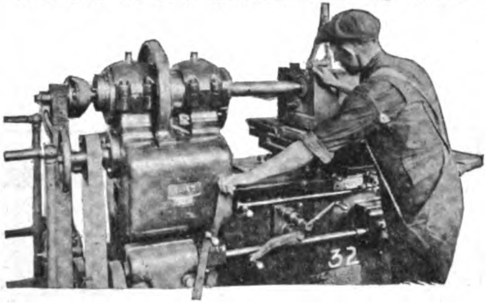
Clutch—Stevens Duryea multiple dry disc.

Transmission—Three speeds forward and reverse; ball bearing; Stevens Duryea patented self-finding quadrant (impossible to mesh wrong gears in shifting).

Drive—Shaft; two universal joints; spiral bevel drive gears; torque tube takes driving torque.

Electrical System—Two-unit 6 volts; starting motor pinion magnetically shifted to engage teeth on flywheel; starting switch on dash. Powerful motor spins engine 130 revolutions per minute. Generator constant voltage type with current regulator.

Battery—120 ampere-hour carried on left side in case between running board and frame.



Special Labor Saving Grinding Machines.

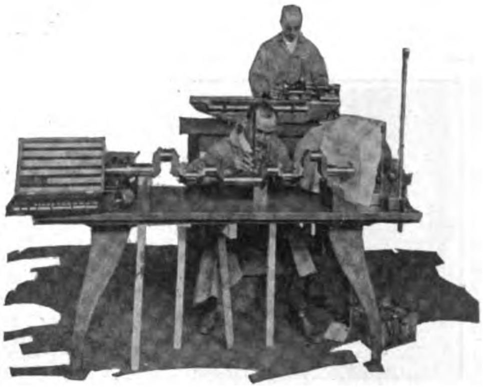
Front Axle—Drop forged, I beam section; special heat treated steel, ball bearing steering spindles.

Rear Axle—Full floating; ball bearing; nickel steel axle tubes and driving members; drop forged differential housing.

Brakes—Service: Contracting on rear wheels; asbestos fabric lined. Hand: Expanding on rear wheels; bronze shoes on wheel drums.

Steering Gear—Semi-irreversible, hardened and ground steel worm and sector; ball bearing; eccentric adjusting bushing.

Springs—Front: Semi-elliptic, 40 inches long. Rear: Three-quarter elliptic, 57½ inches long, underslung on rear axle.



Final Inspection of Finished Crank Shaft.

Lubrication—Alemite system throughout chassis.

Wheels—Artillery type, wood. Wire wheels optional at extra cost.

Rims—Quick detachable; demountable.

Tires—35 inches by five inches straight side cord; rib front, non-skid rear.

Tire Pump—Power driven from transmission.

Tire Carrier—Rear of car for two tires or wheels; Yale locked.

Wheelbase—138 inches.

Tread—56 inches.

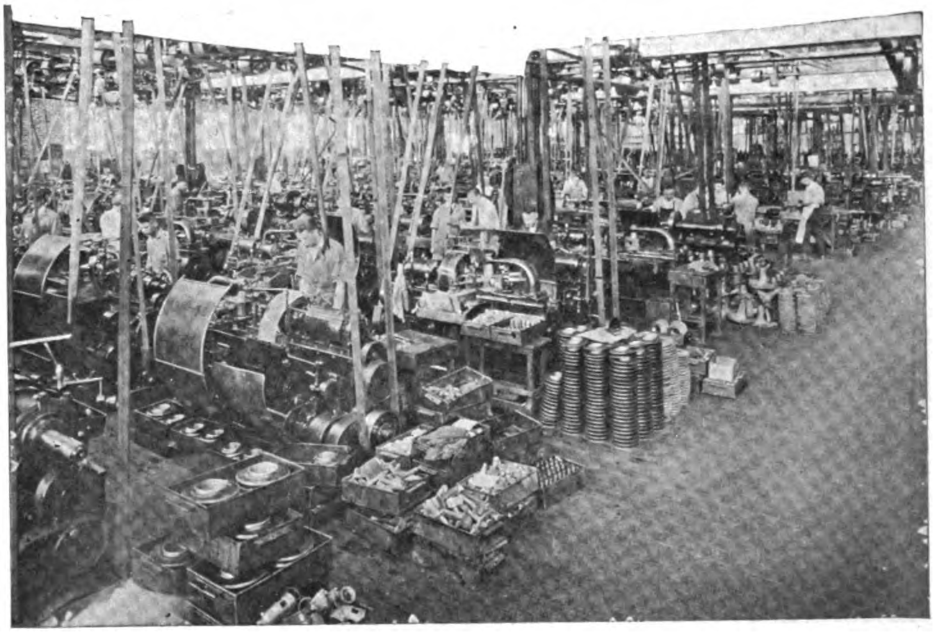
Standard Trimmings—Open car: Nickel; upholstered with the finest quality black hand-buffed, hand boarded leather; hand-buffed leather binding, tonneau carpet of finest imported English horse hair.

Closed cars: Brushed silver finish; upholstered in heavy broadcloth of our own exclusive patterns. Silk curtains, cords and laces and superior wool carpets in harmonizing colors.

Color Specifications—Open car body, chassis, guards, bonnet, splash pans and radiator of the same color; wheels and striping in harmonizing colors. Closed car lower body panels, bonnet, fenders, running board shields, radiator and chassis of the same color; upper body panels, belts, striping and wheels of harmonizing colors.

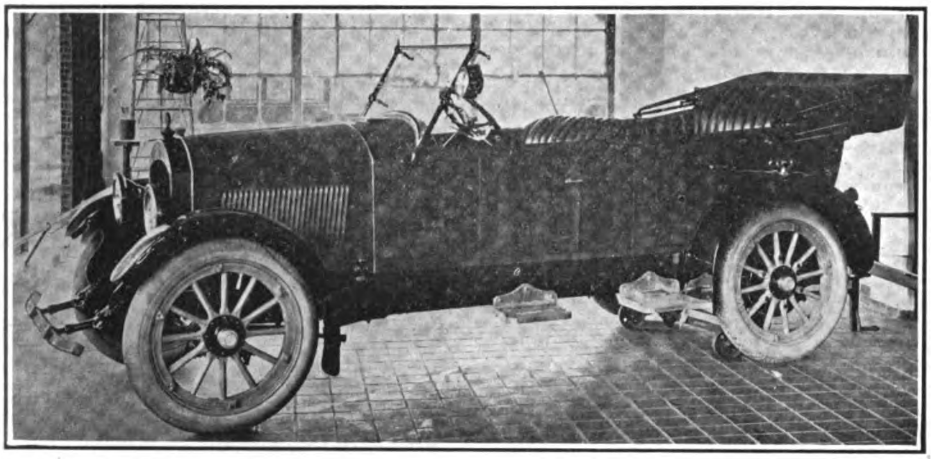
Options: Brewster green light, sage brush deep, green gray deep, Beige brown, coach blue light, coach blue medium, deep wine.

Prices—Model E chassis, $7000; standard body styles; touring, $8000; vestibule limousine, $9500; close coupled sport (four-passenger), $8000; touring sedan (four-passenger), $9500. Custom body styles: Roadster, $8500; town brougham, $10,750; limousine, $10,750.



A Corner View of the Splendidly Equipped, Lighted and Ventilated Machine Shop.

New Models of 1921 Cars, Trucks and



New Premocar Magic Six Model Manufactured by the Preston Motors Corporation, Birmingham, Ala.

PREMO CAR MODEL 6-40 A.

Engine—Falls, Six-Cylinder, Overhead Valve Enclosed, 3⅛ by 4¼, 23.5 Horsepower, S. A. E. Rating.

Lubrication—Force Feed and Splash.

Cooling—Thermo-Syphon or Natural, Service Fan.

Carburetor—Zenith, Especially Designed.

Fuel Supply—Stewart Vacuum, 15-Gallon Tank in Rear.

Ignition—Connecticut.

Starting and Lighting—Dyneto Double-Unit Starter and Generator; Dyneto Lighting.

Transmission and Clutch—Muncie Unit Set, Three Speeds Forward and One Reverse; Borg & Beck Clutch, 10-Inch Multiple Disc.

Wheels—Artillery. Wire or Disc, $75 Extra. **Tires**—Firestone, 32 by 3½. **Rims**—Firestone Type E.

Wheelbase—117 Inches.

Finish—Fabrikoid; Option of Colors.

Equipment—Klaxon Horn, Stewart Speedometer, Large Double-Bulb Head Lights.

Price—$1295 f. o. b. Factory, Birmingham, Ala.

ACE MODEL G.

Engine—Guy Disc Valve, Six-Cylinder, 3¼ by 5, En Bloc.

Lubrication—Own Oil Gauge.

Cooling—Pump.

Carburetor—Special.

Ignition—Atwater Kent.

Starting and Lighting—Auto-Lite.

Transmission and Clutch—Gear Set, Unit Forward with Motor; Disc Clutch.

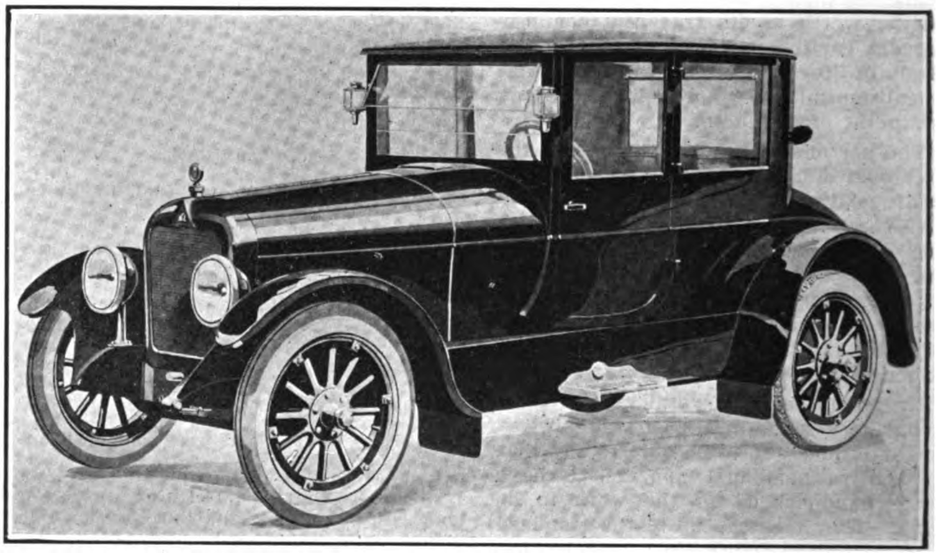
Wheels—Artillery. **Tires**—Firestone, 32 by 4. **Rims**—Firestone.

Wheelbase—123 Inches.

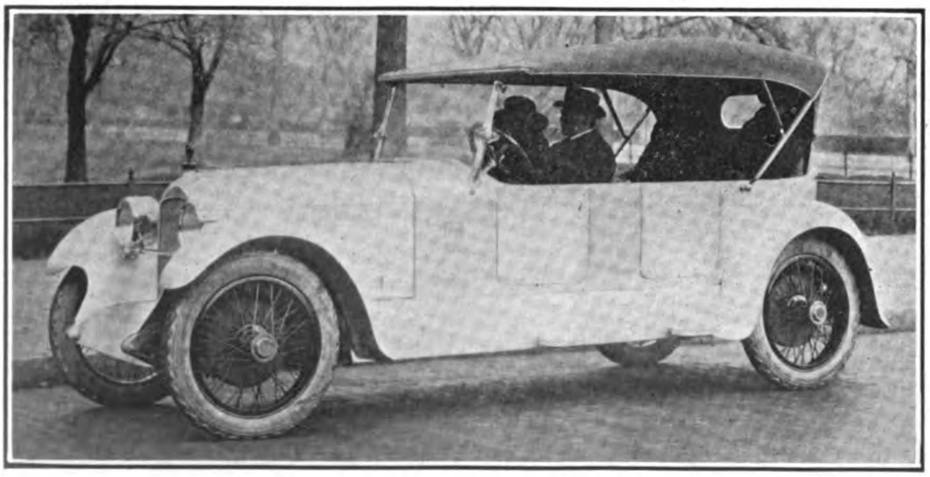
Bodies—Touring, Roadster, Brougham and Sedan.

Finish—Colors Optional.

Equipment—Complete; Individual Side Steps.



Ace Four-Passenger Brougham, Made by the Apex Motor Corp., Ypsilanti, Mich.



Duesenberg Straight Eight Touring Car Made by Duesenberg Automobile & Motors Co., Indianapolis, Ind.

DUESENBERG STRAIGHT EIGHT.

Engine—Duesenberg Single Block, Eight-Cylinder, 2⅞ by 5, 26.74 Horsepower, S. A. E. Rating.

Lubrication—Pressure.

Fuel—Vacuum, tank at rear.

Ignition—Delco.

Transmission and Clutch—Three Speeds Forward and Reverse; Multiple-Disc Clutch.

Brakes—Service, Hydraulic on All Four Wheels by Pedal; Emergency on Propellor Shaft, Hand Lever.

Wheels—Rudge-Whitworth wire. **Tires**—33 by 4⅛, Oversize.

Wheelbase—134 Inches; Clearance, 9⅜ Inches.

Bodies—Aluminum, Straight Line, Stream Line with Well Rounded Fenders and Doors of Ample Width; Individual Steps.

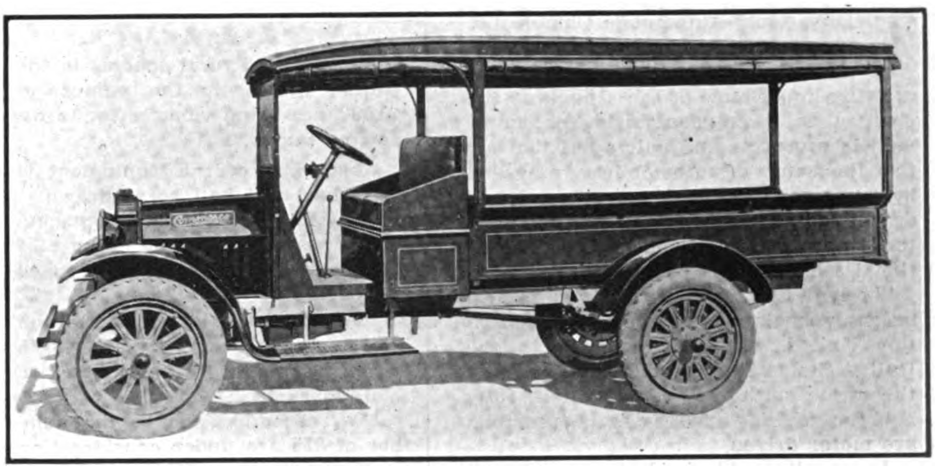
Equipment—Complete, Instruments All on Cowl Board.

Price—Approximately $6000.

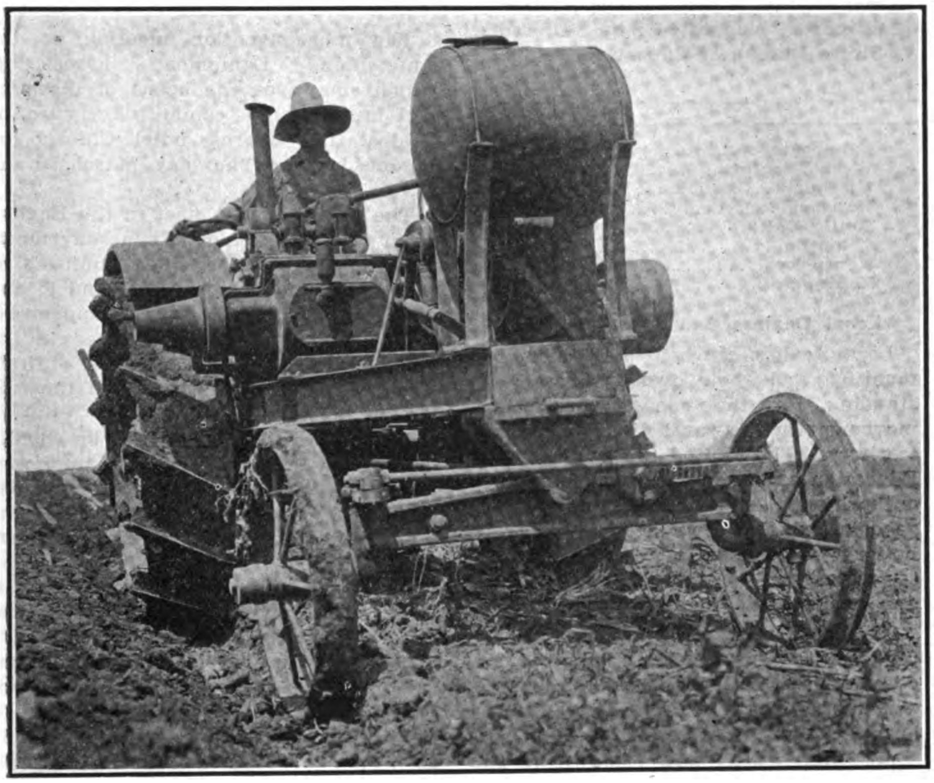
Tractors Now Being Offered to Trade

COMMERCE ¾-TON TRUCK.

Engine—Continental (Red Seal).
Cylinders—Four, En Bloc.
Bore—3¾ Inches.
Stroke—Five Inches.
Ignition—Eisemann G-4 High Tension.
Horsepower—22.5, S. A. E. Rating.
Cooling—Thermo-Syphon System.
Carburetor—Zenith, Stewart Vacuum.
Starting and Lighting System—Bijur Motor and Generator, Willard Battery.
Steering Gear—Jacox Truck Type.
Clutch—Cone Type, 14 Inches Diameter.
Transmission—Detroit Gear, Truck Type, Three Speeds Forward, One Reverse.
Rear Axle—Salisbury ¾-Floating Type.
Gear Ratio—Five to One.
Wheelbase—127 Inches.
Tires—Goodyear Non-Skid Cord Truck Type, 34 by 4½-Inch, Front and Rear.
Tread—56 Inch.
Price—Chassis, Equipped $1350 f. o. b. Detroit, Mich.



New Commerce Model T, Made by Commerce Motor Car Co., Detroit.



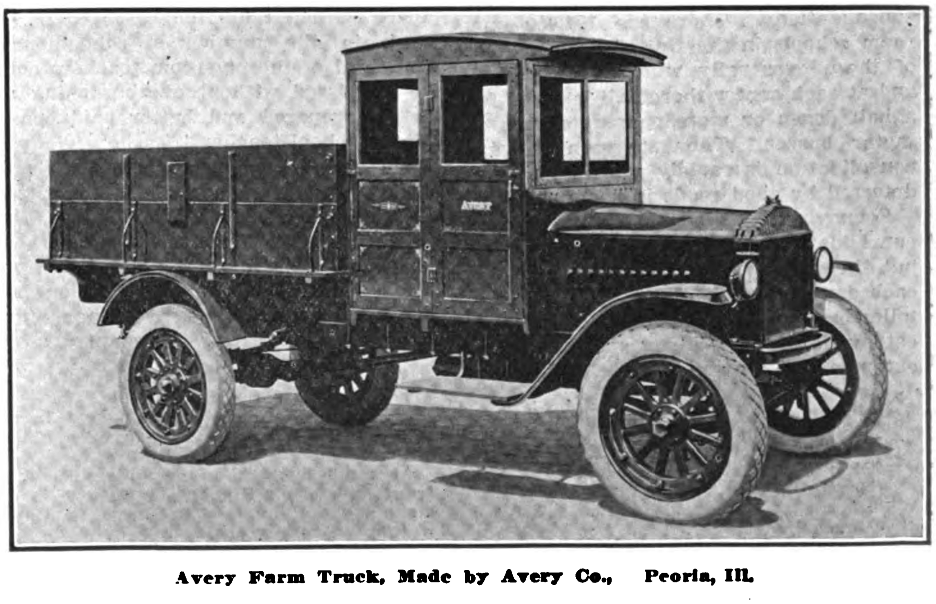
Waterloo Boy, Model N, Made by Deere & Co., Moline, Ill.

WATERLOO BOY MODEL "N" TRACTOR.

Engine—Horizontal I-Head Type.
Cylinders—Two, En Bloc.
Bore—6½-Inch.
Stroke—Seven-Inch.
Speed—750 Revolutions a Minute.
Horsepower—12 Draw Bar, 25 Belt Pulley.
Lubrication—Mechanical Oiler and Splash.
Cooling—Pump Circulation.
Carburetor—½-Inch Schebler.
Ignition—Magneto.
Clutch—Deere Band Type.
Transmission—Enclosed, Two Speeds Forward, One Reverse; Plowing Speed, 2 1/3 Miles an Hour; Road Speed, Three Miles an Hour.
Final Drive—Wheel Type, 53 Inches High, 12 Inches Wide, Fitted with Angle Lugs.
Rear Axle—Operates on Hyatt Roller Bearings.
Length Over All—147 Inches.
Width Over All—77 Inches.
Weight—Less Fuel, Oil and Water, 5850 Pounds.

AVERY ONE-TON FARM TRUCK.

Engine—Special Avery Six-Cylinder.
Cylinders—En Bloc, L-Head.
Bore—Three Inches.
Stroke—Four Inches.
Horsepower—21.6, N. A. C. C.
Cooling—Thermo-Syphon.
Carburetor—⅞-Inch Stromberg.
Starting and Lighting System—Westinghouse Regular Equipment.
Steering Gear—Ross Truck Type.
Clutch—Multiple Disc.
Transmission—Selective Sliding Amidship, Three Forward, One Reverse.
Rear Axle—Avery Torbensen.
Wheelbase—129 Inches.
Tread—56 Inches.
Tires—Goodyear Cords, 34x5-Inch, Front and Rear.



Avery Farm Truck, Made by Avery Co., Peoria, Ill.

Schools as Field for Motor Vehicle Prospects

THE National Automobile Chamber of Commerce, in a recent educational bulletin, calls attention to the growing importance of the schools of the country as a pregnant field for motor vehicle prospects and points out the fact that thousands of automobiles are needed by rural schools today to replace horse drawn equipment, to renew worn out motor transport units and to serve additional school routes.

Twelve thousand consolidated (rural union) schools are now in operation in the United States, according to the United States Bureau of Education; and the same authority reports that fully half the vehicles used for carrying pupils are motor driven.

A consolidated school is one which combines several districts. This means that some of the children must be brought from a considerable distance.

In Massachusetts half of the children for whom transportation is furnished are carried on electric and steam roads, the remainder by motor vehicle or horse drawn conveyances. If the Massachusetts percentage holds true for the country as a whole there are approximately 18,000 automobiles and as many wagons or carriages used in school transportation. This assumes that the 12,000 consolidated schools have a conservative average of 150 to 180 pupils carried per school.

Most of the 18,000 or more horse drawn carriers can be profitably replaced by motor vehicles, except in certain sections where bad roads are a barrier to automobile use.

Massachusetts Recommends Motor Vehicles.

"The motor bus is fast replacing the horse drawn vehicles because of its superiority in regularity, speed and general comfort," says Bulletin No. 115, Massachusetts Department of Education.

"On the whole—transportation by motor bus is found to be somewhat less expensive than by horse drawn vehicles," says the same authority, giving figures.

Much more of the business of supplying motor transportation to schools, however, will be available in the case of new consolidations. There are 194,000 one-room schools in the United States. Most of these eventually will be centralized, and at each center there will be need for a half dozen or more passenger cars or motor busses. The movement toward consolidation is rapidly growing, though deterred by good roads in some sections.

Pennsylvania is considering 275 new consolidations at the present time. Iowa put in a new consolidated school for each day of the school year in 1920. The following partial list, compiled from latest available data, gives an idea of the extent of the movement:

State	No. of Consol. Schools
Indiana	1002
Ohio	913
North Dakota	526
Iowa	360
Massachusetts	333
Minnesota	302
West Virginia	171
Missouri	150
Kansas	140
South Dakota	140
Colorado	114
Kentucky	80
Nebraska	61

Consolidated rural schools in the United States, to the number of 12,000, are using vehicles for transporting pupils.

About half of this equipment is motorized and half horse drawn.

The motor bus is fast replacing the horse drawn vehicle because of its superiority in regularity, speed and general comfort.

One-room schools, not yet consolidated, to the number of 194,000, promise a great future motor vehicle market.

New consolidations to the number of 275 are under consideration in Pennsylvania alone.

Automobile bus body improvements for school transportation purposes suggested by United States Bureau of Education.

Local Dealers Can Aid Movement.

Local dealers can help both their communities and their own businesses by standing for the consolidated school movement in the rural districts of their territory. The United States Bureau of Education and other leading educational authorities recommend consolidated schools, which mean better buildings, better paid teachers and consequent better instruction for the children than the one-room schools can afford.

The relation of good roads and the automobile to education is briefly and forcibly stated by United States Commissioner of Education P. P. Claxton as follows:

"If there were more good roads and more auto busses in our rural counties, the consolidation of schools could go on apace with a reduction of 50 to 80 per cent. in the number of schoolhouses. One-third of the one-room teachers could be dismissed without overburdening the better prepared and better paid consolidated school teacher."

Official Suggestions on School Bus Needs.

J. C. Muerman of the United States Bureau of Education, Washington, has prepared the following suggestions on body styles and service instructions. These suggestions are based on hundreds of inquiries and recommendations from schools all over the country:

Bodies.

Top ventilators are desirable.

Preferable to have driver's seat in the same compartment as passengers, so that he can keep control of children.

As much weight as possible needed on front wheels. Present tendency is for large school busses to have too much weight on rear wheels.

Two exits important, in case of fire, capsizing or stalling in drifts.

Where four rows of seats, running lengthwise of bus, are provided, ample aisle space should be allowed, using maximum possible width of body.

Upholstery—if not too expensive, removable khaki upholstery over leather or leatherette would be preferable to plain leather currently used, as the khaki could be removed and washed.

Service Suggestions.

Seller should provide adequate service instructions.

Minimum garage equipment for minor repairs should be stated.

Definite arrangements should be made for service station work.

Statement needed of how long paint should stand up, and what grade of paint is needed for repainting.

A. E. A. MIDCONVENTION MEETING MARCH 30.

The mid-convention meeting of the Automobile Equipment association, which comprises the board of directors and membership committee, is to be held at the Congress hotel, Chicago, on Wednesday and Thursday, March 30 and 31.

The directors will meet in the English room at 10 o'clock on Wednesday morning and the membership committee at the same time in parlor A-6 and 8, and any applicant who desires to appear before the membership committee in the interests of his application is entirely welcome to do so, as has been the custom in the past.

At this meeting, which will be equally divided between jobbers and manufacturers, there will be a short and separate session of the manufacturers and of the jobbers where they can counsel and confer on matters of interest to them and later both bodies will meet in joint session and if any member of the association has anything they would like to have brought up of a helpful or constructive nature, if sent to Commissioner Webster, it will be properly presented to the body before whom it should really go. This is being done in the thought that at this time some matters may come up of interest to either branch of the industry that may be taken up and started in a preliminary way, to be further discussed at the June convention at Mackinac Island if not properly disposed of at the mid-convention meetings.

The meetings will be in session throughout Wednesday and Thursday, when it is expected final adjournment will be had.

NEW MAXWELL DEALERS.

Lou H. Rose of San Francisco, Cal., and the Conduitt Auto Co. of Indianapolis, Ind. have taken over the distribution of Maxwell cars in addition to the Chalmers.

The Wallace Buggy Co. of Chattanooga, Tenn., and the Omaha Motor Sales Co. of Omaha, Neb., are now handling both Maxwell and Chalmers lines.

NOTES OF INDUSTRY AND TRADE

Is to Manufacture New Pleasure Cars

A new company, known as the Gray Motor Corporation, has been formed at Detroit for the manufacture of a new automobile in four models. The prime movers in the enterprise are Frank L. Klingensmith, who recently resigned as vice president and treasurer of the Ford Motor Co., and Frank F. Beall, for many years vice president in charge of manufacturing of the Packard Motor Car Co.

The company will occupy the factory and equipment of the former Gray Motor Co., Mack avenue and the Terminal railroad.

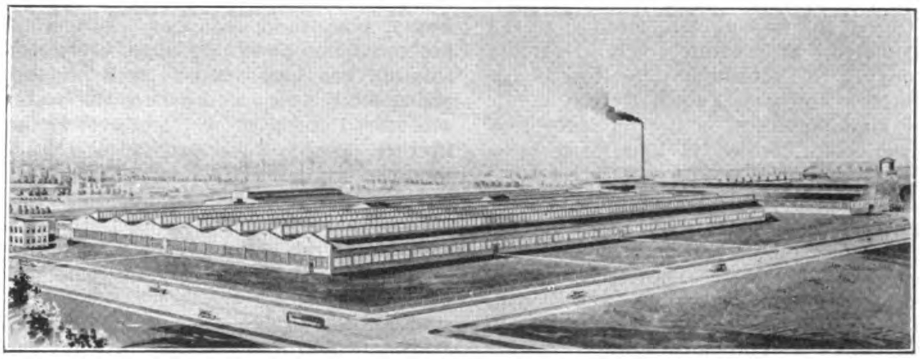
A four-cylinder motor designed by Mr. Beall will go into the new machine. It has a long stroke, small bore and overhead valves, for which simplicity and economy are promised. The wheelbase will be 112 inches and the four-cylinder overhead motor 3½ by 5.

The car will be marketed through about 10 distributing centers, these having assembly plants. The cars will be shipped from Detroit unassembled, thereby reducing expenses from the Detroit office. It automatically will lower freight charges to the purchaser.

Before coming to Detroit Mr. Beall was in the bicycle manufacturing business and spent 12 years with Browne & Sharpe in Providence, R. I. He was one of that company's chief executives when he resigned to join the Packard staff.

William A. Blackburn, for 12 years with the Cadillac Motor Car Co., will be factory manager of the new corporation.

The officers are as follows: President, Frank L. Klingensmith; vice president and general manager, Frank F. Beall; treasurer, George H. Krichner, president of the First State bank of Detroit; secretary and assistant treasurer, J. B. Moran.



The New Columbus Plant of the Timken Roller Bearing Co. at Columbus, O., with the Main Bearing Factory in the Foreground. The Heat Treating Plant is in the Rear to the Right and Offices and Warehouses to the Left.

NAMES OF BIG AUTO OFFICE BUILDINGS CHANGED.

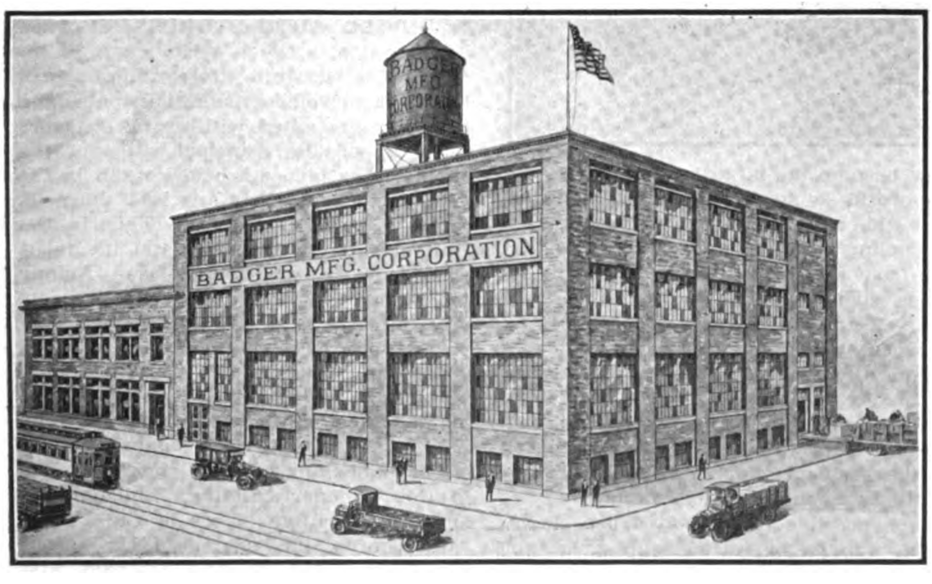
A certificate has been filed with the secretary of State of Michigan amending the articles of association of the Durant Building Corporation so as to change the name of the company to "General Motors Building Corporation."

The company's new office building at Cass avenue and West Grand boulevard, Detroit, will be known as the General Motors Building.

The office building at the corner of 57th street and Broadway, New York city, will be known as the "General Motors Building," instead of the Chevrolet Building, as heretofore.

SHERIDAN CARS EQUIPPED WITH PERFECTION HEATERS.

Announcement has just been made by the Perfection Heater and Manufacturing Co., Cleveland, O., that a contract has been closed with the Sheridan Motors Co., Muncie, Ind., whereby Perfection heaters will be a standard equipment on all Sheridan closed cars. This comfort feature is in keeping with the Sheridan slogan, "The Complete Car."



New Factory Building of Badger Manufacturing Co. in Milwaukee, Wis., Is of Cement and Brick Construction and Exceptionally Well Lighted and Ventilated.

CONNECTICUT CO. AWARDED ANOTHER INJUNCTION.

It is stated that Judge Frank Cooper of the United States District Court of northern New York has made a decision by which a permanent injunction is made in behalf of the Connecticut Telephone & Electric Co., Meriden, Conn., restraining the Denlinger Lamp & Ignition Co., Rochester, N. Y., from the sale of ignition parts which it is claimed were made in imitation of and violating the patents of the plaintiff company.

The Connecticut company is endeavoring by means of court action, as well as by the education of the trade, to eliminate from the market the imitation parts which it claims are of inferior quality, unfailingly give poor service and cause dissatisfaction to users of the Connecticut system.

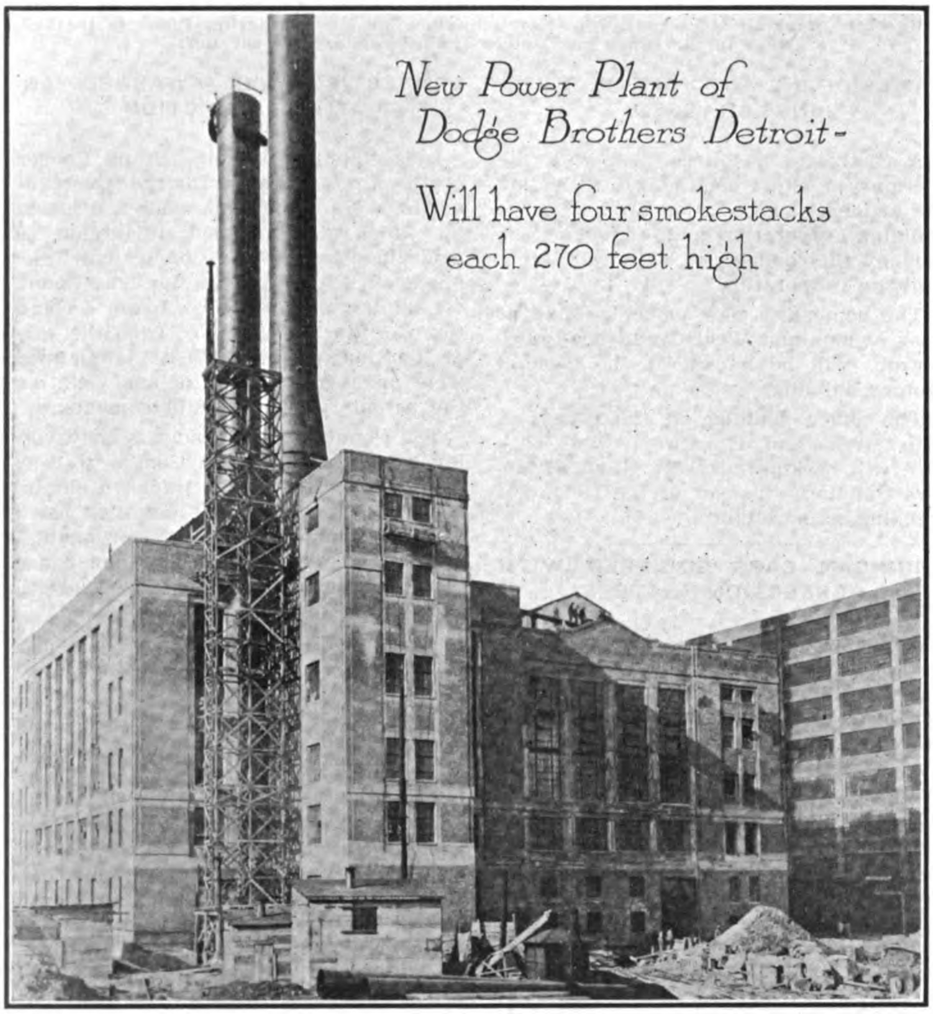
RECORD FRANKLIN SALES.

Business for the month of February as reported by the Franklin Automobile Co. of Syracuse shows that sales are keeping up to a high level. By Feb. 15 the entire month's production had been sold and to meet the overdemand the factory was called upon for 100 more cars than planned for. Shipments for the month totaled 952 cars, or within 35 cars of the best February in the company's history—this occurring last year. A new record would have been hung up this year but for the fact that February, 1921, had one less day than February, 1920.

Even with the Franklin factory working on a 40-car-per-day programme, which is the present rate of production, it found itself unable to keep up with orders. During February the total number of orders received aggregated 1107, and even the 952-car output fell short of filling orders for February shipment by 155 cars. The manufacturing schedule for March calls for the production of 1031 cars.

The Simms Magneto Co. of East Orange, N. J., reports for 1920 a net income of $71,661. This compares with $94,998 earned in 1919 and $74,414 in 1918.

Mammoth Power Plant and Cooling Tower for Dodge Brothers Plant



One of the predominant features of the expansion programme being rapidly brought to consummation by Dodge Brothers, the well known Detroit motor car manufacturers, is the immense new power plant, which is illustrated herewith.

Tons and tons of coal will be consumed there beneath eight huge boilers, but not one shovel will be in sight. It is to be a "shovel-less" plant from beginning to end. No coal will be shoveled in and no ashes will be shoveled out. Everything is to be automatic. A car dumps its fuel cargo into a hopper and passes on. Soon another car comes and receives a load of ashes—and no human hand will have touched the coal in the entire process of transformation.

The power plant is designed for an installed capacity of 40,000 kilowatts and it requires approximately 25,000 gallons of water a minute for each 10,000 kilowatt unit. There is no natural water supply within miles of the factory. To take water from the city mains and then waste it after passing once through the condenser, would be out of the question. Not only would the cost be prohibitive—it would be about 70 cents a thousand cubic feet, or $560 an hour—but the drain of the city's supply would be far too heavy. In other instances where similar problems presented themselves the solution has been found in a cooling pond, a large reservoir where the water was stored and used over and over again. In this case, however, so large a tract was not available. Not only are property prices extremely high, but there was danger that the spray rising from such a pond would damage newly manufactured cars and parts. So this plan also was abandoned.

From this problem or conglomeration of problems grew the plans for what has now become the largest cooling tower in the world—a structure 146 feet long, 32 feet wide and 104 feet high. It is capable of cooling 18,000 gallons of water a minute from a temperature of 105 to 85 degrees when the outside temperature is 72 degrees and the relative humidity is 69 per cent. With other atmospheric conditions the water will be cooled to within 25 degrees of the existing dew point with a minimum temperature of 45 degrees. This tower effectively disposes of the problem which confronted Dodge Brothers construction engineers. It makes possible the repeated use of the same supply of water, with a loss of only five per cent. due to evaporation. The tower is of the most substantial type, capable of withstanding a wind pressure of 90 miles an hour.

Four immense stacks, each 270 feet high and 13 feet in diameter, are being erected. They will be among the largest in the country. Although the power house was not started until May 18, 1920, it is now practically ready for operation. The first fire was started Feb. 1. Many of the factory executives were present to observe the ceremonies. Built at a cost of $3,500,000, the power plant is without question one of the engineering triumphs of modern industry. It is significant, in this connection, to observe that the entire plant was built by Dodge Brothers construction department. With this plant in operation the factory is safeguarded against any future emergencies such as the breakdown of the central power plant, on which many of Detroit's largest industries are dependent.

The new power house is only one of a number of large expansion projects now in progress at Dodge Brothers, the total cost of which will be approximately $8,000,000.

TIMELY NEW LITERATURE OF INTEREST TO THE TRADE.

The Barrett Co., maker of the well known Tarvia products, has just issued from the press a set of booklets showing the application of Tarvia on roads and for other purposes.

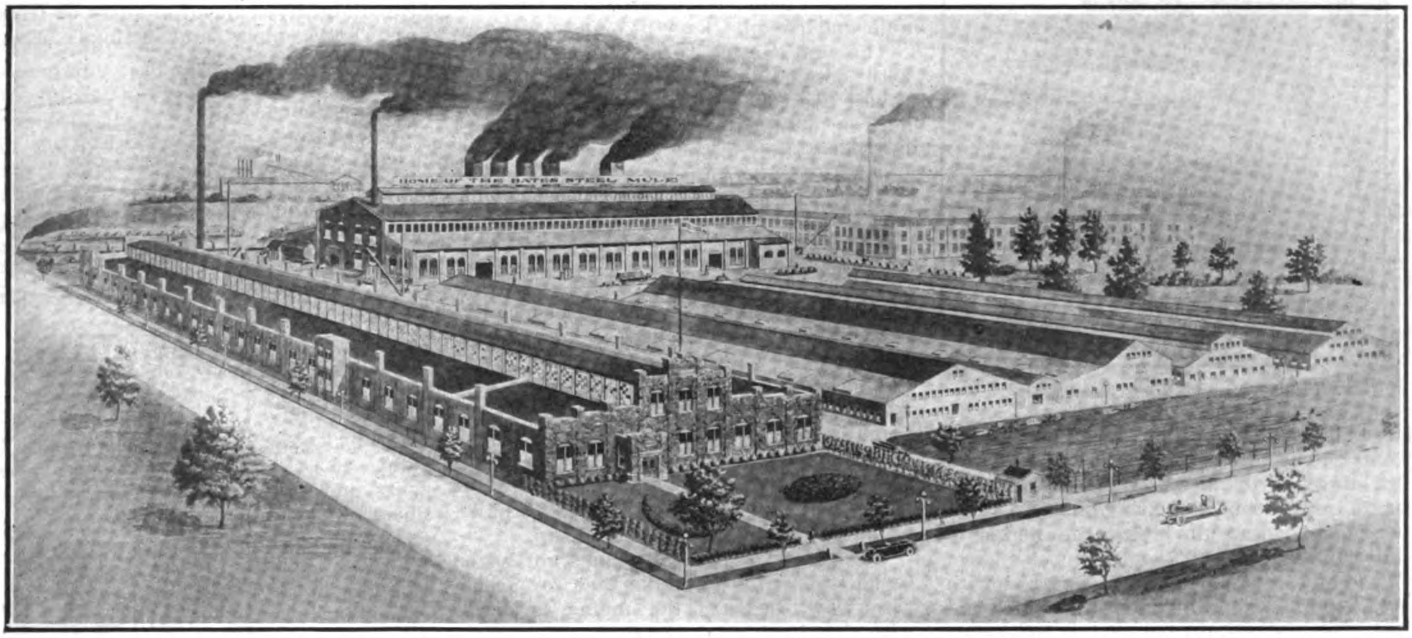
These brochures are entitled, respectively, "Tarvia Pavements—A Booklet Showing Step by Step in Actual Photographs the Construction of a Tarvia Pavement;" "How a Tarvia Macadam Roadway Is Constructed" and "Tarvia Preserves Roads. Prevents Dust." These are all illustrated in the superb manner characteristic of Tarvia publicity, and the text is replete with interesting and valuable information concerning road construction and maintenance and similar matters.

The Barrett Co. maintains distribution headquarters in all of the principal cities of America and Canada.

UNITED AUTO STORES NEWS.

The United Auto Stores, Inc., which has its home offices in Philadelphia, and is now represented with stores in more than 35 of the principal cities of the country, has placed a house organ in the field to keep properly apprised those interested in its activities. This is the United Auto Stores News and its debut was made with the March issue. Among the features in its contents of more general interest is a comprehensive symposium on the idea of real service on which the readers of the "News" are invited to express an opinion as to the highest ideal of the term and its practical application to every day business.

The publishing office of the "News" is in the Widener building, Philadelphia. and the executive offices of the United Auto Stores, Inc., are at 1411 Walnut street, Philadelphia, and 18 East 41st street, New York City.



HOME OF THE BATES STEEL MULE

Magnificent Plant of the Bates Machine & Tractor Co., Joliet, Ill., Where the Bates Steel Mule Is Produced to Supply an Increasing Demand.

Ford Outlines Plans for Expansion

In what is claimed to be the first authoritative statement' in regard to his plans for the expansion, present and future, of the mammoth Ford enterprises, Henry Ford gave out the following information based on conditions the last week in February:

That plans for the new power project and factory at Green Island, near Troy, N. Y., are being moulded into shape following the recent permit of the United States government to go ahead with the work.

That the Ford factories are turning out at present about 3000 automobiles and 200 tractors each day, which is pretty nearly the pre-war schedule, even with the smaller number of men employed. He expects the demand to increase just as regularly as it did before 1917.

Estimates from a reliable source place the number of men at work in the Highland Park Ford plant at about 24,000 and at the Rouge plant about 6000.

That there were 95,000 cars in the hands of dealers and 30,000 in process of construction at the branches when the Highland Park plant closed Dec. 24.

That 57,000 cars were sold during January, liquidating the 30,000 completed in the branches and 27,000 of the dealer stocks.

That retail sales for the first half of February were 42,000.

That total production for February was 35,000.

That sales through February approximated 85,000, assuring the liquidation of 50,000 more of the dealer stock.

That dealer requirements for March are 70,000, necessitating a production schedule of 3100 daily, within 1100 of the record for daily production.

That working forces and production will be increased steadily until normal production is reached.

That continued operation and increasing production is contingent on steel prices and that if the company is forced to again shut down it will be due solely to prohibitive steel prices.

That there will be no reduction in the wages on specific jobs and no reduction in the minimum scale.

That the Ford Motor Co.'s reply to reports of financial stress is the announcement of steadily increasing working forces and output scheduled to reach close to normal by the end of March.

That the executives now in charge at Highland Park and River Rouge will constitute the permanent official personnel with official titles in most cases eliminated.

STROMBERG PASSES DIVIDEND.

Directors of the Stromberg Carburetor Co. have passed the quarterly dividend on common stock. The company paid a dividend of 50 cents in the December quarter. The directors said the action was taken because of general business conditions. Dividends were first paid by the company in 1917 at 75 cents a share for the quarter. In August, 1918, the rate was increased to $1 quarterly, but last December it was reduced to 50 cents.

Net profits for 1920 operations, after payment of all expenses and charges and after making allowances for Federal taxes, were estimated at approximately $410,000, or $5.45 a share on the 75,000 shares of capital stock outstanding. In 1919 the profits were $401,328, or $5.35 a share.

Paul M. Hutchins, agent for Hudson and Essex cars at Grand Rapids, Mich., has added the Lafayette car to his line, which he will distribute in western Michigan.

Earnings of Car and Accessory Makers

Pierce-Arrow Motor Car Co.'s report for the last year shows net profits after charges and Federal taxes amounting to $1,769,914. This was equal, after preferred dividends, to $3.88 a share earned on the 250,000 shares of common stock of no par value. The net profit the preceding year was $2,491,070, or $6.75 a share.

Continental Motors Corporation's report for the fiscal year shows net profits after Federal taxes of $3,567,504, compared with $3,425,725 in the preceding year. After dividends had been paid last year there was a surplus of $2,517,611. The balance sheet shows inventories of $11,164,999, an increase of more than $5,000,000 over the same item in 1919.

The Mullins Body Corporation for the year ended Dec. 31 reports net sales of $3,711,420 and net profits after Federal taxes of $701,290. After preferred and common dividends there was a surplus for the year of $211,290.

The Peerless Truck and Motor Co. for 1920 reports a net income after charges and Federal taxes of $1,063,306, equal to $5.21 a share on 200,000 shares ($50 par) outstanding against $872,154, or $4.36 in 1919.

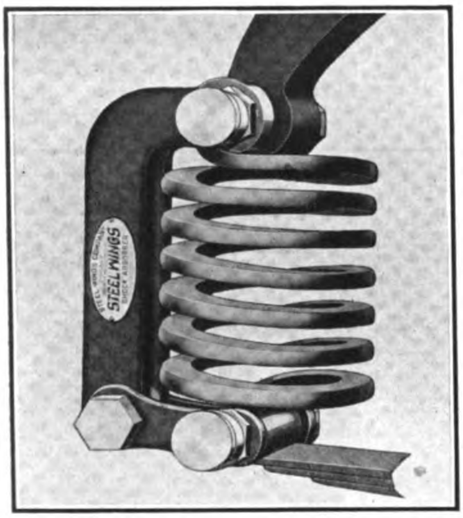
The Studebaker Corporation's report for 1920 shows net profits of $9,822,854 after deductions of Federal taxes, depreciation and other fixed charges. This was equivalent to $15.18 a share on the $60,000,000 of common stock, compared to earnings of $20.69 a share on the $45,000,000 of common stock outstanding at the close of 1919. In December, 1919, however, the capital stock was increased from $30,000,000 to $45,000,000, so that if the $30,000,000 had prevailed until the close of the year the 1919 earnings would have been $28.54 a share.

STEEL WINGS SHOCK ABSORBER.

Steel Wings Triple Purpose Springs for Ford fronts are designed to eliminate the necessity for shock absorbers on these cars. The spring contains two more leaves than the Ford front spring and is 10 inches longer. It is made of alloy steel, oil tempered.

This spring may be installed on a Ford without changing the construction—that is, without drilling any holes. It is the work of a few moments only.

The Steel Wings spring gives additional strength through its boltless center feature, which eliminates liability of breakage at the center bolt. The Steel Wings spring is locked together with a patented corrugated center lock. The hangers are extra heavy drop forgings.



Steel Wings Shock Absorber.

Additional stability is obtained by the extra long spring which carries the load of the car to the extreme end of the axle, preventing side sway, making steering easier and obviating the necessity for stabilizers.

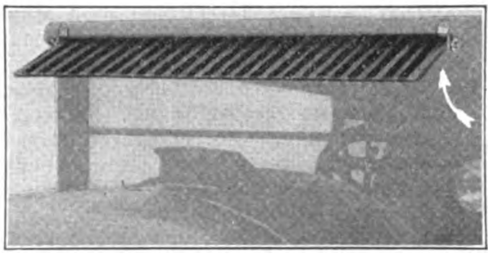
Steel Wings springs are equipped with the Stanley self oiling feature, which not only makes the upkeep easier, but keeps the spring constantly lubricated, thus insuring its perfect resiliency at all times.

Steel Wings Triple Purpose Springs for Ford fronts are guaranteed for the life of a car.

Manufactured and sold by the Steel Wings Co., 417 South Dearborn street, Chicago, Ill.

LAFAYETTE AUTO VISOR FOR ALL CARS.

The old established firm of J. Horat Co., has recently brought out a very practical and cheap visor. The insistent demand of automobile owners for a device which will protect the windshield from rain, snow, sun and glaring headlights has been thoroughly analyzed by this company with the result that it has perfected a visor very simple in construction and with several exclusive patented features.



Lafayette Auto Visor.

The universal bracket by which the visor is attached permits it to be applied to any open or closed car. The cover is ingeniously designed so that it may be removed and replaced without disturbing the frame of the visor. In order to meet the demand of different localities, covers of several different patterns of striped material are furnished, as well as solid black. Simple adjustment to any angle is provided for and these adjustments may be made from the seat.

The desire of the manufacturer was to furnish a visor which would not only be adaptable to every make of car, but one that would at the same time be durable and cheap.

The LaFayette Auto Visor complete with one cover is sold for $5. Extra covers are $3 each. Further information may be obtained from the J. Horat Co., Lafayette, Ind.

THE ONE HAND-Y VALVE GRINDER.

The Knight Engineering and Sales Co., Los Angeles, Cal., recently placed on the market a new valve grinder especially designed for the facing of automobile valves.

This new tool can face a set of 12 valves in less than 20 minutes so efficiently that it only requires one application of grinder compound to seat.

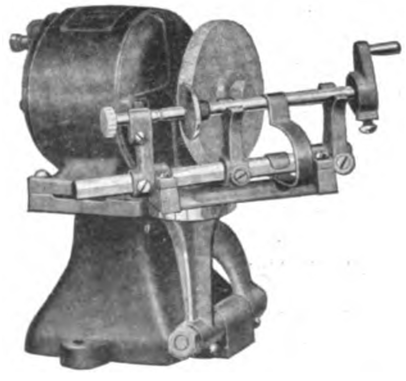
Valves of any size and of any angle can be faced with the One Hand-Y Grinder without any special set up.

The center of the valve does not have to be true with the valve face for accurate work because the facing is done with the shank as the center.

The grinder is equipped with a 1/12 horsepower Westinghouse motor.

Do it with the

ONE-HAND-Y
VALVE GRINDER



BLUE RIBBON GRAPHITE SPRING OIL.

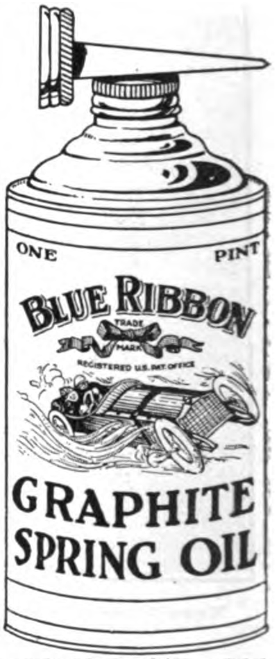
As is well known, squeaky springs or squeaks anywhere else usually mean poor or improper lubrication. It is a hard, strenuous job to lubricate springs or other parts with ordinary oil or grease where it requires the use of spreaders or wedges or the removal of springs or parts to clean off rust.

It is stated that Blue Ribbon Graphite Oil is a favorite with garage men and automobile owners because it makes short work of a mighty unpleasant job, and not only gives perfect and permanent lubrication. but eliminates and prevents rust and produces a smooth sliding contact free from friction, which insures comfortable and easy riding without the nerve racking squeaks and unpleasant noises which take the joy out of motoring.

Frozen or Rusty Connections.

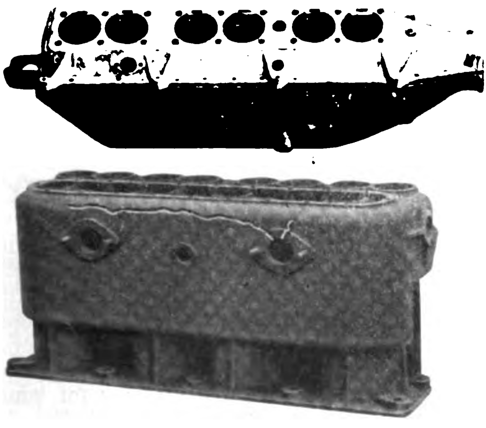
Nothing is more aggravating to the garage man, machinist, plumber or steam fitter than the removal of rusty or frozen nuts, bolts, pipes and fittings. Every mechanic has gone through this experience—fumed, fussed, cussed and tussled with aching muscles and skinned hands.

A shot of special quick penetrating graphite oil from the Blue Ribbon Handy Oiler goes right to the spot and relieves the resistance or friction whether it is caused by rust, corrosion or lack of proper lubrication, leaving a thin deposit of graphite, which retains just enough of the lubricant to prevent rust, dirt or grit from forming, due to the smooth, close graphite contact. It likewise is stated to prevent about 90 per cent. of spring breakage, to increase tire mileage and preserve the life of the car all around, as nothing will rack and add to its normal wear and tear quicker than springs and other working parts which lack proper resiliency and freedom of action.



Blue Ribbon Graphite Spring Oil is put up in half-pint and one-pint handy oil cans, and is manufactured by the International Metal Polish Co., Inc., Indianapolis, Ind., which will supply prices of this and its other products on request.

Illinois collected $5,915,646.17 in motor vehicle fees during 1920. There were 503,761 pleasure cars registered and 64,997 motor trucks, a total of 568,758.



Showing Castings After Being Repaired with F. A. A. Aluminum and Cast Iron Mends.

SUBSTITUTE FOR ACETYLENE WELDING.

A product which is claimed to make a permanent repair on automobile motors. as well as aluminum and cast iron castings, is now on the market. The F. A. A. Aluminum and Cast Iron Mends are spoken of as substitutes for acetylene welding. F. A. Albertus, the originator of the F. A. A. products, has had many years experience in practical shop work and his products are the result of many trying and difficult experiments.

In repairing iron or steel a filling material of the proper chemical composition must be used to bind the metal together. The importance of this composition cannot be over-estimated, since the strength and structure of the finished repair depends almost entirely upon the filling material.

The Cast Iron Mend is stated to meet the above requirements and to be used successfully in repairing all classes of gray iron, malleable iron and steel. It is especially valuable in the repairing of scored cylinders and cracked water jackets. No machining is required, nor is heat applied to the casting, thus avoiding warping and cracking. Cast Iron Mend is applied with an ordinary copper soldering iron, and muriatic acid cut with zinc.

In the case of the Aluminum Mend, the process is somewhat different. First the parts to be repaired are filed clean, then heated with a blow torch. After applying a small amount of the mend and rubbing it in well with a wire brush, the parts are ready to be placed together and all cracks and crevices filled with the mend. After cooling the repair is filed off and polished, leaving a finished job, the same color as aluminum.

Aluminum Mend is compounded especially for the purpose of retarding oxidation of the aluminum. When oxide is present it is rapidly dissolved by the mend, producing a repair similar in structure, composition and color and equal in strength to the original metal.

All of the F. A. A. products are subject to rigid tests and thorough inspection, thus assuring a perfect product to the trade.

The sales policy will be to dispose of the products through distributors and jobbers.

In territory not covered by distributors and jobbers, products will be supplied direct to the consumer.

The accompanying illustrations show repair work after being mended by the F. A. A. Cast Iron and Aluminum Mends.

These goods are made by F. A. Albertus & Co., 206 Ninth street, Milwaukee.

SAFETY ROBE RAIL BALKS SNEAK THIEVES.

One of the most celebrated thief catchers in the country, who is an inspector in the New York metropolitan police department has said:

"Automobile owners throughout the United States, in the smaller communities as well as in the larger cities, have undoubtedly sustained a greater net loss through the theft of lap robes, coats and similar portable possessions left in their cars than through all other forms of automobile thievery combined."

The Safety Robe Rail, which is being marketed by the Safety Robe Rail Corporation, 1776-1778 Broadway, New York city, is designed to obviate just this annoyance and loss. It is attached to the car in the same place and manner as the old style robe rail and occupies no more space.

As will be noted from the cut the rollers are eccentric and tighten if an attempt is made to remove a robe or other object from them.

When they are not in use, lap robes, wraps, coats, etc., are held so securely by the Safety Robe Rail that physical force cannot remove them. The sneak thief's technic, of course, does not permit the use of attention attracting tools. However, even were he to use a "jimmy," he could not separate the Safety Robe Rail from its charge.

Notwithstanding the relentless, potential power of the Safety's grip, it holds gently whatever is entrusted to its care. Whether holding one article or several, the Safety's grip automatically adjusts itself to just the proper pressure.

The Safety Robe Rail is unreservedly guaranteed by the maker. The price is $20. In ordering the make and model of car should be given.

HIGH LUSTER FINISH FOR AUTOMOBILE USE.

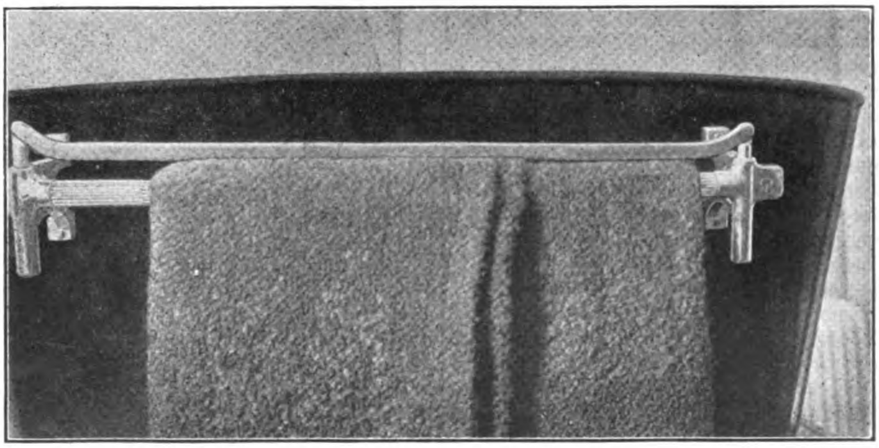
That substitutes seldom satisfactorily take the place of originals is true even if trite, and this may be illustrated by experience in trying to refinish any highly enamelled or varnished surface, such as a new automobile body. To the H. L. Feasel's Laboratory, 9 Debrosses street, New York city, may be attributed the distinction of making and placing on the market a liquid the properties of which are said to be such that the original finish is protected and preserved by its use. Not in any sense of the word is it a polish — in every sense of the word it will preserve and protect. It is sold under the name of High Lustre Finish, and is guaranteed by the H. L. Feasel's Laboratory to preserve and protect, not renew, any varnished or enamelled finish.

H-L-F
High Lustre Finish
A Product of the
H. L. FEASEL'S LABORATORY

High Lustre Finish cleans, rubs dry, lasts. An old soft cotton cloth is all that is needed. Applied in this manner, not lavishly, but as reasonable necessity demands, the lustre and beauty of the original finish will be indefinitely retained. The more you rub the better, because H. L. F. removes all foreign matter when so applied. Its component parts contain no injurious ingredients, such as turpentine, alcohol, acetic acid, etc., which tend to destroy and literally dissolve the original finish; thus the purchaser of High Lustre Finish is assured that its use on any enamelled or varnished surface will not harm or destroy the original finish.

High Lustre Finish is packed one dozen bottles to the case and an attractive counter display, with signs, descriptive folders, etc., are supplied to dealers.

The price list is as follows: One-half pints, $6 a dozen; pints, $12 a dozen; quarts, $18 a dozen.



The Safety Robe Rail in Position on Back of Seat.

Personal News of Industry and Trade

New Representatives of Stutz Co.

Fred P. Steele, for many years associated with the automobile industry and favorably known to distributors from coast to coast, has joined the Stutz Motor Car Co. of America, Inc., and will represent the factory in the Atlantic coast district. **Homer R. Horsfall**, formerly identified with the automobile business in St. Louis, and for the past five years with the Overland, is now connected with the Stutz Motor Car Co. of America, Inc., with sales supervision over the western and Pacific coast territories. **Fred Wilson**, one of the pioneers of the industry, is now with the Stutz Motor Car Co. of America, Inc., in the capacity of assistant sales manager.

W. H. D. Totten, who was a director of the United States Motor Truck Co., Cincinnati, O., and secretary of the Stewart Iron Works Co. of the same city, recently died at his home in Cincinnati. Mr. Totten had many friends in the automotive and iron industries with which he was so long associated.

W. A. Beardsley has been appointed, by the Winther Motor Truck Co., Kenosha, Wis., as district sales manager for the states of Washington, Oregon and Idaho. He had previously been associated with several large distributing companies on the Pacific coast. **A. J. Landrum**, Laredo, Tex., has been appointed Winther distributor for southern Texas and the states of northern Mexico. and the Harper-Libby Co., Inc., 801 Beacon street, Boston, Mass., will represent the company in eastern Massachusetts.

H. Y. Grassl is to be retained by the reorganized Republic Motor Truck Co. as director of service of the Republic Truck Sales Corporation. Mr. Grassl has been connected with the service department of the Republic institution for over four years, during the early portion of which time he visited the entire Republic distributor organization in the United States and Canada, and supervised the installation of standard service records, maintenance of stock inventories and the company's general service system. Practically all of his business career has been devoted to the mechanical and engineering field. Among the larger concerns with whom he was connected may be mentioned the Allis-Chalmers Clyde Machine Works of Racine, Wis., the Metropolitan Power Co. of Chicago and the Goldman Co., engineer and machinery manufacturer of Chicago. For two years immediately prior to joining the Republic organization Mr. Grassl was connected with the Master Truck Co. of Chicago, and during that concern's early manufacturing experience, supervised the engineering and production of its first truck model.

Hoomer Hilton, Managing Director, National Association of Motor Truck Sales Managers.

T. B. Blackiston, formerly district sales manager in the southwest territory for the American Hammered Piston Ring Co., Baltimore, Md., has been promoted to the position of assistant general sales manager, replacing J. H. Quackenbush. S. A. Barclay will be district sales manager in charge of the territory formerly supervised by Mr. Blackiston. **A. M. Merrifield** has been placed in charge of the western and Chicago sales districts as district sales manager, replacing D. T. Preyer.

Glenn B. Hiller, formerly general sales manager of the Nelson Motor Truck Co., Saginaw, Mich., has been elected general manager and director of sales and advertising of the Triangle Motor Truck Co., St. Johns, Mich.

W. C. Durant has resigned as president and director of the Durant Building Corporation and has been succeeded by **A. P. Sloan, Jr.**

Daniel G. Throne, National Sales Representative for Republic Motor Trucks.

Hilton Has Joined the Winther Co.

Homer Hilton has been elected vice president and general sales manager of the Winther Motor Truck Co., Kenosha, Wis. Mr. Hilton is a well known figure in the motor truck industry, just relinquishing the duties of managing director of the National Association of Motor Truck Sales Managers, of which organization he has been a director for some time past. Previous to his direct management of the association affairs he was sales manager of the Oshkosh Motor Truck Manufacturing Co., of which company he was one of the organizers three years ago. He has also been connected with various other organizations in the automotive field.

W. J. Corr has been elected secretary and treasurer of the Maibohm Motors Co., Sandusky, O., succeeding I. O. Bormann, resigned. Mr. Corr has been director of purchases for the Maibohm Motors Co. for the past year and is widely known in the automotive industry. He was with the General Motors Co. for the first two years following its organization. doing purchasing, cost and systematizing work at the Northway, Cadillac and Oakland plants. For the following two years he was director of purchases of the Apperson Brothers Automobile Co., Kokomo, Ind.; then for two years director of purchases of the Falls Motors Corporation, Sheboygan Falls, Wis. For nearly three years prior to joining the Maibohm organization he was purchasing agent for the Detroit plant of the Aluminum Castings Co.

Don F. Whittaker has been elected executive sceretary of the National Association of Motor Truck Sales Managers and has assumed charge of affairs at the headquarters of the association, 1157 Book building, Detroit. Mr. Whittaker has been connected with well known truck manufacturing concerns, such as the Federal and Acason Motor Truck companies. The next meeting of the directors of the association will be held March 25, at which plans will be made for the carrying on of the work under Mr. Whittaker's supervision.

Harry Eisner of the Eisner-Lenk Co. and the Auto Glare Remover Co., 711 Boylston stneet, Boston, has returned from a tour of three months and a half abroad with Mrs. Eisner. Mr. Eisner states that he was successful in placing foreign selling rights for the Glare Remover in England, France, Italy, Germany and Switzerland.

Roland Rohlfs, the well known aviator, who holds the world's altitude record of 34,610 feet, has become a member of the sales force of the Ostendorf Motor Car Corporation, Buffalo, N. Y., which distributes the Franklin car. Mr. Rohlfs is the son of Anna Katherine Greene, the noted novelist.

Strout Is Apperson's Eastern Manager

George H. Strout, who has been connected with the Apperson Brothers Automobile Co. for a number of years, has been made manager of the eastern department and, in addition to his new duties, which include general charge of the New England, eastern New York and northern New Jersey territory, he will continue to direct the export business of the company.

W. R. Melcher, formerly eastern representative of the Gemco Manufacturing Co., has returned to the C. A. Shaler Co., Waupun, Wis., in the capacity of special jobbers' service representative on Shaler vulcanizers and Shaler Roadlighters. Mr. Melcher was associated with the Shaler company in 1918-19.

Mitchell Mackie, who has been sales manager of the Waukesha Motor Co., Waukesha, Wis., since 1915, resigned March 1.

George H. Strout, Who Has Become Eastern Manager for the Apperson Brothers Automobile Co.

H. L. Dipple, formerly president of the H. L. Dipple Co., Indianapolis, Ind., was recently made general manager of the Central Auto Top & Leather Co., Inc., 421 North Capitol avenue, Indianapolis, Ind., maker of automotive accessories, transmission belting, etc. Mr. Dipple brings to his new position a valuable experience gained in important connections in the automotive field.

Harry E. Marshall has been appointed Pacific coast representative of the Mueller Electric Co., Cleveland, O., manufacturer of Universal batteries and test clips. He will be in charge of the company's offices and warehouses at 332 Leavenworth street, San Francisco, Cal.

C. A. Grainger, formerly factory representative of the American Hammered Piston Ring Co., Baltimore, Md., for the southeastern district, has been promoted to be district sales manager of the territory comprising Texas, Missouri, Kansas, Arkansas and Oklahoma.

W. G. Rath, Newly Appointed Secretary-Treasurer of the Napoleon Motors Co., Traverse City, Mich.

T. B. Funk, who has been Utilitor engineer for the Midwest Engine Co., has also been placed in charge of sales to succeed Fred E. Wilson. Mr. Funk went to the Midwest organization last year and prior to that was associated with the Moline Plow Co. as chief engineer and factory manager.

Seymour R. Cochrane was recently made director of the sales division of the Allison-Rood Co., Lincoln car distributor in the Chicago territory. He was formerly director of the exchange car division of the company.

Harry J. DeBear has sufficiently recovered from his recent operation as to be able soon to assume his duties again as president of the Maxwell Motor Sales Corporation of New York city.

Ralph Leavenworth has resigned his position as advertising manager of the Standards Parts Co., Cleveland, O., to accept the post of director of personnel for S. L. Weedon & Co. of the same city.

C. D. Peet, General Manager, Napoleon Motors Co., Traverse City, Mich.

Hudson to Head New Truck Company

William F. Hudson, president of the Hudson Motor Specialties Co., Philadelphia, and inventor of Hudford and Flexo products, is forming a company to build a three-ton truck which will embody in its construction many of Mr. Hudson's patented features. The name of the company will be the Hudson Motor Truck Co. and the product will be known as the Hudson truck. Mr. Hudson will be president of the new company and J. H. Malone, vice president of the Hudson Motor Specialties Co., will be vice president of the truck company also.

H. J. Behr, formerly manager of mechanical sales for the B. F. Goodrich Rubber Co. in the Philadelphia district, has been appointed general manager of the Goodall Rubber Co.

F. R. Wilhelmy, who recently resigned from the Standard Parts Co., Cleveland, O., has joined the Cleveland Tanning Co.

T. B. Funk, Utilitor Chief Engineer, Is Now Also Sales Director.

J. S. Inslip, formerly of the sales department of the metropolitan branch of the Locomobile company, has been appointed New York manager of Rolls-Royce of America, Inc., to succeed R. W. Schuette, resigned. **J. Roy Hiltz** has also left the Locomobile company to take up special sales work with Rolls-Royce, making his headquarters at the company's American works, Springfield, Mass.

George E. Smith has resigned as sales manager of the Simon Sales Co., Detroit, Mich., which position he assumed about a year ago. He is well known for his work in various sections of the country for Willys-Overland, Inc., in connection with sales promotion and efficiency systems.

Saville Baar, who was attached to the Americanization Bureau of the Detroit Chamber of Commerce during the war period, and was also a former representative of the Simon Sales Co., has joined the Studebaker Corporation in Detroit.

JAFFE REPLACEMENT RADIATOR.

One of salient features of the method adopted by the Jaffe Radiator Co., 14 East Jackson boulevard, Chicago, Ill., in the manufacture and distribution of its Jaffe radiator product is the guarantee against damage from freezing or through defective materials or workmanship. The company states the reasons for the supremacy of its product as follows:

1. Correct construction of the scientifically correct honeycomb cellular type; where elasticity and resiliency are of prime importance in distribution of shock, the honeycomb is acknowledged the ideal type.

2. Water tubes are rolled to avoid weakening of the metal—not die stamped.

3. Tubes are corrugated; therefore, being stronger and containing more metal than straight sides, the flow of the water is slightly interrupted, giving the brass more time to absorb and disperse the heat.

4. The absence of sharp angles and corners, which are present in some other types of zig-zag water channels, prevents the clogging which so impairs radiator efficiency; nor is there any internal soldering to clog with sediment.

3. Composed of over 2000 air cells, two-thirds of each of which come in direct contact with the water in the channels; air fin in each cell not only augments radiating surface of core, but breaks up the air as it enters the cells and imparts to it a whirling motion, insuring maximum cooling value.

6. The basically sound hexagonal cellular construction and the naturally resilient rolled brass provide enormous strength with great flexibility. For this reason the most violent shocks and incessant vibration can be withstood, because a flexible and not a rigid, unyielding resistance is offered to strains and blows.

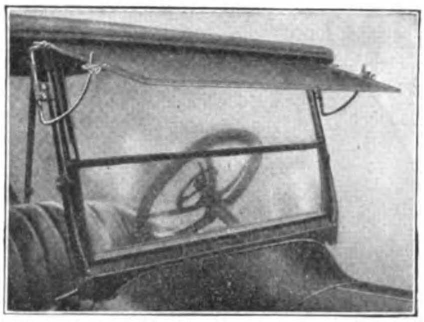
7. By this wonderful flexibility all danger from cracking and bursting, if the water freezes, is eliminated. The Jaffe will not burst, crack, leak or become distorted from freezing.

Jaffe Replacement Radiator.

8. Brass is used wherever the water comes in contact with the metal and this includes the tanks. Freedom from rust and corrosion is thus insured, coupled with great strength and security from frequent repairs.

9. Large cells make repairs from accidental damage easy; the symmetry of the core construction gives notable beauty of appearance; the black enamelled shell is of pressed steel; all joints and angles subject to severest strain or damage are reinforced; from outlet to neck and cap, strength and durability are paramount.

PRESTON STORM AND GLARE VISOR.



Preston Storm and Glare Visor, Open Model.

The Preston Storm and Glare Visor, shown in the accompanying illustration, designed to shield the eyes of motorists from the glare of the sun, street lamps and head lights, is one of the latest devices added to the wide line of articles manufactured by the Metal Special Manufacturing Co., 338-356 North Kedzie avenue, Chicago. It has been placed on distribution and already a heavy popular demand has been created for it, it is stated.

The visor consists of a patented nickel plated, adjustable bracket and has a thumb screw attachment which permits its adjustment to any range or angle of vision without the driver leaving the car. When used on an ordinary touring car the supporting brackets are held in position by two steel clamps which fasten to the windshield posts. Each bracket is provided with screw holes so when applied to closed cars the clamps are not used and the bracket is screwed securely to the frame of the windshield. A special bracket is made for Ford touring cars and roadsters.

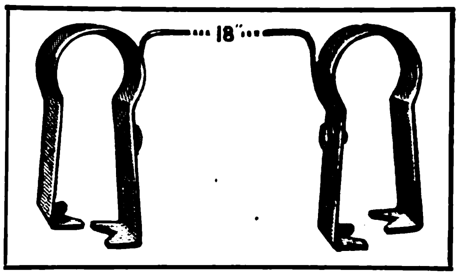
The frame, the joints of which are electrically welded, is covered with black water proof automobile top material, firmly stitched, and presents a neat and finished appearance. A wide piece of material is left at the back of the visor in order to completely seal the space between the automobile top and the visor, thus excluding rain or snow. A round piece of bar steel extends across the top the entire width of windshield, projecting 2¼ inches on each side. The adjustable brackets slide on this bar so that each visor is adjustable in width to suit any car within a variation of four inches.

The Preston Visor is being made in two sizes, the larger being four inches wider than the smaller and with the adjustable feature will fit all cars from 36 to 44 inches in windshield width measuring from center to center of the windshield posts.

It is claimed for the device that it adds greatly to the comfort and safety of motoring, relieving the constant eye strain and preventing accidents due to clouded windshields and glaring light.

THE ATTACHO BATTERY JUMPER.

The Attacho Battery Jumper is especially designed to meet the need for a simple, practical, convenient and inexpensive tool for use in connecting storage batteries for charging. It consists of two lead coated clamps connected by 18 inches of lead coated copper wire. It is intended primarily for use on batteries fitted with the standard tapered terminals. On these terminals the hair-lip jaws take a close hold and the clamp stands firmly upright, with no tendency to lop over.



These jumpers are not recommended for use on old style battery terminals.

The clamp is a one-hand affair. It is not necessary to take two hands to pull the jaws apart. The proper method is to grasp the shorter leg between the thumb and two fingers, hook the longer leg over the top of the terminal and spread the clamp by pulling toward the operator.

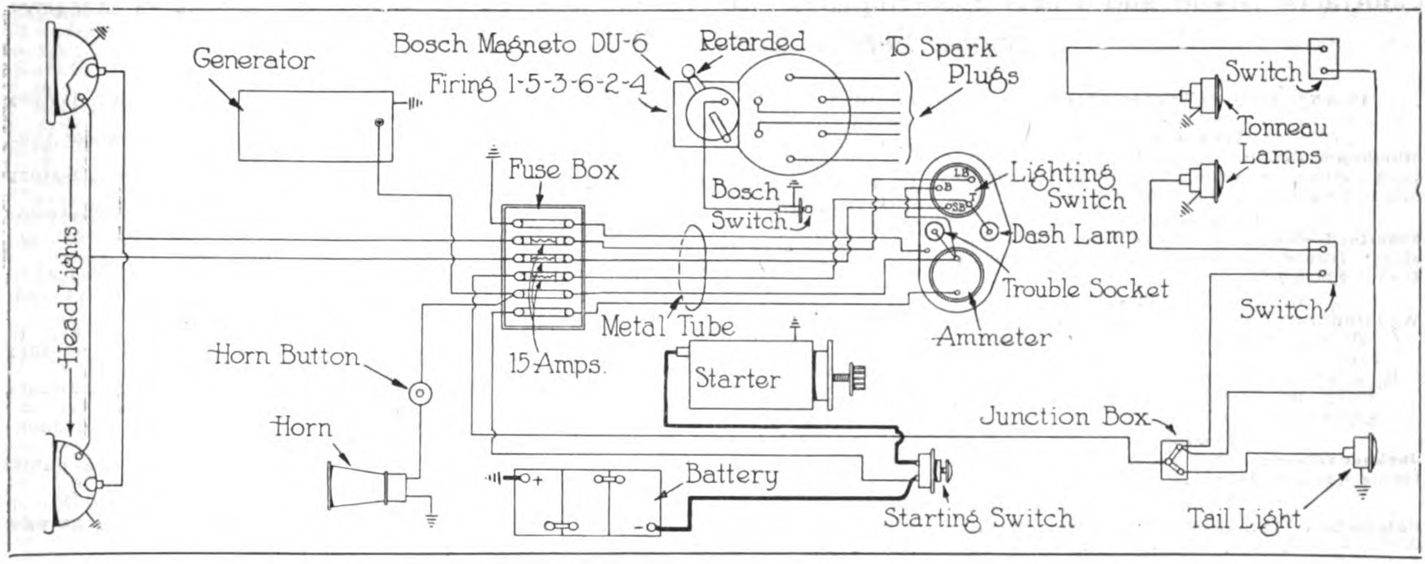
The Attacho Battery Jumper is manufactured by the Mueller Electric Co., 2135 Fairmount road, Cleveland, O. The net prices are as follows: In lots of less than 10, 20 cents per jumper set; in lots of 10, 14 cents a set; lots of 100, 12 cents a set, and lots of 1000, 10 cents a set.

TO MARK TOOLS WITH NAME.

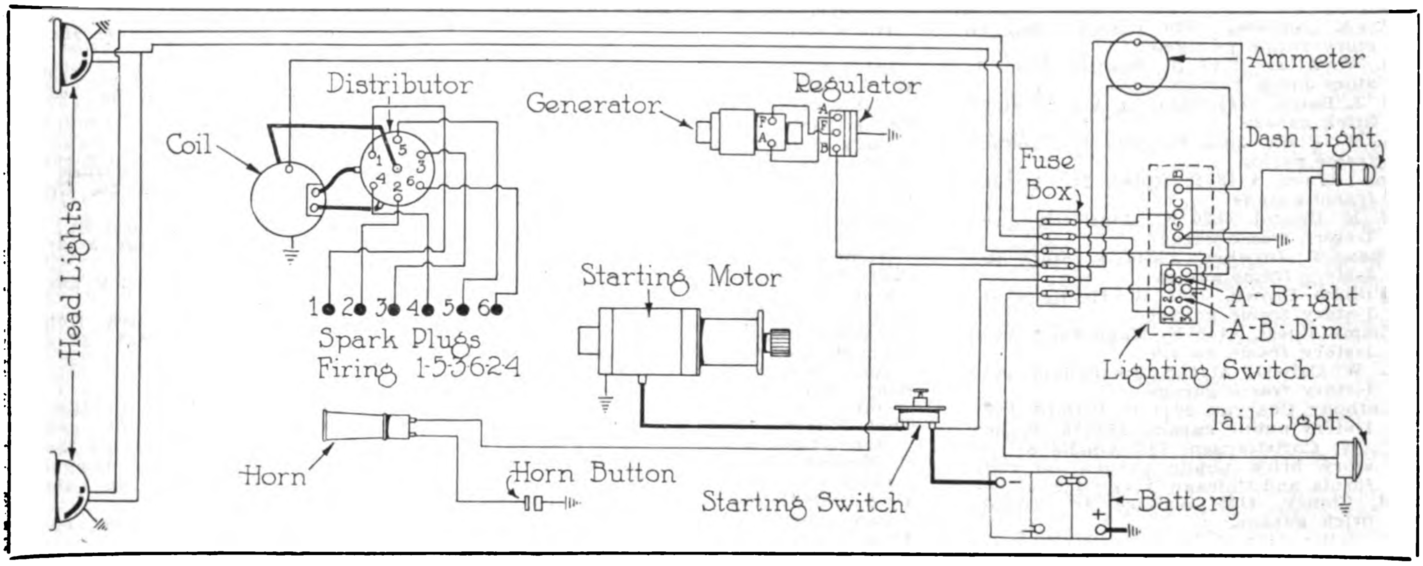
Protect the tool with a thin layer of wax or hard tallow by coating the heated steel with wax and allowing it to cool. When the wax is hard the name is written in it with a pointed instrument, so that each stroke penetrates to the steel.

Then pour some nitric acid over the waxed surface, let it stand for a short time and after washing off the acid with water heat the metal until the wax melts, and wipe it dry. The name will appear engraved in the steel.

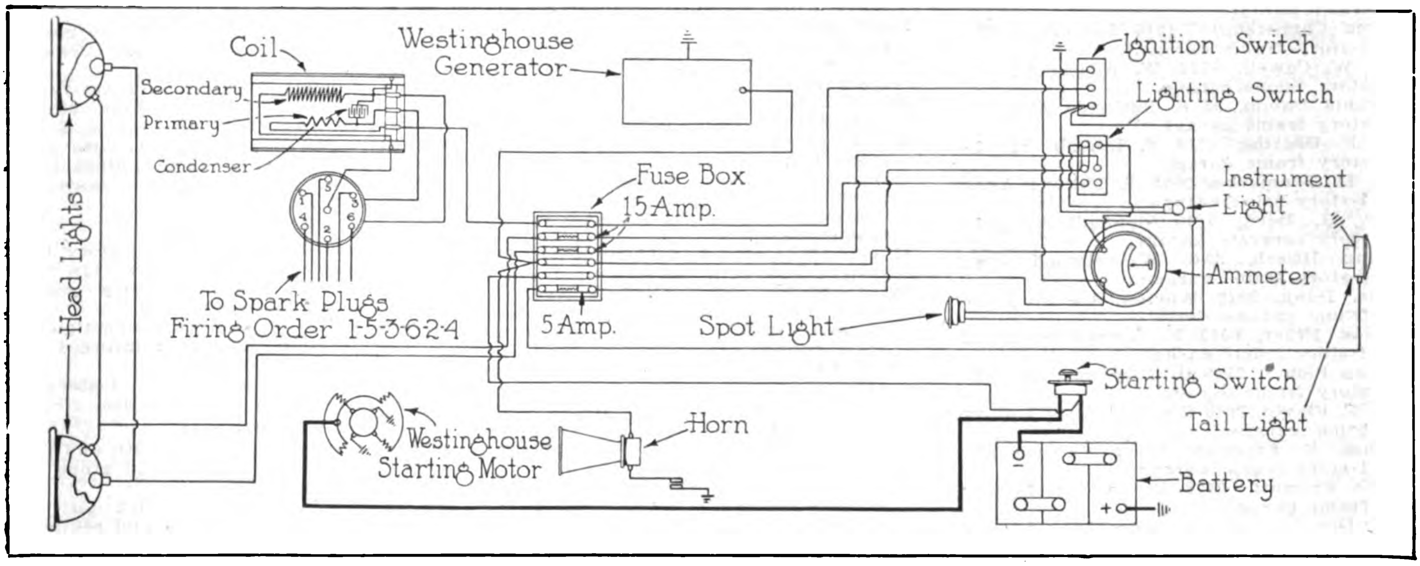
Monthly Wiring Diagram, No. 14


Generator
Bosch Magneto DU-6
Firing 1-5-3-6-2-4
Retarded
To Spark Plugs
Switch
Tonneau Lamps
Fuse Box
Bosch Switch
Lighting Switch
LB
B
T
SB
Dash Lamp
Trouble Socket
Head Lights
Metal Tube
15 Amps.
Ammeter
Switch
Horn Button
Horn
Starter
Junction Box
Battery
Starting Switch
Tail Light

Lexington 1916, Model 6-N, Two-Unit Single Wire System.


Distributor
Coil
Generator
Regulator
Ammeter
Dash Light
Fuse Box
Head Lights
Starting Motor
1 2 3 4 5 6
Spark Plugs
Firing 1-5-3-6-2-4
Horn
Horn Button
Starting Switch
A-Bright
A-B-Dim
Lighting Switch
Tail Light
Battery

Lexington 1916, 1917 and 1918, Model O, Two-Unit Single-Wire System.


Coil
Secondary
Primary
Condenser
Westinghouse Generator
Ignition Switch
Lighting Switch
Instrument Light
Ammeter
Fuse Box
15 Amp.
5 Amp.
Head Lights
To Spark Plugs
Firing Order 1-5-3-6-2-4
Spot Light
Starting Switch
Tail Light
Westinghouse Starting Motor
Horn
Battery

Lexington 1918 and 1919, Series R, Two-Unit, Two-Wire System.

RECORD OF BUILDING OPERATIONS FOR MARCH

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Arkansas.

Marianna—Mann & Gatling, Scimitar Bldg.; Memphis, Tenn.; 1-story brick commercial garage, 50x100; $15,000.

Connecticut.

Stamford—Stamford Motor Sales Co.; 1-story frame or terra cotta salesroom, 40x40; $25,000.

District of Columbia.

Washington:

G. H. Bright, 4917 13th St.; 1-story garage; $50,000.

R. J. O'Neill, 1147 Connecticut Ave.; 1-story brick and reinforced concrete garage; $150,000.

Florida.

Jacksonville—R. B. Parrimore; 2-story frame garage; $12,000.

Illinois.

Cairo—Leo McDaniel, 804 Commercial Ave.; 1-story garage and repair shop; $40,000.

Chicago:

C. C. Adams, 1344 Madison St.; 1-story frame garage.

C. E. Adcock, 1520 Elston Ave.; 1-story frame garage.

D. V. Atlas, 2148 N. Sawyer Ave.; 1 story brick garage.

B. J. Balch, 5811 Calumet Ave.; 1-story brick garage.

A. W. Blanz, 2032 Fletcher St.; 1-story frame garage.

Jos. Bower, 6448 S. Robey St.; 1-story frame garage.

E. E. Bristol, 4826 N. Monticello Ave.; 1-story frame garage.

Chas. T. Broeker, 10045 S. State St.; 1-story frame garage.

William Brown, 3008 W. Harrison St.; 1-story frame garage.

Emma Buest, 4448 N. Maplewood Ave.; 1-story frame garage.

L. W. Calwell, 4140 N. Springfield Ave.; 1-story frame garage.

Anthony Charvat, 2621 S. Millard Ave.; 1-story public garage, 25x125; $10,000.

C. W. Christiansen, 845 Ainslie St.; 1-story brick public garage; at California and Chicago Aves.; $50,000.

M. Clancy, 4135 Wallace St.; 1-story brick garage.

E. Collis, 4853 N. Western Ave.; 1-story frame garage.

J. J. Courts, 3800 W. 63rd St.; 1-story concrete garage.

R. J. Cronin, 1043 E. 65tr St.; 1-story frame garage.

Fred Coppersmith, 4915 Lexington St.; 1-story frame garage.

E. W. Cowell, 3522 W. Adams St.; 1-story frame garage.

Archie Damm, 33 S. Parkside Ave.; 1-story frame garage.

L. F. Dearing, 4114 N. Lincoln St.; 1-story frame garage.

A. D. Denmarke, 2625 S. Millard Ave.; 1-story brick garage.

Dr. H. Deru, 6845 Chappell Ave.; 1-story concrete garage.

John Drisch, 3942 Wrightwood Ave.; 1-story frame garage.

Jas. Dunn, 2849 Warren Ave.; 1-story frame garage.

Chas. Eifler, 6043 N. Hermitage Ave.; 1-story frame garage.

John Fisher, 2549 S. Ridgeway Ave.; 1-story frame garage.

E. F. Flavin, 7640 Emerald Ave.; 1-story brick garage.

Thos. F. Freeman, 11522 Victoria St.; 1-story frame garage.

Leo Fremuth, 2733 Byron St.; 1-story frame garage.

M. Handler, 1231 S. Avers Ave.; 1-story frame garage.

Jas. Harrington, 3164 N. Halsted St.; 1-story brick garage.

L. Hayner, 2211 N. La Porte Ave.; 1-story frame garage.

A. Hendricks, 4555 Montana St.; 1-story brick garage.

L. Hoos, 52'2 Kenmore Ave.; 1-story frame garage.

Fred M. Hull, 735 N. Lockwood Ave.; 1-story frame garage.

Jas. B. Hurless, 6420 Dorchester Ave.; 1-story brick garage.

Irving A. and Raymond Jenski, 2633 Milwaukee Ave.; 1-story garage, storage battery and service station, at 2621 Milwaukee Ave.; $20,000.

Oscar Johnson, 7723 Paxton St.; 1-story brick public garage, 72x165; $30,000.

J. Kane, 1121 George St.; 1-story frame garage.

W. E. J. Keller, 5746 S. Mozart St.; 1-story brick garage.

C. F. Krebs, 2749 N. Sacramento Ave.; 1-story frame garage.

M. Kufer, 3317 Crystal St.; 1-story frame garage.

W. L. Lainsch, 10818 N. Harding Ave.; 1-story frame garage.

C. Larson, 4220 Henderson Ave.; 1-story frame garage.

E. M. Looby, 7142 Peoria St.; 1-story brick garage.

W. E. Lowry, 4649 N. Springfield Ave.; 1-story frame garage.

Frank McGowan, 3444 S. Wood St.; 1-story frame garage.

M. Matthes, 419 Oakwood Blvd.; 1-story frame garage.

R. T. Miller, 4048 W. 63rd St.; 1-story frame garage.

J. E. Mockel, 5859 Prairie Ave.; 1-story frame garage.

Carl Mohr, 4318 N. Springfield Ave.; 1-story frame garage.

E. H. Morey, 650 N. Long Ave.; 1-story frame garage.

John Mullen, 6458 S. Sengamon St.; 1-story brick garage.

Benj. Myers, 3137 Muskegon Ave.; 1-story frame garage.

Thos. Nelson, 214 N. Lockwood Ave.; 1-story frame garage.

C. Nielsen, 720 N. Long Ave.; 1-story brick garage.

Fred Nielsen, 733 N. Avers Ave.; 1-story frame garage.

Fred Ohler, 1715 Walnut St.; 1-story frame garage.

L. M. Olson, 1412 Thoindale Ave.; 1-story frame garage.

William F. Pagels, 1412 Bertean St.; 1-story brick garage, 100x125; $35,000.

Jacob Raiser, 1123 S. Mason Ave.; 1-story frame garage.

H. E. Scott, 450 N. Francisco Ave.; 1-story frame garage.

M. M. Shanahan, 4048 N. Kilpatrick Ave.; 1-story frame garage.

Jos. Stephens, 7435 Wentworth Ave.; 1-story frame garage.

Chas. D. Stevens, 18 N. Mason Ave.; 1-story frame garage.

R. Stevens, 7533 Ellis Ave.; 1-story frame garage.

Gilbert Stoetzel, 4046 Arthington St.; 1-story frame garage.

W. C. Stokes, 1336 Elindale Ave.; 1-story frame garage.

H. J. Swardstad, 3747 Fullerton Ave.; 1-story frame garage.

H. Tagner, 1601 Chase Ave.; 1-story brick garage.

A. F. Trecker, 1623 Lunt Ave.; 1-story frame garage.

Frank Weidner, 3507 N. Claremont Ave.; 1-story frame garage.

Geo. F. Weiland, 6153 Kimbark Ave.; 1-story brick public garage and filling station, 98x130, at 6850-58 Parnell Ave.; $50,000.

J. W. Weir, 817 E. 88th St.; 1-story frame garage.

Otto Wenzel, 825 Altgeld St.; 1-story brick garage.

A. J. Wester, 5449 E. Ravenswood Ave.; 1-story brick garage.

J. E. White, 4348 Shubert Ave.; 1-story frame garage.

William E. Zimmerman, 2616 Eastwood Ave.; 1-story frame garage.

Indiana.

East Chicago—Arday Bros., 4713 Tod Ave.; 1-story brick garage, 50x124, at 143 Alcott St.; $10,000.

Indianapolis—Harry G. Barker, 647 E. 42nd St.; 1-story garage and accessory shop, 4206-10 College Ave.; $18,000.

Kokomo—Dennis White Auto Co.; 2-story brick and reinforced concrete garage and salesroom, 78x144, at Buckeye and Jackson Sts.; $125,000.

Linton—Gilt & Hale; 1-story brick public garage, 40x120; $60,000.

Vincennes—J. N. Dyer, R. F. D. No. 1, Bruceville, Ind.; 1-story brick garage, 150x150; $50,000.

Iowa.

Fort Dodge—Brady Transfer Co.; 1-story garage and repair shop, 16th St. and Central Ave.; $12,000.

Kentucky.

Louisville—Zaek Wilhoyte, 221 E. 9th St.; 1-story brick garage, 100x110.

Owensboro—Michael Fiorella; 1-story brick garage and repair shop, 40x100; $5000.

Maryland.

Baltimore:

Standard Oil Co.; 1-story garage and service station, at 3227-29 Greenmount Ave.; $10,000.

S. Randolph Vinceti, 213 Light St.; two or three-story brick garage, at 3-7 N. Paca St.; $60,000.

Henry C. Weber; 1-story brick garage, 44x62; $6500.

Jas. B. Yeatman, 4742 Park Heights Ave.; 1-story brick garage; 22 compartments; $6600.

Massachusetts.

Boston—Herbert E. Stevens, 24 Dix St.; 1-story concrete block public garage, 60x115, at 1617 Dorchester Ave.; $25,000.

Worcester—E. R. Banbuick, 25 Kingsbury St.; brick fireproof public garage, 45x90.

Michigan.

Ann Arbor—City, care city clerk; 1-story garage and repair shop; $10,000.

Detroit:

Homberger & Murray, care Geo. Homberger, 3964 Townsend Ave.; 1-story auto paint shop; $20,000.

H. C. Keywell, 212 Abbott St.; 1-story brick and reinforced concrete garage, 90x137, at Napoleon and Beaubien Sts.; $50,000.

Grand Rapids—Creston Cooperative Oil Co.; 1-story garage and filling station; Leonard St. and Plainfield Ave., N. E.

Petoskey—Northern Auto Co., care Smith Hinchman & Grylls, 710 Washington Arcade Bldg., Detroit; 2-story sales and service station; $80,000.

Minnesota.

Blue Earth—Frank Barnes; 2-story brick and concrete public garage, 60x120.

Mankato—Guy Austin; 1-story garage; 2nd St., near Hickory; $44,000.

Minneapolis—Glassberg Construction Co., N. Y. Life Bldg.; 1-story reinforced concrete garage, 76x126; $30,000.

Red Wing—Standard Oil Co.; 1-story garage and service station; $30,000.

Missouri.

Kansas City—D. L. Piggot, 12th and Prospect Aves.; 1-story brick and stone trim garage, 113x144.

St. Louis—Vesper-Buick Auto Co., 3550 Lindell Ave.; 1-story brick and reinforced concrete salesroom, garage and repair shop, 10x120, at Vandeventer and Pine Sts.; $75,000.

Nebraska.

Omaha—B. R. Hastings, Harry Wolf, C. W. Martin; 1-story garage and repair shop; 17th and Howard Sts.; $50,000.

New Jersey.

Bridgeton—Johnson Bros.; 1-story garage and accessory shop; $2500.

Newark:
- Kuskin, Rotberg & Horn, 647 E. 19th St.; 1-story brick and limestone trim public garage, 86x100, at 354 Elizabeth Ave.; $20,000.
- New Jersey Whitewashing Disinfecting Co., N. J. R. R. and New York Aves.; 1-story brick and reinforced concrete, 50x108, at 9-11 New York Ave.; $15,000.
- Arthur H. O'Malley, care Notelli and Scrocco, 185 Market St.; 2-story garage and salesroom; $60,000.
- John Plaff, 580 S. 10th St.; 1-story cement block public garage, 50x82, at 15-17 Gareis St.; $9000.

Ocean City—John N. Sweeney, 34 S. 60th St., Philadelphia; 1-story brick and public garage, 92x120, at 9th and Ocean Ave.

New York.

Adams—Perl W. Devendorff Corp., 145 Arsnel St., Watertown, N. Y.; 1-story hollow tile and brick sales and service garage, 85x165.

Albany—Louise Eaton, 62 S. Ferry St.; 1-story brick garage, 132x123.6, at Arch St. and Dongan Ave.; $45,000.

Blasdell—Geo. Uggla, 2-story brick public garage, 40x80; $20,000.

Brooklyn:
- I. Aievolo, 6410 New Utrecht Ave.; 1-story brick garage, 40x100; $20,000.
- Chershad Realty Co., 1199 Eastern Parkway; 1-story brick garage, 118x97, N. E. Cor. Empire Blvd. and New York Ave.; $40,000.
- Flatbush Duryea Stores Co., 201 Montague St.; 1-story brick garage, 100x250; N. E. Co. 22nd St. and Duryea Pl.; $80,000.
- S. Huchital, 673 Flatbush Ave.; 1-story brick garage, 40x122; $12,000.
- Kelin Bros., 913 55th St.; 1-story brick garage, 50x100; $25,000.
- A. Larper, 943 Willoughby Ave.; 1-story brick garage, 74x44; S. W. Cor. Suydam St. and Myrtle Ave.; $10,000.
- Liberty Wyona Co., Inc., 1199 Eastern Parkway; 1-story brick garage, 128x167; $40,000.
- E. Lieberman, 758 Ocean Ave.; 1-story brick garage, 50x76; $75,000.
- Mary E. Lucke, 779 E. 32nd St.; 1-story brick garage, 74x159; $35,000.
- Parkside Improvement Corp., 309 Broadway; 1-story brick garage, 100x125; $45,000.
- Harry Proacci, 19th St. and 3rd Ave.; 1-story brick garage, 51x68; N. E. Cor. 19th St. and 3rd Ave.; $16,000.
- Realty Association, 162 Remson St.; 1-story brick garage, 43x85; $15,000.
- John J. Sullivan, 570 Hamilton Ave.; 1-story brick garage, 85x200; $50,000.
- Webster Building Corp., 390 Saratoga Ave.; 1-story garage, 510x200; $75,000.

Buffalo—Erie Service Co., 249 Masten St.; 1-story brick garage, 68x175, at 235 Elk St.; $40,000.

East Norwich, L. I.—Mrs. Monroe D. Robinson, 960 Park Ave., New York; 2-story frame garage, 26x70; $13,000.

Elmhurst, L. I.—Henry Pasen; 2-story brick garage, 127x38, S. W. Cor. Woodhaven Ave. and Jasst Pl.; $25,000.

Middleport—Frank Page; 2-story public garage, 40x100.

New York:
- Est. Bradish Johnson, 39 Cortlandt St.; 2-story brick garage, 171x111, at 625-37 W. 49th St.; $100,000.
- R. E. Bruning, 359-61 E. 144th St.; 3-story garage, 50x36; $12,000.
- Adele Dowe, 194 Bowery; 1-story brick garage, 19x100, 326 E. 122nd St.; $15,000.
- Samuel Garry, 523 W. 187th St.; 1-story brick public garage, 123x140 and 202x131; $50,000.
- Grand Improvement Co., Inc.; 1-story garage, 75x100, at 878-80 De Kalb Ave.; $25,000.
- S. H. Kufferman, 40 W. 25th St.; 1-story public garage, 50x122; $25,000.
- Lucy Lagana, 463 E. 189th St.; 1-story brick public garage, 25x130; $12,000.
- M. J. Martins Sons, care S. J. Kessler, 529 Courtlandt Ave.; 2-story fireproof garage, 110x130, at 230th and Exterior $15,000.
- Nathan & Wolf, 1587 Bathgate Ave.; 1-story brick public garage, 90x96; $15,000.
- Max Rich, 253 Throop Ave., Brooklyn; 1-story brick and concrete garage, 100x202; at 1812-18 First Ave.; $65,000.
- Benj. Sagel and Morris Fein. 147 Fourth Ave.; 1-sory brick garage, 104x134; at 2392 Old Broadway; $30,000.
- Saksin Realty Co., 220 Broadway; 1-story brick public garage, 75x225; $60,000.
- Shamrock Toweling Co., 667 W. 50th St.; 2-story garage, 85x100, at 661-65 W. 50th St.; $25,000.
- S. P. Bldg. Co., 3011 Barnes Ave.; 1-story brick public garage, 99x100; $30,000.
- S. B. Steimetz, 449 E. 150th St.; 1-story brick and terra cotta public garage 100x100, N. E. Cor. S. Blvd. & 172nd St.; $35,000.
- Woodruff Construction Co., 700 Trinity Ave.; 1-story public garage, 100x160; $50,000.

Poughkeepsie—Detroit Cadillac Motor Co.; 3-story reinforced concrete garage and salesroom, 63x105, at Mill and Washington Sts.

Watertown—T. N. C. Motor Sales Co.; 1-story hollow tile sales and service garage, 72x138.

White Plains—Chas. Scott, 6 William St.; 1-story brick public garage, 45x90; $15,000.

Yonkers:
- J. Romaine Brown, 299 Madison Ave., New York; 2-story garage. 75x170; S. W. Cor. Broadway and Harriet St.; $40,000.
- William I. Hohauser, 206 W. 42nd St., N. Y.; 1-story brick public garage, 55x100, at 218-20 Riverside Ave.; $20,000.

Ohio.

Akron—William Brill, care Norka Theater, 1197 E. Market St.; 1-story brick commercial garage, 30x301, at 777 E. Market St.

Canton—H. A. Smith; 1-story garage and repair shop, 320 Piedmont Ave., N. E.

Cincinnati—Automatic Garage Co., care G. C. Jackson, 71 Blumer B'dg., 17-story garage and repair shop. 100x156; 3rd and Walnut Sts., N. E.; $800,000.

Cleveland:
- A. F. Regner and J. B. Kulks; 1-story garage and repair shop, at E. 93rd St. and Orleans Ave.; $25,000.
- Whitworth & Johnson, 314 Engineers' Bldg.; 2-story garage and service station; Superior Ave.; $53,000.

Dayton:
- Ellsworth Klepinger, 21 Miami Apartments; 1-story brick public garage, 34x70; $7000.
- Rubicon Realty Co., 226 S. Ludlow St.; 1-story brick public garage, 104x50; $18,000.

East Cleveland—Whitworth & Johnson, 314 Engineers' Bldg., Cleveland; 2-story brick and terra cotta trim public garage, 52x140; $53,000.

Elyria—J. C. Crispa Co., 202 Masonic Bldg.; 1-story commercial garage, 40x150.

Middletown—D. E. Snider, 2nd and Wall Sts.; 2-story reinforced concrete public garage; $70,000.

Portsmouth—Universal Motor Co.; 2-story brick commercial garage, 120x160; $75,000.

Spring Valley—Henry T. Walton; 1-story brick public garage, 30x100; $20,000.

Youngstown:
- Frank Leish; 1-story garage and repair shop, at 220-24 E. Boardman St.; $100,000.
- Standard Auto Sales Co.; 1-story garage and repair shop, at Wick and Maple Aves.; $150,000.

Oklahoma.

Oklahoma City—A. Gordon, 1723 W. 11th St.; 1-story frame garage.

Pennsylvania.

Abbottstown—Walter J. Cromer; 2-story brick public garage, 35x150; $10,000.

Charleroi—Frank Zwick, Hotel Arthur; 2-story brick and concrete commercial garage, 48x50; $35,000.

Easton—Alpha Portland Cement Co., First National Bank Bldg., 1 and 2-story garage, 54x126; $30,000.

Lancaster—John B. Harman, 48 N. Queen St.; 4-story brick garage and service station, 85x160; $120,000.

Philadelphia:
- Nathan Litman, S. E. Cor. 52nd and Jefferson Sts.; 1-story brick garage, 36x76; at 421-3 Gaskill St.; $7000.
- Anna O'Hara, care J. E. Fieldstein, 1328 Chestnut St.; 1-story brick public garage, 25x80 and 20x45, at Richmond and Marlboro Sts.

Washington—Geo. O. Rogers, Penn Bldg., Pittsburgh, Pa.; 2-story brick and concrete commercial garage, 80x100; $50,000.

Tennessee.

Morristown—People's Service Station, Memphis; 1-story brick filling station, 20x38.

Texas.

Corpus Christi—Benj. Sanders will probably rebuild burned garage.

Dallas—Lester Miller; 2-story garage, 48x34; $5000.

Dandridge—Holtsinger & Cox; 1-story concrete block garage, 54x120; $20,000.

Fort Worth:
- North Main Service Station, 1421 N. Main St.; 1-story fireproof service station, 28x72.
- Oldfield Tire Co.; 1-story filling station; $3750.

San Antonio—C. C. Albee; 1-story brick garage; $3000.

Wichita Falls—H. C. Ferruman; 2-story brick filling station, 44x20.

West Virginia.

Williamson—Consolidated Motor Co.; 3-story brick garage, 50x120.

Wheeling:
- C. A. Vadlar, care C. W. Bates, 77 12th St.; 5-story reinforced concrete garage, 135x86x102x75.
- Welty-Buick Co., 1413 Main St.; 2-story front and 3-story rear garage, 68x121; $60,000.
- West Virginia Motor Sales Co., 930 Market St.; 1-story garage and repair shop.
- Wheeling Motor Sales Corp.; 2-story brick and tile garage, 40x110 and 40x40.

Wisconsin.

Antigo:
- Antigo-Buick Co.; 1-story garage and salesroom; $20,000.
- Antigo Hardware Co.; 1-story garage and repair shop; $15,000.

Beloit—Yellow Cab Co.; 1-story garage and accessory shop, at 550 Public Ave.

Cedarburg—Lauterbach Sales Co.; 1-story garage, 60x150; $60,000.

Granton—C. F. Finnigan; 1-story concrete garage, 50x65; $10,000.

Hartland—Frank Tessman, care Morton Dairy Co.; 1-story garage; $15,000.

Janesville—J. P. Cullen, 425 E. Milwaukee St.; 1-story garage and repair shop; $10,000.

Sturgeon Bay—J. C. Dana; 1-story garage and repair shop; $15,000.

CONTRACTS AWARDED.

Connecticut.

Bridgeport—D. Schine & Son, 729 Union Ave.; 1½-story public garage, 92x96; for Aldo & D'Agostino, 96 Tom Thumb St.; $25,000.

Norwalk—S. J. Fairbanks. 438 Atlantic Ave., Stamford, Conn.; 1-story battery service station, 50x140; $20,000.

Florida.

De Land—Buick Garage; 1-story brick and concrete garage, 60x196.

Illinois.

Chicago:
- S. Alles, 4114 Clarendon Ave.; 1-story frame garage.
- Geo. Ambrose, 4143 W. Van Buren St.; 1-story frame garage.
- A. Anderson, 1414 Farragut Ave.; 1-story frame garage.
- Carl Anderson, 3706 N. Hermitage Ave.; 1-story frame garage.
- C. E. Anderson, 8045 Avalon Ave.; 1-story frame garage.
- Oscar Anderson, 3911 N. Kedzie Ave.; 1-story frame garage.

G. Audrey, 5036 N. Winchester Ave.; 1-story frame garage.
Jos. M. Barkowak, 6001 S. Talman Ave.; 1-story brick garage.
Gusta Bauer, 3821 Herndon St.; two 1-story brick garages.
William Becker, 1723 N. Ridgeway Ave.; 1-story frame garage.
E. Brady, 165 E. Chicago Ave.; 1-story frame garage.
O. A. Bruckman, 2437 Pensacola Ave.; 1-story frame garage.
A. J. Casson, 7414 Maryland Ave.; 1-story frame garage.
J. C. Chant, 1411 Winnemac Ave.; 1-story brick garage.
M. F. Clemins, 2740 Whipple St.; 1-story frame garage.
C. Conwell, 1315 Elmsdale Ave.; 1-story frame garage.
O. Dallia, 1338 Melrose St.; 1-story frame garage.
A. R. Davis, 6515 S. Albany Ave.; 1-story frame garage.
Jas. Davitt, 6245 Kenwood Ave.; 1-story brick garage.
Jihn Donnellan, 4123 S. Union Ave.; 1-story frame garage.
L. Douglas, 3319 W. Fulton St.; 1-story brick garage.
John Duffy, 103 Rush St.; 1-story brick garage.
John D. and Edward J. Duffy, 1243 Columbia Ave.; 1-story garage, 91x140, at 2902-6 N. Clark St.; $60,000.
J. Duneen, 732 N. Ridgeway Ave.; 1-story frame garage.
John Edwards ,4022 Argyle Ave.; 1-story frame garage.
M. Engert, 1901 S. Ridgeway Ave.; 1-story frame garage.
S. Erdman, 5040 Barry Ave.; 1-story frame garage.
Louis Erlanson, 3918 Montrose Ave.; 1-story brick garage.
F. A. Fisher, 12137 Parnell Ave.; 1-story frame garage.
Geo. Fitzman, 2350 Seminary Ave.; 1-story brick garage.
Fred Flede, 4727 N. Maplewood Ave.; 1-story brick garage.
Samuel Flyer, 1124 S. Keeler Ave.; 1-story frame garage.
W. Fowler, 6507 S. Marshfield Ave.; 1-story brick garage.
Dr. Geo. N. Frost, 5933 W. Erie St.; 1-story frame garage.
William B. Fuchs, 2219 Foster Ave.; 1-story frame garage.
P. Geimer, 6029 Ridge Ave.; 1-story frame garage.
E. P. Gerscheer, 2148 Addison St.;. 1-story brick garage.
John W. Giles, 4526 N. Leavitt St.; 1-story frame garage.
A. Goldsmith, 4219 N. Robey St.; 1-story frame garage.
Gunderman Plumbing Co., 1909 Irving Park Blvd.; 1-story brick garage.
A. Gustavson, 1411 N. Keeler Ave.; 1-story frame garage.
U. S. Hall, 4102 Colorado Ave.; 1-story frame garage.
A. Hammer, 122 S. Central Ave.; 1-story frame garage.
M. Hard, 5740 W. Superior St.; 1-story frame garage.
J. L. Hawkins, 2916 Wilcox Ave.; 1-story brick garage.
Julius Henkel, 2451 N. Monticello Ave.; 1-story frame garage.
S. J. Holbrook, 6938 Dante Ave.; 1-story frame garage.
Gust Holmes, 5507 N. Clark St.; 1-story brick garage.
Holton Seeleye & Co., 140 S. Dearborn St.; 1-story garage, 86x161, at Rosemont and Northwestern R. R.
F. B. Hubbard, 6624 Newgard Ave.; 1-story frame garage.
Jas. L. Hurd, 7356 Rogers Ave.; 1-story stucco garage.
Hyman Bros., 2510 N. Kedzie Blvd.; 1-story brick garage.
Ideal Coated Paper Co., 4323 S. Western Ave.; 1-story metal garage.
Karl Jensen, 2313 N. Harding Ave.; 1-story frame garage.
Aug. Katz, 2021 N. Keystone Ave.; 1-story brick garage.
E. A. Kimball, 4321 N. Hermitage Ave.; 1-story frame garage
L. A. Koelsch, 1317 Eddy St.; 1-story frame garage.
John Lane, 131 N. Mason Ave.; 1-story frame garage.
A. N. Lang, 2942 Walnut St.; 1-story frame garage.
Mrs. A. Larsen, 1420 N. Kohn Ave.; 1-story frame garage.
J. A. Lay, 4241 N. Lincoln St.; 1-story frame garage.
John Lee, 3725 Ferdinand St.; 1-story frame garage.
G. W. Lessman, 519 N. Le Claire Ave.; 1-story frame garage.
E. W. Lewis, 1008 N. Harding Ave.; 1-story frame garage.
H. Lexaw, 3834 N. Avers Ave.; 1-story frame garage.
Andrew Lindmark, 10311 Ave. J.; 1-story brick garage.
S. J. McClelland, 621 S. Kedvale Ave.; 1-story frame garage.
J. B. McClure, 6533 S. Troy St.; 1-story frame garage.
R. G. McKenna, 4325 Park Ave.; 1-story frame garage.
McLennan Construction Co., 3105 Calumet Ave.; 1-story garage, 150x180, at Monroe St. and Racine Ave.; for Parmelee Transfer Co., 203 S. Clark St.; $100,000.
M. Marken, 1121 N. Richmond St.; 1-story brick garage.
J. W. May, 1346 W. 64th St.; 1-story brick garage.
H. A. Meade, 2309 Thayer Ave.; 1-story frame garage.
P. Meehan, 1237 Newport Ave.; 1-story brick garage.
F. Morrison, 2332 Clifton Ave.; 1-story brick garage.
H. C. Murmann, 3929 Addison St.; 1-story brick garage.
G. A. Myer, 4912 Forestville Ave.; 1-story frame garage.
Jas. Nelson, 5243 Byron St.; 1-story frame garage.
John Olsen, 4150 N. Hamlin Ave.; 1-story frame garage.
William Palla, 4251 N. Richmond St.; 1-story frame garage.
P. Perlstern, 1246 S. Central Park Ave.; 1-story brick garage.
A. Peterson, 1614 Berwyn Ave.; 1-story brick garage.
T. F. Pfingston, 4430 N. Sawyer Ave.; 1-story frame garage.
J. Pahlke, 3320 N. Halsted St.; 1-story brick garage.
Fred Ratsch, 1140 Lunt Ave.; 1-story frame garage.
John Redmond, 4329 E. Congress St.; 1-story frame garage.
Mrs. J. Reuter, 5211 Cullom Ave.; 1-story frame garage.
William Rohde, 4241 Melrose Ave.; 1-story frame garage.
Benj. Sachs, 931 Margate Terrace; 1-story brick garage.
Fred Schultz. 6011 Byron St.; 1-story frame garage.
C. C. Sherman, 5531 Gladys Ave.; 1-story frame garage.
L. A. Stephan, 5234 W. Monroe St.; 1-story frame garage.
C. Swanson, 4526 N. Leavitt St.; 1-story frame garage.
Mrs. G. E. Tappen, 5413 Cornell Ave.; 1-story frame garage.
G. C. Taylor, 1218 N. Harding Ave.; 1-story frame garage.
Jos. Uredel, 3512 N. Keating Ave.; 1-story frame garage.
E. H. Warkinton. 4827 St. Anthony Ave.; 1-story frame garage.
H. T. Warnes, 4552 N. Leavitt St.; 1-story frame garage.
Mrs. Mary Whole, 1743 Nelson St.; 1-story frame garage.
R. F. Wille, 7626 Luella Ave.; 1-story frame garage.
Frank Young. 11125 Vincennes Ave.; 1-story frame garage.
William Zoellner, 4514 N. Avers Ave.; 1-story frame garage.

Lake Forest—Robt. G. McGann, 332 S. Michigan Ave., Chicago; 2-story brick and reinforced concrete garage, 95x26; $35,000.

Maryland.

Baltimore:
Hicks, Tase and Norris, 106 W. Madison St.; 1-story brick garage; $11,000.
John Hudak, 4401 E. Lombard St.; 1-story garage, 71x83; $10,000.
C. K. Wells, Jr., 2919 Guilford Ave.; 1-story garage, 46 compartments; for Jos. H. Sneeringer, 1407 N. Luzerne Ave.; $6000.

Massachusetts.

Pittsfield—Geo. L. Haskins. Chesire, Mass.; 2-story public garage, 50x75.

Michigan.

Detroit—S. E. Benjamin & Co., 604 Free Press Bldg.; 1-story garage, at Oakman and Glendale Ave., for E. M. Rothman, 515 Dime Bank Bldg.

Grand Rapids—L. P. Oltmons, Bldrs. and Nader's Ex.; 2-story public garage, 50x132; for Decker & Jean, Grand Rapids Savings Bank Bldg.; $25,000.

Highland Park—De Lisle & Cooper, 402 Ford Bldg., Detroit; 1-story garage and show room, 60x126; S. E. Cor. Victor Ave. and Brush St.; for John F. Koenig, 1458 Gratiot Ave.; $50,000.

Lansing—H. G. Christman Co.; 1-story commercial garage; for F. G. Van Dercoort, 202 S. Sycamore St.; $10,000.

Missouri.

Kansas City:
William R. Jewell, 417 Rialto Bldg.; 2-story garage, 100x100; at 33rd St. and Gillham road; for E. Harvey, 238 Lathrop Bldg.; $30,000.
R. H. Shaw, 6130 Swope Parkway; 1-story garage, 50x50; at 5820 Swope Parkway; $5000.
Fred Tevebaugh, 121 N. Topping Ave.; 1-story garage, 50x110, at 4122-24 E. 15th St.; $12,000.

St. Louis—Lay Bros., 2025 E. Warne Ave.; 1-story garage, 50x80; for Louis Venegoni, 1900 S. Kings Highway.

New Jersey.

East Orange—Leo Schneider, 480 S. 16th St., Newark; 1-story garage and repair shop at 105 Amherst St.; $12,500.

Newark—Geo. Baney, 37 Bridge St.; 1-story garage and salesroom, 50x100, at Bridge and Front Sts.; $50,000. Lessee, Federal Motor Truck o., 367 Halsey St.

Perth Amboy—Jorgen T. Jorgensen, 547 Compton Ave.; 1-story garage at New Brunswick Ave. and Lee St. for city; $37,000.

West Hoboken—Hydro-Bar Waterproofing Co., 356 First Ave., New York; 2-story public garage, 63x100, at Palisade Ave. and De Mott St.; $50,000.

New York.

Brooklyn—Zulli & Sons, 1690 Pacific St.; 1-story garage, 99x100; for Jas E. Albright, 282 Stuyvestant Ave.; $13,000.

Corning—Corning Building Co.; 2-story garage, 24x40, at 101 Gohocton St.; for Marvin Olcott; $15,000.

Greenwich—Chas. Caswell; 1-story garage for Park & Petteys; $10,000.

Long Island City, L. I—Interstate Land Holding Co., 44 Wall St., N. Y.; 1-story garage, 70x100; $40,000.

Ohio.

Middletown—D. E. Snider, Wall and 2nd Sts.; 1-story public garage, 140x75; $60,000.

Youngstown—Frank Leish, 224 E. Boardman St.; 2-story garage, 68x150, at 220-24 E. Boardman St.

Pennsylvania.

Allentown—Jacob Schnitzer, 173 Cheu St.; 2-story public garage, 65x85, at 5th and Hill Sts.; $25,000.

Harrisburg—F. L. Morrow, 3223 N. 3rd St.; 1-story public garage, 70x149, at Susquehanna Ave. and Emerald St.; for James K. Devine; $10,000.

Palmyra—John Gorber; 3-story public garage, 50x162; $40,000.

Philadelphia:
Jos. L. Bobb; 1-story garage, 120x112; $15,000.
W. H. Bunn; 1-story garage, at 5213 N. 10th St.; $425.
T. F. Callahan; 1-story garage, 20x70, at 3923 Ludlow St.; $1500.
H. Chesvin; 1-story garage, 49.8x101, at 1512-16 Cayuga St.; $5000.
John Clark; 1-story garage, 34x18, at 2128 Medary Ave.; $800.
F. Clavo; 1-story garage, 18x27; 5711 Cherry St.; $2000.
Emma Daniel; 1-story garage, 18x27, N. W. Cor. Flora and Berks Sts.; $500.
Michael Di Orio; 1-story garage, 16x24, at 6023 Germantown Ave.; $500.
Frank Donato; 1-story garage, 16x50, at 1423-25 S. 8th St.; $2500.
F. C. Ebner, two 1-story garages, 16x58; $2000.
William H. Eddelman & Sons; 1-story garage, 15.3x22; N. S. Hermitage St., E. Ridge Ave.; $1500.
Geo. P. Einwechter; 1-story garage, 13.6x15, at 241 S. 58th St.; $350.
Geo. C. Fossel; 1-story garage, 29.6x30, with wing 20x96; $3500.
Edwin G. Fricke; 1-story garage, 14x37, at 3428 N. Sydenham St.; $2500.
Chas. Garrett; 1-story garage, 19.9x35.5 and 19.6x65.2; N. W. Cor. 58th and Media Sts.; $3000.
Geo. J. Goldey; 1-story garage, 14x47; S. E. Cor. 37th and Mt. Vernon Sts.; $2000.
Jos. V. Hartinelli; 1-story garage, 11.6x15, at 501 N. Simpson St.; $300.
Jacob Hausen; 1-story garage, 16x16; $400.
Chas J. Heckler, 2-story garage, 18x70; $2000.
H. M. Irwin; 1-story garage, 16x27, rear 626 N. 48th St.; $1000.
John J. Keenan; 1-story garage, 15.6x20; N. W. Cor. Richmond and Orthodox Sts.; $300.
Robert Killough; 1-story garage, 19x22; rear 6601 McCallum St.; $1800.
Larkins & Louderback; 1-story garage, 18x86, with wing 35x26; $3500.
Geo. H. McCracken; 1-story garage, 18x100; $4500; also 1-story garage, 36x18, with wing 18x52; $4500.
Frank McEnaman; 1-story garage, 2x18; 4701 Hazel Ave.; $1500.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN MOTOR CARS, TRUCKS, TRACTORS, ETC.

Arkansas.

Ft. Smith—DeJarnette Motor Co.; $50,000; J. J. and Ona E. DeJarnette, Rutherford J. Ross.

California.

Los Angeles—Alexander Motor Co., 215 S. Western Ave., to handle Chevrolet cars; R. G. Alexander.

Pasadena—C. H. Smith Motor Co.; $50,000; C. H. Smith, F. H. Whitington, W. W. Webster.

Sacramento—Williams, McAllister & Weber, Inc.; $100,000; T. J. Williams, J. W. McAllister, Geo. J. Weber, H. O. Harrison.

San Francisco—Pierce-Arrow Pacific Sales Co.; $300,000; R. G. Hudson, Milton Bernard, J. Sheriffs, M. Brown, E. A. Higgins.

Colorado.

Pueblo—Garrett Motor Co.; $20,000; D. T. Garrett, Mac H. Hendrix, A. A. Ambrose.

Connecticut.

Stamford:
- Mathison Motor Sales Co., Inc.; $75,000; Chris. Mathison.
- Stamford Motor Sales Co; $50,000.

Waterbury—M. A. Doolittle Motor Co.; $225,000; M. A. Doolittle, G. C. Southworth, V. A. Wolcott.

Delaware.

Dover:
- Arnold Campbell Motor Co.; $100,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland, Philadelphia, Pa.
- Delo Tractor Demonstrating Co., farm tractors; $150,000; Wilber A. McCoy, Pittsburgh, Pa.; W. I. N. Lofland, Frank Jackson, Dover.
- National Auto Supply Co.; $100,000; C. T. Cohen, C .B. Outten, S. L. Mackey, Wilmington.
- National Motor Racing Assn., autos; $100,000; Thos. J. Sweeney, John Williams, Raymond J. Maginn, Philadelphia, Pa.
- United Used Car Corp.; $6,000,000; Benj. W. Roberts, Harley H. Phillips, Eugene A. Beacham, Syracuse, N. Y.

Florida.

Jacksonville—Warren C. Thomas Corp., general motor truck, tractor, trailer and auto business; $500,000; H. B. Phillips, Cornelius Thomas.

Orlando:
- Walter Buchanan, Inc.; passenger cars, trucks, tractors and accessories; $25,000; E. W. and G. F. Buchanan, Iona Sheldon.
- Schiff Auto Supply Co., general auto and accessories sales business; $15,000; J. Schiff, G. R. Johnson, T. L. Casey.

Tampa:
- Peninsular Motors Corp., general auto business; $40,000; Maurice E. Lucas, S. C. Metchik, Saml. Blumberg.
- Tampa Motor Co.; $15,000; R. W. Shackleford, C. M. Phipps, V. T. Covington, W. J. Lancaster.

Illinois.

Chicago—Delson Co.; $10,000; Abner C. and Eli Delson, A. M. Muessil.

Springfield—Jennings Auto Sales Co., trucks, passenger cars and tractors; $250,000.

Waukegan—Achen & Wells Motor Co., Inc.; $30,000; Merrill J. Achen, Clarkson L. Pack, Rex E. Wells.

Indiana.

Columbia City—Risk Motor Sales Co.; $25,000; E. C. Risk, Harry Goldthwaite, C. G. Barley.

Marion—Baker-Morris Auto Sales Co.; 610 S. Adams St.; $25,000; R. R. and M. P. Morris, C. A. Buffington.

Niles—Powell Auto Sales Co., to succeed Price Garage; H. F. Powell.

Richmond—Wayne County Nash Motor Co.; $20,000; W. W. Timmerman, Ann L. and L. J. Froelich.

Terre Haute—Comet Auto Sales Co.; $25,000; G. W. Imle, A. C. Kohl, N. H. Kafourey, Elza Pkes, W. F. Schuchardt.

Iowa.

Sioux City—Salyers-Walters Motor Co. to succeed J. T. Stewart Motor Co., 505 Pearl St., Mitchell cars; E. B. Salyers, R. H. Walters.

Kansas.

Baxter Springs—Jefferson Highway Auto Supply Co., Wyandotte county; $40,000; R. Roy and Pearl M. Van Horn, Baxter Springs; R. R. Page, Galena.

Oskaloosa—Simon-Miller Motor Co., reorganized; A. A. Webber, Overbrook.

Pittsburg—Pittsburg, Overland Co., 4th and Locust Sts.; W. L. Williams, J. C. Broadley.

Rosedale—E. R. Slater Motor Co., Wyandotte County, Ford agency; $75,000; Geo. Gerner, 900 S. W. Blvd.; Geo. Rushton, 814 S. W. Blvd.; Clyde Leavengood, 1324 S. W. Blvd.; J. P. Jensen, H. C. Roadecker, E. W. Sanders and E. R. Slater, all of Rosedale; Otto Breitag, Kansas City, Mo.; C. J. Johnson, Kansas City, Kan.; president, Geo. Gerner; vice pres., E. R. Slater; gen. mgr., Geo. Rushton; treas., Ernest Sanders.

Topeka—Rowles Motors Co.; $50,000; P. J. McBride, L. W. Rowles, H. H. Mack.

Wichita—Packard Motor Car Co., reorganized; A. M. Flynn, mgr.; H. L. Craemer.

Kentucky.

Covington—Louis Meyes Motor Co.; $50,000; Louis, John C. and Stella Meyer.

Danville—Danville Motor Co.; $32,000; R. A. Lipps, Fred McLane, P. C. Saunders.

Greenup—Leslie Motor Co.; $30.000; Chas. Schmutz, John L. Sowdars, P. J. Leslie.

Louisville—Fowler Motor Co. to succeed J. B. Hillson Motor Co., Sayers Six cars and Traffic trucks.

Maine.

Augusta—Capitol City Motor Co., Ford agency, sales and display room and office, Macomber-Hill-Wight Blk., Water St.; Henry A. Briggs, mgr.; Geo. Pettengill, Rumford.

Portland:
- Bowman Motor Car Co., Overland sales headquarters 46 Allyn St.; Earl C. Bowman, Hartford, Conn.; W. J. Herron, Palmer Brainard, Emile Schaffer.
- Traffic Motor Sales Co., auto sales business and to maintain and operate chain of camps, boarding houses and hotels along main highways of state; president, Wilbur H. Taylor, Allston, Mass.

Massachusetts.

Boston:
- Facto Motor Trucks, Inc.; $500,000; Adolf A. Geisel, Herman C. Farr, Wm. V. Baldwin.
- C. W. Muldoon, Inc.; $50,000; Chas. W. and Mary T. Muldoon, Wm. T. Maybury.
- Traffic Sales Corp., traffic truck sales and service, 661 Commonwealth Ave.; John L. Brooks, John Wood, Rich. McGann.

Lynn—Sweeney & Thompson, Inc., motor vehicles; $100,000; John J. Sweeney, Augustus Ford, Geo. W. Thompson.

Springfield—Parsons-Reynolds, Inc., autos; $50,000; Chas. A. Reynolds, Wm. H. Persons, Chas. J. Weston.

Worcester—Worcester White Co., Inc.; $10,000; Paul McHale, Thos. J. Judge, J. D. Williams.

Michigan.

Albion—A. G. Noble Co.; $35,000; Arthur G. Noble, Marc C. Reed, Donald W. Ruff.

Alma—Alma Buick Motor Sales Co., Bennan Blk., Buick cars and accessories; pres., Fred Slater; supt. mechanical dept., C. W. Slater.

Bad Axe—Thumb Assn. of Mich., Fords; pres., H. B. Harder, Pigeon; sec., C. A. Klein; treas., G. A. Tindale, Cass City.

Grand Rapids:
- Bazzett & Kridler Sales Co., agency for Gardner, Stephens and McFarlan autos; office and service station, 119-121 Sheldon Ave., S. E.
- Messner-Peters Auto Sales Co.; $10.000; Louis E. Noel, Chas. E. Messner, Aloysius A. Peters.

Lansing—Robson Auto Co.; $30,000.

Minnesota.

Bemidji—Overland-DeLeuil Co.; $75,000; J. A. Deleuil, A. M. Bagley, Clyde Petrie.

Missouri.

Brookfield—Moore Motor Co., to succeed Dickinson Motor Co., Ford cars, Fordson tractors and parts; Vernon C. and Lee E. Moore.

Harrisonville—G. E. Cable & Co., Chevrolet cars, to succeed Cable & Lyon; Geo. E. Cable.

Kansas City:
- Gridley Motors, Inc., to succeed Gridley Motor Co., Peerless, Auburn and Locomobile cars; Harry M. Genung, H. A. Dougherty, B. E. Gridley.
- Lilley Motor Co., 1816-18 Independence Ave.; $25,000; Harry J. Kyle, atty., 1204 Grand Ave. Temple.
- Mutual Motors Corp., 1814 McGee St., Davis and McFarlan cars; Ernest L. Knott.
- U. S. Truck Sales Co., 1735 Locust St., U. S. trucks.

St. Louis:
- Diamond T Motor Co., Diamond T trucks; mgr., Jos M. Grossman.
- Gillham Motors Corp., successor to Tate Gillham Motor Car Co., 3016-18 Locust St., Studebaker autos; pres., F. C. Gillham.
- Marion Country Motor Co. of Centralia, Ill.; $100,000; Missouri agent, J. A. Pope, 1610 Locust St.
- U. S. Truck Sales Co., 1610 Locust St.; U. S. trucks; pres., J. F. Mackey.
- Westcott Auto Co.; $50,000; Harold R. Small, atty., Pierce Bldg.

Springfield—Haskett Motor Co. to succeed Haskett-Mace Motor Co.; Guy R. Haskett.

New Jersey.

Jersey City—Universal Sales Co., general auto business; $100,000.

Perth Amboy—New Brunswick Motor Car Co.; $125,000.

New Mexico.

Albuquerque—Lauderbaugh Motor Co., Harrington Bldg., Gold and 5th Sts., Hudson and Essex cars; Harry Harrington, Guy Lauderbaugh.

New York.

Alden, Erie County—Alden Motor Sales Corp.; $50,000; L. P. Meyer, R. B. McConnell, G. B. Doyle.

Brooklyn:
- Armleder Motor Truck Co. of N. Y., 3rd Ave. and Butler St., Armleder trucks; mgr., John S. Hyatt; sales mgr., A. W. Christopher.
- Danl. Harding, autos and realty; $5000; L. B. Glatz, M. Morris, D. Harding.
- Jas. Kenney & Co., autos and accessories; $5000; J. H. Becker, J. J. and J. P. McManus, 1056 53rd St.
- Ritz Holding Co., autos; $5000; D. Sherry, B. M. Maltz, A. Ritzenberg, 1707 E. 14th St.
- Spa Motor Co.; $50,000; F. D. Williams, N. A. Catenaro, M. Lanna, 926 Atlantic Ave.
- Syers & Boyle Corp., motor vehicles; $10,000; G. J. Syers, V. R. and T. A. Boyle, 3130 Ocean Ave.

Buffalo—Nash-So. Park Co., $33,000; E. F. Bleeck, C. A. Winegar.

Cold Springs—Graziana Motors; $50,000; C. Sara, H. Ferris, W. H. Truesdell.

Flushing—Studebaker Sales of Long Island, autos; $10,000; J. H. Howatt, D. J. Stack, F. H. Jockers.

Geneva—Dependable Auto Co.; $25,000; I. Redway, J. B. Owen, F. A. Jeffrey.

New York City:
- Clinton Truck Sales Corp., Manhattan; auto business; $150,000; H. H. Waller, 36 Vesey St.
- Commerce Truck Sales Corp., Manhattan; $10,000; R. and A. Ossenfort, R. H. Hones, 721 Ridge Blvd.
- Commodore Motor Sales Corp.; $10,000; W. P. Jackson, E. R. Smith, H. Bond:
- Commonwealth Auto Corp., Bronx; $5000; M. Kahan, J. Brenner, L. J. Fine, 1547 Madison Ave.
- E. 75th St. Coach & Auto Co.; $15,000; E. J. Donohue, J. J. Herald.
- Everymake Auto Expert Co., Manhattan; $20,000; A. M. and S. Weiss, M. Silvermintz, 904 Tiffany St., Bronx.
- Excelsior Implements Corp., Manhattan, commercial and agricultural; $52,500; A. B. Champlin, T. T. and R. McWilliams, 72 St. Nicholas place.
- H. U. Service Corp., Manhattan; autos and commission; $100,000; H. Roth, S. C. Gyenes, A. M. Coyle, 334 5th Ave.
- Indiana Parts Depot, Manhattan; motor trucks; $75,000; H. K. York, S. W. Balch, F. C. Cole, 160 Broadway.
- Jas. W. Jackman Co., Inc., general auto business; $150,000; M. B. Brooke.
- Ohio Motor Vehicle Sales Co.; $11,000; W. E. Ferris, J. Black, J. Oberrieth.
- Ullman & Hauser, Manhattan, autos; $5100; A. Yalowitz, J. Ullman, S. Hauser, 105 Audubon Ave.

Rochester—Rochester White Co., autos; $350.000; C. E. Winters, G. E. Hebner, R. K. Forth.

Syracuse—Revoir Motors; $100,000; W. D. Andrews, F. G. and M. M. Revoir.

Troy—Mutual Auto Sales Co.; $10,000; N., M. and J. Bazar.

Utica—Mohawk Valley Motors; $40,000; J. L. Dandy, J. L. Willis, J. S. Bird.

Whitestone—Volz & Olsen, autos; $10,000; M. P. O'Leary, J. Olsen, A. Volz.

North Carolina.

Charlotte—H. L. Morrow Co., autos; $100,000; H. D. and E. H. Morrow, F. M. Stephens.

Ohio.

Cleveland—Hare's Motors Ohio Co., Hare motor line in Ohio, to succeed Lake Motor Sales Co., 6545 Carnegie Ave.; $500,000; pres., R. J. Coach; gen. man., Fred C. Wood; sales mgr., R. B. Livee.

Columbus:
- Columbus Temple Motor Co. to succeed L. B. Adkins Motor Co., Templar cars in Central Ohio; L. D. Adkins.
- C. T. Dunkle Motor Co., Handley-Knight line; $200,000; C. T. Dunkle.
- B. M. Ellis Motor Co., 25 N. 4th St., Lincoln cars in Columbus and Central Ohio; B. M. Ellis.
- Ohio Hart-Parr Co., Hart-Parr tractors in Ohio; T. T. Van Doran, H. T. Fravel.
- Ross Motor Co.; $10,000; C. L. Mason, E. R. Ross, F. Reiser, D. Robb, Lorenzo D. Mayes.

Lima—Hawisher Motor Co., Studebaker cars; $50,000; H. A. and E. H. Hawisher, O. W. Miller, C. J. Landsair.

Medina—Gibbs Motor Co., Oakland and Chevrolet cars; Edward C. and Earl B. Gibbs.

Springfield—Springfield Truck & Tractor Co., Harvester trucks; $20,000; Ralph W. Hollenback, C. H. Smart, H. E. Otewalt, S. J. Guyton, C. L. Nissley.

Oklahoma.

Bartlesville—Kirk Motor Co.; $25,000; pres., L. N. Kirk; vice pres., Mrs. L. N. Kirk; treas., H. E. Hartford; J. A. Collins, T. R. Kirk.

Bigheart—Presbury Motor Co.; $50,000; J. A. Presbury, A. W. Bruce, Jas. M. Barriger.

Claremore—Neal Motor Co., Chevrolet and Nash lines and to conduct service station, to succeed Bell Motor Co.; A. D. Neal, H. W. Wilkinson, Holdenville.

Sand Springs—Sand Springs Motor Co.; $10,000; J. M. Burke, Sand Springs; A. F. Antle, F. J. Bryan, Tulsa.

Woodward—Williams Motor Co.; $10,000; G. M. Williams, H. R. Caldwell, W. E. Lewis.

Oregon.

Portland—Auto Sales Co., to succeed Hamilton Auto Co., Stephens Salient Six cars in Oregon and part of Washington; Earl E. Ransom, A. B. Bailey, F. C. Belcher.

Texas.

Abilene—Perry Newberry Motor Co.; $30,000; J. T. Perry, Clyde Newberry, Comer Clay.

Bastrop—Bastrop Motor Co., to succeed Robertson Motor Co.; mgr., Gus Schaffer.

Beaumont—Walter J. Leicht Auto Co.; $15,000; Walter J. Leicht, J. J. White, E. C. Cherry.

Dallas:
- Dallas Used Car Exchange; $15,000; J. E. Harris, Curtis Washburn, T. A. Rose.
- Oakland Motor Car Co. of Pontiac, Mich.; $10,000; agt., Paul A. Stevenson.

El Paso—Paulin Motor Co.; $25,000; A. H. Britain, C. D. Paulin, Carrie Finley.

Ft. Stockton—Smyth-Freet Motor Co. to succeed Smyth Motor Co., autos and auto accessories; Arthur Freet.

Hemphill—Hemphill Motor Co.; $20,000; A. M. Jones, L. Low, J. W. Minton.

Houston:
- Drexel Motor Co. of Wilmington, Del.; $80,000; Texas agt., W. R. Drexel.
- Shelor-Barnes Motor Co; $100,000; W. P. Barnes, Mrs. M. Carroll, J. W. Shelor.
- Vistol Sales Co.; $5000; G. W., Mrs. O. A. and Clarence Johnson.

Mexia—Welch Motor Co.; $100,000; F. W. and G. W. Welch, J. H. Sweatt.

Mission—Mission Motor Sales Co.; $15,000; J. M. Shaver, Logan Duncan, E. K. Johnson.

Tyler—Baldwin, Warren & Coppedge; $10,000; E. L. Coppedge, C. A. Warren, Fred Baldwin.

Wichita Falls—Williams-Thompson Motor Co., 05 Lamar St., agency for Packard cars, equipment and salesroom; W. Oscar Williams, W. K. Thompson.

Utah.

Provo—Done & Higgs Motor Co.; $30,000; A. J. and H. J. Done, G. H. and M. H. Higgs.

Virginia.

Norfolk—Marmon-Haynes Corp.; $50,000; Vincent Cace, Jr., Jos. M. Cace.

Richmond—H. E. Willingham Co., Inc., autos and accessories; $50,000; W. E. Willingham, H. L. Flippen.

Washington.

Selah—Selah Motor Co.; $10,000; Harold R. Pinkerton, Stanley J. Nagely, Norman G. Schotz.

Spokane—Geo. M. Parsons Motors Sales Co., distribute Stutz cars and establish selling agencies and service stations at Walla Walla, Dayton, Colfax and other points.

Wisconsin.

Eau Claire—Triangle Auto Co., autos; C. D. and T. H. Withers, Fred C. Routh.

Grafton—Riebe & Mueller Motor Co.; Walter L. Mueller.

Green Bay—Green Bay Nash Co., Nash dealer in Brown county; $30,000; Mathew M. Schleis, Bert E. Siebert, Geo. F. Reeks.

Milwaukee:
- Lochen Motor Co. to succeed Lochen-Moore Co., Hupmobile, Moon and Apperson cars; salesroom, Plankinton Arcade; garage, 180 Martin St.; Walter Lochen.
- Wisconsin Elkhart Co., Crow and Elkhart cars and Huffman trucks in Wisconsin; $20,000; pres. and mgr., F. J. Noetzel.

New Holstein—New Holstein Auto & Tractor Sales Co., motor cars, trucks and tractors, etc.; $25,000; John and Adolph L. Langenfeld; Ben M. Stiefvater.

Sheboygan—W. A. Knack Motor Co., autos and tractors; $75,000.

Sturgeon Bay—Lake Shore Motors Co.; $25,000; H. W. Ullsperger, F. C. Huff, Frank Caffee.

Wausau—Donald Murray Tractor Co.; Holt tractors; $25,000; pres., Danold Murray; vice pres., Wm. W. Gamble; sec. and treas., S. B. Bissell.

Whitewater—Everhardt & Co., motor cars, trucks and automotive equipment, etc.; $30,000; R. J. Everhardt, R. C. Coxe, R. J. Cummings.

MANUFACTURERS OF MOTOR CARS, TRUCKS, TRACTORS, ETC.

Dover, Del.:
- Autocyclette Mfg. & Sales Corp.; $300,000; Harry W. Cross, Brooklyn, N. Y.; Frank R. Mead, Stamford, Conn.; Leonard A. Watson, South Beach, Conn.
- International Tractors Corp.; $100,000; C. T. Cohee, S. L. Mackey, R. E. McCloskey, Wilmington.
- Keystone Airline Corp., air craft of all kinds; $1,000,000; Wilbur A. McCoy, McCoy, Pittsburgh, Pa.; W. I. N. Lofland, Frank Jackson, Dover.
- Tallant Co., autos; $50,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.
- Wills-Sainte Claire Co. of Ohio; autos and parts; $450,000.
- Yellow Cab Co.; $1,000,000; C. T. Cohoe, C. B. Cutten, S. L. Mackey, Wilmington.

Wilmington, Del.—Jos. Grondahl & Co., autos and machinery; $2,600,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

Chicago, Ill.—Hicks-Parrett Tractor Co., merger of Parrett Tractor Co., wheel type, and Hicks Tractor Co., crawler type; to make both types of tractors; $3,000,000; pres., Vincent Bendix; vice pres., Robt. Barbour, Geo. A. Gibson, J. E. Tracy; vice pres. in charge of engineering, R. P. Hicks; vice pres. and head of export dept., Russell A. Reed; treas., Herbert L. Scharlach; sec., Walter J. Buettner; directors, the above and Warren Barbour, Henry A. Rudkin, B. A. Tomkins.

Greenville, Ill.—Duty Motor Co.; two-ton trucks; $500,000; pres., W. H. Ruther; vice pres., W. J. Gubser; sec.-treas., J. P. Snowden; sales mgr., P. Harnetiaux.

Boonton, N. J.—Yale Piston Ring Co., Myrtle Ave.; motor vehicles, parts, etc.; $125,000.

Brooklyn, N. Y.—C. B Templeman; autos and bicycles; $5000; L. and C. B. Templeman and C. B. Templeman, Jr., 332 5th St.

New York, N. Y.:
- Do-It-All Tractors Corp.; $100,000; G. H. Scanlin.
- Victor Page Motor Corp.; $5,000,000; Arthur W. Britton, Saml. B. Howard, Robt. K. Rhistle.
- Peugeot Co. of America, Peugeot cars; $3,000,000.
- Wills Sainte Claire Co. of N. Y.; autos; $350,000; G. A. McLaughlin, W. J. Oliver T. F. Walsh.

Syracuse, N. Y.—Nera Car Corp., commercial cars; J. Allen Smith, Carl Neracher.

Warren, O.—Western Reserve Motor Car Co.; autos; $3,000,000; R. K. Johnston, Cleveland.

Philadelphia, Pa.—Wills Sainte Claire Co. of Philadelphia; motor vehicles; $1,300,000; C. H. Balske, M. A. Bruce, S. E. Dill, Wilmington, Del.

Memphis, Tenn.—Ideal Tractor-Cultivator Co., N. Memphis Machine Works, Belt Line; farm tractors; $1,000,000; pres., Robt. F. Carr, pres. of Union Motor Car Co.; vice pres., W. J. Meyer, Memphis; S. B. Street, Columbus, Miss.; R. F. Moorehouse, Springfield, Mo.; sec. and treas., R. N. Phillips; mgr., J. P. Stanton; inventor, R. L. Tolston.

MANUFACTURERS OF ACCESSORIES, PARTS AND EQUIPMENT.

California.

San Francisco—Monarch Radiator & Fender Co., 623-38 Ellis St., make and repair radiators; mgr., A. H. Black.

Connecticut.

Hartford—Fuller Storage Battery Co., reorganized; pres. and mgr., New Haven branch, H. H. Oleson; treas., Sherman A. Fuller, Hartford; vice pres. and mgr., Providence branch, Edmund A. Rogers, Manchester; sec. and adv. mgr., Willard B. Rogers, Manchester.

Delaware.

Dover:
- Acme Supply Co.; $50,000; M. M. Lucey, M. B. Reese, M. D. Kylen, Wilmington.
- Ajax Engineering Corp.; motors, engines; $100,000; J. M. and J. A. Frere. M. A. Alexander, Wilmington.
- Collapsible Rim Mfg. Co., collapsible rims for autos; $2,000,000; Love Culbreth, B. F. Eaglin, Omaha, Neb.; E. F. O'Brien, Lexington. Neb.
- Cotter Tire & Rubber Co.; $500,000; T. L. Croteau, M. A Bruce, S. E. Dill, Wilmington.
- Davis Boring Tool & Mfg Co.; $1,400,000; Emery E. Davis, Oscar H. Hyde, St. Louis; Henry Morris, Springfield, O.
- Detroit Automotive Corp., protecting robe rail; $2,600,000; Jos A. Curtis, Benj. H. Cham, Miles G. E. Bott, Detroit, Mich.
- Evans Cooks Mfg. Corp.; auto springs; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.
- General Motors Lock Corp.; $1,000,000; D. Lee McConaughey, Martin Croissant, M. B. Lang.
- Gill Piston Ring Co.; $10,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.
- Jos. Grodahl & Co., auto machinery; $2,600,000; C. T. Cohee, C. B. Outten, S. L. Mackey, Wilmington.
- Houck Mfg. Co.; auto tires and rims; $1,000,000; Wm. G. Houck, Edward I. Cullen, New York; Jas. P. Callender, Ridgewood, N. J.
- Interstate Storage Battery Co.; $1,000,000; Wray C. Arnold, Frank A. Cabeen, Jr., Wrayl W. Fry, Philadelphia, Pa.
- Lockwood Tires & Mfg. Corp.; tires; $2,500,000; Ora M. Lockwood, Harold J. Clay, Rudolph Becker, Buffalo.
- Motive Lubricant Corp.; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.
- Nu-Air Tire & Rubber Corp.; $1,000,000.
- O. C. T. Sectional Tire & Rubber Co.; $1,000,000; Jas. B. O'Connor, Lawson T. Arwater, S. L. Carter.
- Re-Flow System Co. of Ohio; auto devices; $25,000; T. L. Croteau, M. A Bruce, S. E. Dill, Wilmington.
- U. S. Auto Sheet Metal Works, Inc.; $50,000; Geo. L. Townsend, Jr., Edmund P. Moody, Dorothy M. Broughton, Wilmington.

Georgia.

Atlanta—Martin-Parry Corp. of Georgia; auto bodies, cabs, tops, wheels, etc.; $100,000; M. F. Goldstein, Marion Smith, Atlanta; John J. Giltinan, York, Pa.

Illinois.

Chicago:
- Adaptu Carburetor & Mfg. Co.; $250,000; Alvis J. Huskins, Wilbur F. Sheron, Jos. Lasham, Edward Hibben, Almon W. Morton.
- Automotive Production Co., make and deal in auto equipment, accessories and to sell autos; $2500; M. M. Poehhinger, John L. Smith, Arthur A. Basse.
- Star Battery Co; $15,000; John J. Dunne, Jas. M. Buckley, Rich. T. Shea.
- Woodlawn Battery & Ignition Co., make and deal in electrical appliances and repair batteries; $20,000; Wm. B. and Edwin J. Caddis Davis H. Alexander.

Peoria—Graham-Seltzer Automotive Accessory Co.; $150,000.

Indiana.

Goshen—Wagner Utility Auto Body Co.; $50,000; F. A. Wagner, E. H. Hewitt, E. S. Oleson.

Indianapolis:

- Kant Cut Tube Products Co. to take over wire tube dept. of E. C. Atkins Co.
- Stanley Gauge Co.; $10,000; Albert and R. W. Stanley, Oscar Hill.

Kansas.

Pittsburgh—Pittsburg Hand Made Tire Co., N. Locust St., tires; Messrs. Sharp & Wheeler.

Rosedale—I-ne-da Fender Brace Mfg. Co., rear 524 Southwest Blvd.; mgr., M. E. Stucker.

Maine.

Sangerville—Armocord Co., Inc.; make, repair and deal in auto tires, casings, tubes and accessories; $100,000.

Maryland.

Portland—Luthy Storage Battery Corp.; make, repair and deal in electric batteries and parts; $100,000.

Massachusetts.

Boston:

- Gray Motors Corp.; pres., Frank L. Klingensmith.
- Romer Motors Corp.; motors, steam, gas and electric engines, motor trucks and cars, airplanes, motorcycles, tractors and parts; $5,000,000; Al. J. Romer, Boston; J. Ellis Nightingale. Danvers; Jas. L. Roope, Salem.

Michigan.

Adrian—Reiber-Kolz Co., make and sell auto fixtures; $25,000.

Calumet—Calumet Body Corp., to make Calumet all-purpose bodies for trucks; $200,000.

Detroit:

- Curran Motor Products Co.; auto accessories; $100,000; pres., Dr. E. T. Curran; vice pres., W. N. Nahikian; sec.-treas., P. M. McKay; sales mgr., P. T. Quinn.
- Leitch-Nelson Co., make and sell auto accessories; $100,000.
- Viking Motors Co., air craft motors and accessories; $100,000.

Holland—Duffy Mfg. Co., make and deal in auto accessories; $10,000.

Minnesota.

Minneapolis—Comfort Windshield Co.; $100,000.

Missouri.

Carthage—Chain Battery System of Mo. & Kan., Newbstein Bldg., 414 Grant St.; $100,000; pres., E. C. Nordyke; sec. and treas., M. A. Perkins; director, Thos. Fosdick.

Herman—General Rubber Co.; $500,000.

House Springs—Ny Brimer & Son, auto bodies.

Joplin—Missouri Storage Battery Works, 119 E. 5th St.; batteries; $15,000; pres., F. A. Liggett; vice pres., C. R. Turninge; treas., Julius Becker; sec., S. C. Wyman; atty.. Grover C. James, Frisco Bldg.

Kansas City—Carbon Proof Motor Co.; $100,000; Harold Ragland, asst. atty.-gen., Jefferson City.

Montana.

Red Lodge—Auto Safety Brake Co.; $50,000; J. J. Kellum, C. W. Crawford, Leo J. Kent.

New Jersey.

Camden—Cutler Auto Radiator Co.; $100,000; Herman Z. Cutler, Henry Cooperson, Lawrence M. Verga.

Newark:

- Modern Steel Wheel Corp. of N. J.; $125,000; Henry Nauschildt, Edward H. Roberts, New York; Christian Kuyl, Jersey City.
- White Mfg. Co., auto accessories; $50,000; Benj. F. White, Paterson; Michael and Wm. L. Greenbaum, Newark.

New Brunswick—Atlantic Rubber Ace Co.; $100,000; Clarence M. Haight, Newmarket; Louis J. and Edward Belloff, New Brunswick.

Union—Public Safety Signal Corp.; devices for autos; Hugo and Lena Faller, Harry A. Klein, Jersey City.

Weehawken—Felton Auto Signal Corp., 101 Oak St., auto signals; $125,000.

New York.

Binghamton—United Auto Gear & Parts Co.; $20,000; S. Bloom, H. and J. Leven.

Brooklyn:

- Atlas Metal Stamping Co., Inc., take over business of Isidor Blickman; pres., Wollman Amdur; treas., Isidor Blickman.
- Manutil Corp., Brooklyn; motors and engines; $10,000; W. C. Adams, A. J. Brislin, J. J. Munro, Richmond Hill.
- Parons Auto Accessories Corp.; $500,000; Louis E. Jordan, Gus W. Foephel, New York; Harry Fink, Brooklyn.

Buffalo:

- Clear Sight Products Corp.; auto parts; $75,00; F. C. Lograsso, J. F. Lang, F. J. Boswell.
- De Loe Shackleless Spring Corp.; auto parts; $50,000; E. G. LeLoe, M. C. Spratt, H. J. Kelly.
- Glenmore Co. of Del.; lubricants; $400,000; rep., J. W. Glenn, Buffalo.

New York City:

- Acme Rim Mfg. Corp., Manhattan; $15,000; W. P. White, L. B. Wishnevsky, L. N. Larson, 4814 New Utrecht Ave., Brooklyn.
- Biggs Black Corp.; auto accessories; $25,000; T. J. Nolan, T. Black, H. W. Biggs, 230 W. 68th St.
- Brazilian Rubber Refining & Mfg. Co., Manhattan; $400,000; F. Chamie, J. T. Coggins, J. E. Strowbridge, 512 Bergen St., Brooklyn.
- Clearview Windshield Cleaner Corp., Manhattan; $100,000; H. L. Rothenberg, B. R. Stein, S. Gerber, 320 Broadway.
- Dual Ignition & Mfg. Co., Manhattan; spark plugs; $30,000; C. H. Hammond, S. C. and B. S. Henney, Sea Cliff.
- Gulotta & Weilheimer, Manhattan; motors; $10,000; C. and A. Gulotta, B. Weilheimer, Hewletts, L. I.
- H-L Electric Co., Manhattan; $10,000; B. Hymawitz, M. L. Wack, O. I. Jubelsohn, 36 E. 8th St.
- Ideal Auto Body Co.; $5000; J. M. Manchester, J. Russo, H. Woltman.
- Loxtite Carrier Co., Manhattan; auto locking devices; $25,000; L. Wendell, C. A. Doherty, F. K. Greene, 80 Maiden lane.
- Nor-Dan Electrical Supply Corp., Manhattan; storage batteries, etc.; $100,000; Norman G. Degnon.
- Porter Electric Carburetor; $300,000; F. W. and F. B. Skinner, A. W. Porter.
- Quality First Fabric Co., Manhattan; auto fabrics; $50,000; A. A. Kotzen, S. M. Louis, T. W. Constable, 51 Chambers St.
- Resistance Tire & Rubber Corp., Manhattan; $250,000; F. G. C. Campbell, D. F. O'Meara, W. Troy, 60 Broadway.
- Vulcanized Rubber Co. of Maine; $1,500,000; rep., H. S. Dodd, 251 4th Ave.

Oswego—M. E. White & Co., auto top manufacturing and repair shop, 61 E. 2nd St.; M. E. White, Syracuse.

Plattsburgh—Todd & Buick, to make motors and engines and operate garage; $72,000; K. F. Klein, M. J. Clow, J. B. Todd.

Rochester—Pomeroy Electric Co.; autos; $40,000; S. S. R. Robinson, H. N. Bennett, B. H. Pomeroy.

Schenectady:

- Metal Parts & Tool Co.; auto supplies; $8375; S. R. Van Patten, H. L. Kay, A. T. St. Louis.
- Sterling Storage Battery Co.; $55,000.

Troy—Ashton-Collins Corp.; motors; $50,000; H. W. Turner, C. Collins, A. A. Ashton.

White Plains—Nash-Pope Co.; motors; $15,000; W. W. Ford, N. Mazzilli, L. Pope.

Ohio.

Akron—Cord Tire Machine Co.; $1000; R. M. and P. W. Sanderson, C. W. Shearer, C. Cochran, H. C. Allen.

Dayton—Apple Electrical Mfg. Co.; line of dynamo electrical machinery; $500,000.

New Philadelphia—Crawford Tire & Rubber Co., to succeed Bucyrus Rubber Co.; Fred Rufenacht; mgr., Philip H. Heater.

Oregon.

McMinnville—Schlegel's Auto Top Shop; H. B. Schlegel.

Wisconsin.

Appleton—Acme Body Works, passenger car and motor truck bodies, cabs, etc.; $60,000.

Milwaukee—Para Auto Tire Co. of Chicago; $50,000.

Oshkosh—Oshkosh Radiator Co.; $6000; John Ternaat, Edward H. Huessner, Thos. McKelvey.

Racine:

- E. L. M. Tire & Rubber Co.; $200,000; gen. sales mgr., A. J. Riggs.
- Schartow Iron Products Co; automotive equipment, hardware, etc.; F. E. Schartow.

S. Milwaukee—Midland Co. to succeed Schartow Mfg. Co., Sharto products; pres., R. A. Nourse; vice pres., T. E. Ward; sec. and treas., C. P. Nourse.

Watertown—Bickett Rubber Corp., rubber products of all kinds; $100,000; L. W. Bickett, Max G. Kusel, E. L. Hoge.

GARAGES, REPAIR SHOPS AND SERVICE STATIONS.

Arkansas.

Bentonville—O. T. Garage Co.; $8000.

N. Little Rock—Guenter Goodyear Service Station, 3rd and Orange Sts., drive-in service station; Karl and Bernard Guenter.

California.

Colton—Motor Service Co.; H. G. Bezdechek.

Santa Ana—Santa Ana Garage & Machine Co., N. Main St.; F. W. Wendorf, H. E. Vickerman.

Santa Barbara—Hipes & McCrary, rear Huff's Garage 20 E. Victoria St., auto repairing and ignition.

San Diego—Titan Battery & Ignition Co., Titan battery service agency; A. B. and J. C. Shaw.

Connecticut.

Hartford:

- Highland Garage, Inc., to succeed Highland Court Hotel Garage, 25 Belden St.; Thos. H. Bonner, N. R. Goltra.
- Universal Grinding Co., 6 Hoadley place, auto parts grinding and to carry a stock of oversize parts; Fred J. Wood, Wilbur C. St. Cyr.

Delaware.

Dover:

- Broomalls Garages, Inc.; $200,000; E. R. Hansell, J. Vernon Pimm, E. M. MacFarland, Philadelphia, Pa.
- Commerce Service Corp.; $300,000; C. W. and C. S. Horne, Erie, Pa.; E. A. Wagner, Scranton, Pa.
- Eagle Comb Investment Corp., garage; $100,000; Jas. Milton, Fred Stevens, Jos. Showers, Philadlephia, Pa.
- Emergency Road Service Co.; repair autos; $2,000,000; M. M. Lucey, V. P. Lacey, L. S. Dorsey, Wilmington.
- Templar Tire Co.; rebuild autos; $50,000; M. L. Rogers, L. A. Irwin, W. G. Singer.
- Washington Garage Co.; $50,000; Ellis A. Beck, Saml. F. Tyree, W. C. Bowie.

Florida.

Orlando—Motor Parts Service Co., Orange county; $25,000; L. C. Williams, D. C. McMullen, Cephas Geiger.

Illinois.

Arthur—Dickson Bros.; garage and repair shop.

Bloomington—Williams & Brockschmidt; garage; Tom Dale Bldg.

Chicago:

- Calumet Battery Service, Inc.; $5000; Charlotte and Geo. H. Triplett, Pearl and Archie W. Harmon.
- Enterprise Auto Repair Co.; $2500; C. W. and Anna Huck, Chas. Neil.
- N. Ave. Auto Repair Shop and Battery Service Station, Inc; $10,000; E. R. Beatty, Geo. A. Thompson, Inez Kiley.

Galesburg—Central Garage, to succeed Main Garage, N. Main St.; mgr., John Farmulener.

Indiana.

Anderson—Anderson Overland Co. to succeed Hill-Stage Garage. 6th and Jackson Sts.; Chas. Jackson, John Hartman.

Brazil—C. M. Wilson Garage, to succeed Service Garage Co., 522 E. National Ave.; C. M. Wilson.

Gary—Whyte Markson Corp., auto repair business; $10,000; L. A. Whyte, E. E. Price. Harry Markson.

Harvard—Weibel & Barrows Tire & Vulcanizing Co., Googley Bldg., cor. N. Eastman and W. Front Sts.; F. W. Weibel, C. E. Barrows.

Marion—Auto Exchange & Repair Shop, 1611 Adams St.

Seymour—Seymour Tire & Vulcanizing Co., Andrews Bldg., N. Chestnut St.; Chas. B. Hagan.

Iowa.

Dubuque—Marold Cylinder Regrinding shop, garage and repair shop; W. J. Marold.

Hedrick—Johnson & Hardesty, garage and accessory shop, Helm Bldg., Main St.

Monticello—Byrne & First, 1st and Angle Sts., garage and accessory shop.

Muscatine—Root & Allison Vulcanizing Co., 215-17 Walnut St.

Shenandoah—Ford Repair Shop to uscceed O'Day & Amos; Freeman Cain.

Kansas.

Alta Vista—Spot Cash Garage; John Jacobs, Dwight, Kan.; Geo. Dunlay; mgr., John Jacobs.

Arkansas City—Scott's Battery Electric Service Co. to succeed Scott Wade Battery Electric Service, 112 S. 1st St.; W. E. Snodgrass.

Atchison:

- J. T. Berridge & Sons Garage Co.; $75,000; J. T., Earl and Guy Berridge.
- Clark Bros., Enterprise Garage, 205 Commercial St.
- Kelly & Grippin, garage and radiator shop, 112 S. 8th St.

Augusta—Moddy Garage, 115 W. 6th St.

Belpre—West Side Garage, Beckwith Bldg.; Graf & Ruggles, owner.

Emporia—Commercial Garage, 710 Commercial St., general auto repair work; H. C. Long, H. P. Miller, W. H. Shuey.

Hays—Auto Top Shop; Arel agerquist, Elmer Gilberg, Assaris.

Hutchinson—A-1 Auto Service Co.; $50,000; H. D. and N. P. Lloyd, W. L. Whitlock.

Kansas City—Central Battery & Service Co., 1028 Central Ave., electric repair work.

Sedan—Guy's Storage; Guy Fields, owner.

Kentucky.

Louisville—Edinger Motor Parts Co., service on Continental motors and distributor for Kentucky and Tennessee; C. A. and E. C. Edinger.

Maine.

Portland—Evans & Gale, Winter St., E. Deering, auto painting, making and repairing of auto tops and removal of dents in auto bodies and fenders; Fred H. Evans, Portland; Edward F. Gale, Westbrook.

Massachusetts.

Beverly—K. & K. Garage Co.; $25,000; Fred P. and Arthur R. Keach.

Holyoke—Hampden Garage, Inc.; $40,000; Roger Lachapelle, Edmond E. Berger, Jules Guertin, Jeffrey Rivest, Wm. Plouffe.

Michigan.

Charlevoix—Black & Hammond, Lakeway Garage, State and Antrim Sts., agency for Chevrolet cars and trucks; Henry Black, O. D. Hammond.

Detroit—Neighbor Tire & Repair Co.; $10,000; Emil Froh, Wm. F. Hemminghaus, Edwin B. Snow.

Escanaba—IXL Garage & Motor Co., 511 Ludington St., Skelton cars; E. J. Moreau, E. M. Charlebois.

Finton—Green & Judson Ford Agency Leroy St.

Lansing—Sterling Auto Painting Co., 325 E. Mich. Ave.; E. G. Ogletree.

Muskegon—Baldwin Sovacool Co., garage and accessory shop, 61 E. Clay St.

Port Huron—Mack Bros., garage and filling station, Petit Bldg., 6th St.

Warren—Warren Service Garage Co.; $10,000; J. B. Moore, F. J. Licht, Calvin B. Moore.

Minnesota.

Echo—Frasier & Edwards, Echo Garage Homer Frasier, Vincent Edwards, Milroy.

Medford—Papke & Krippner, Owatonna, garage.

Missouri.

Cabool—Elk Horn Garage; Frank Brown, Chas. Fitzgerald.

Chillicothe—Blue Point Garage.

Eldon—Ross Battery Station; E. A. Ross, owner.

Harrisonville—Gray & Freeman, auto repair shop, rear Kohler-Wolfe Motor Co.'s sales room, east side Public Sq.; Harry E. Freeman, Fred D. Gray.

King City—Sauceman & Fraisewater, Amble Inn Garage; R. W. Sauceman, Tarkee; R. R. Faisewater, Savannah.

Marshall—All Ford Garage, formerly Boyd Garage, W. North St., battery and filling station and garage; Russell Nicholas.

St. Louis:

Alexander Garage; $10,000; Ephrim Caplan, atty., 1836 Arcade Bldg.

Battery Service Co., garage and accessory shop, 22nd and Locust Sts.

Shelbyville—Johnson & Pulse, garage and auto repair shop, John Bauer Bldg., Postoffice Blk.

Montana.

Miles City—Park View Garage Co.; $50,000; W. M. and A. C. Jacobs, A. B. Middleton.

Nebraska.

Hastings—Hastings Tractor & Implement Co., 816 W. 1st St., tractor service station; mgr., G. E. Mozee.

Ord:

Lincoln & Washburn, auto repairs, Siler Bldg.

Ord Garage & Repair Shop, formerly Guy Burrows shop; Wilfred William, A. J. Maslonka.

New Hampshire.

Exeter—McReel Garage, Water St., garage and accessories.

New Jersey.

Newark—Modern Garage Co.; $100,000; Morris Pankins, Meyer Rashkas, Ike Koplowsky.

New York.

Avon—Isham & Wright, garage; $8000; J. G. Carpenter, W. J. Wright, F. W. Isham.

Brooklyn:

Aborn Garage; $12,000; S. H. Lictenstein, A. L. Friedson.

Bergen Auto Service; $12,000; J. H. Smith, C. H. and J. H. Gimpel, Jr., 280 39th St.

Chaplin Garages; $20,000; G. H. Aspland, M. E. Pryor, W. A. O'Connor, 102 Himrod St.

Gare Garage Corp.; $5000; C. L. Raskin, I. E. Meller, H. Gare.

Majestic Auto Service Station; $10,000; S. S. Rubenstein, E. Schaffer, E. Steiner, 572 3rd Ave.

Pittkin Service Garage; $5000; L. M. Janowitz, L. Goldbauer, J. Gallanter, 1946 Pitkin Ave.

T. & F. Garage Co.; $10,000; A. and H. Topp, J. L. Fay, 316 Wyona St.

Townsend Garage; $50,000; R. C. Dubois, J. A. and R. Townsend.

Well Worth Garage; $20,000; J. Kalmus, M. Cohen, I. Gottlieb.

W. P. and G. Garage Corp.; $18,000; C. J. Gillem, E. L. Durling, J. C. Beck, 2322 Bedford Ave.

Buffalo:

E. Buffalo Garage & Service Corp.; $25,000; A. F. Smith, W. E. Bryant, G. B. Reigel.

Ellicott Tire & Repair Co.; $20,000; L. S. and W. K. Allen, T. R. Wheeler.

Gleasner Compressed Air Supply & Equipment Co.; $10,000; M. Huizenga, L. B. and W. Gleasner.

Gleasner Expert Repair Station, autos; $5000; A. Batt, L. B. and W. Gleasner.

Jarvis Garage Co.; $5000; F. Weisedel, E. E. Engstrom, R. Braunlein.

Glen Cove, L. I.—Glen St. Garage; $10,000; H. L. Hedger, P. F. McMahon, C. F. Wheeler.

Kingston—Ulster Garage; $25,000; A. F. Moleneaux, C. A. Warren, J. W. Eckert.

Lynbrook—Schratwieser's Garage; $10,000; M. Grady, M. Pollini, C. Schratwieser.

Mt. Vernon—Civic Center Garage; $10,000; L. E. R. and M. K. Harris, M. Shimer.

New York City:

Acme Bus Co., Manhattan, repair shop; $10,000; A. C. and K. and E. Kohler, 327 E. 86th St.

Alreo Motor Service Corp., Manhattan; $5000; J. F. Kreisa, J. J. Jones, R. I. Godby, 450 W. 49th St.

Art Garage, Manhattan; $12,000; M. Weingrod, I. J. Fein, S. Isaacson, 78 Blake Ave., Brooklyn.

Arthur Renting & Service Co., Bronx; $5000; repairs, A. E. and K. R. Dockrell, W. P. Clarke.

Consolidated Instrument Co., to render service in connection with all types of speed indicating and recording instruments and devices.

Dandy Garage; $25,000; C. T. Gysin, J and C. McCluskey.

East River Garage, Manhattan; $10,000; I., B. and F. Stolwitz, 120 W. 117th St.

Equity Garage, Manhattan; $50,000; G. W. Childs, B. L. Gluck, J. Parlato., 549 W. Broadway.

Ganz & Zimmerman, Bronx, auto repairing; $5000; W. T. Mulcahy, A. J. Ganz, A. Zimmerman, 381 E. 151st St.

Great Northern Garage, Manhattan; $25,000; J. L. Janover, E. Strudel, I. Estersohn, 30 Church St.

Harlem Market Garage; $15,000; M. Stottmore, J. S. Weinberger, P. Lippner.

Harwell Garage; $50,000; H. M. Heyman, H. Schapiro, H. Gerson.

H. U. Service Corp.; $100,000; H. Roth, S. C. Gyenes, A. M. Coyle.

Leonel Garage & Storage Corp.; $6000; N. F. and P. W. Hanson. L. F. Breithaupt.

Majestic Auto Repair & Rebuilding Co., Bronx; $6000; C. Jeniello, P. Gabrionne, J. Raffa, 667 E. 187th St., Bronx.

Marble Hill Garage, Manhattan; $7500; E., G. H. and A. Levine, 401 W. 215th St.

97th St. Garage, Manhattan; $10,000; C Ell, M. Chodorowsky, I. Schwartz, 830 Cauldwell Ave., Bronx.

Putnam Auto Salvage & Repair Corp., Manhattan; $25,000; A. C. and M. Putnam, L. Cohn, 302 Broadway.

Schumacher's Garage Co., Manhattan; $50,000; H. C. Harris, P. T. Winslow, W. J. Schumacher, 168 W. 228th St.

Speedway Garage, Manhattan, general realty; $20,000; R. and T. Jeffrey, D. H. Lehman, 291 Broadway.

Star Gas Station & Garage Co., Manhattan; $10,000; A. J. Farquhar, H. and S. D. Sink, 137 Russell St., Brooklyn.

Victor Welding Works, Manhattan; autos; $20,000; W. and O. Malinka, G. Malinka, Jr., 358 E. 57th St.

Wilnat Garage Co., Manhattan; $5000; N. H. Litt, W. J. and J. Newman, 747 E. 152nd St.

Richmond Borough—Cairney Garage Co., merchandising; $125,000; M. J. Conovitz, J. C. Quinn, W. Cairney, W. Brighton.

Rochester:

Glenwood Garage; $5020; E. L. and H. Ashton, F. E. Smith.

Waubon Garage & Mfg. Co.; $50,000; J. J. Frawley, H. C. and E. H. Hien.

Watertown—Watertown Steam Vulcanizing Works; $25,000; E. B. Salmon, Jr., C. J. Grabowsky, G. W. Fox, Syracuse.

Yonkers—Fernbrook Garage Corp.; $10,000; M. Friedman, H. Steinschreiber, P. Pincus, 511 W. 178th St.

North Carolina.

Winston-Salem—Norfleet Baggs, Inc., to rebuild, repair and manufacture autos; $125,000.

North Dakota.

Sheldon—Currence & Peterson, Newark, S. D.; Spiekermeier Garage.

Ohio.

Cleveland—Hellen Auto Painting Co.; $5000; E. P. DeGallier, C. L. Hellen, H. A. Miner, T. Blackett, D. J. Brophy.

Marietta—Marietta Ignition Service Station, 128 Green St.; expert work on magnetos, generators and starting motors; A. J. and W. F. Wesel.

Steubenville—Automotive Battery Service Co.; $250,000; G. E. Wisener, G. W. Vreeland, I. Sulzbacher, H. B. Conover, C. W. Mathias.

Oklahoma.

Arnett—Barker's Garage & Electrical Shop, successor to Barker Bros. Garage.

Commerce—Liles & Clark, Central Garage; Fred Clark, E. H. Liles.

Eufaula—Battery Service Station; mgr., Walter Rhodes.

Norman—Walsh & Wittie, sheet metal and radiator repair shop, 203 W. Main St.

Wanette—Gentrys & Williamson, Wallace Garage, Main St.; C. R. and C. V. Gentry, J. D. Williamson.

Oregon.

Portland—Hawthorne Motor Service Co., formerly Square Deal Garage, 1111 Hawthorne Ave.; Geo. Heinze, W. Orewiler.

South Dakota.

Eureka—Golden Rule Garage; $15,000; John Kallenberger, A. Zenk, H. W. Bartels.

Watertown—Public Service Garage, 205 S. Broadway; J. W. Fanset.

Tennessee.

Ripley—People's Service Station; mgr., Edward Luton.

Texas.

Dallas—Champion Garage & Machine Shop, Inc.; $5,000; B. B. and Preston Owen, R. R. Dodson.

El Paso:

Cleveland Square Garage; $75,000; S. G. Groom, A. B. LaGasse, W. L. Campbell.

Carl W. Newell Co.; garages; $10,000; J. H. Nations, Carl W. Newell, T. C. Holliday.

Houston—Morrow Co., Inc; $10,000; J. D. Morrow, A. M. Armand.

Kerrville—Kiefer & Zumwald, Dixie Garage.

Pittsburg—Murphy & Calvert, garage, old Stansell shop.

Port Arthur—Southern Auto Painting & Top Works, 321 7th St.; I. P. Stansbury, C. W. Ingleright.

Ranger—City Garage & Machine Co.; $10,000; R. D. Lincoln, J. T. Harnes, L. R Taylor.

San Angelo—Lynn-Bowen Tire Co., Wooley Bldg., corner of S. Chadbourne St. and Concho Ave., to succeed E-Z Tire Co., vulcanize and retread tires; Harvey Lynn, David Bowen.

Waco:

KT Garage, 110 Peach St.; repair work on autos; B. F. Dorr, J. A. Ritter.

Modern Auto Repair Co., Franklin and 9th Sts., service station for Hudson and Essex cars and Republic trucks.

Welch Service Station, auto repair work.

Wisconsin.

LaCrosse—LaCrosse Automotive Service Co., specialize in passenger car, truck and tractor service from the electrical angle; L. J. Stellflug, F. W. Humrich.

Lyons—Marsh & Burpee Garage; garage and repair shop; John Marsh, Geo. Burpee.

DEALERS IN ACCESSORIES, EQUIPMENT AND PARTS.

Arkansas.

Little Rock—Four-Six Tire Co.; $5000; Jas. H. Rice, P. T. Phillips, A. G. Kahn.

California.

Pasadena—Pasadena Motor Supplies Co. to succeed Seibert Motor Supply Co., 54 W. Colorado St., auto accessories; Fred Krug, Jas. E. Richardson.

Connecticut.

Stamford—National Auto Supply Co $10,000; Morris, Abe and Bessie Kweskin.

Delaware.

Dover:

Acme Supply Co.; $50,000; M. M. Lucey, M. B. Reese, M. D. Kylen.

Dealers' Motor Supply Corp.; $300,000; M. M. Lucey, L. S. Dorsey, V. P. Lacey, Wilmington.

East End Tire Co. of Erie; $25,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Monroe Cooperative Oil Co.; motor fuels; $275,000; Carl Kirburtz, Edgar H. Stadelman, Doras A. Soleau, Monroe, Mich.

Parsons Auto Accessories Corp.; $500,000.

Remington Sales Corp.; auto and gas engine parts; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Georgia.

Rome—Exide Battery Service Co. to succeed Richards Battery Co.; batteries and accessories; H. D. Long, Gadsden.

Valdosta:

Valdosta Specialty Co.; motor vehicle accessories, attachments and parts; $5000; J. R. Dasher, A. C. Mizell, E. R. Barber, Mrs. J. M. and H. K. Wilkinson, G. S. Balfour, G. G. Hearn, W. D. Peoples, R B. Mackey, O. P. Tucker, W. E. French, W. G. Campbell.

Illinois.

Chicago:

Illinois Auto Parts Co.; $3000; Rubin Davidson, Max Kaplan, Saml. Fridlander.

Service Parts Corp.; $1000; E. S. Carlisle, C. H. Scribner, F. C. West.

Standard Auto Remodeling Co.; garage equipment; $5000; E. L. Hamilton, L. Q. Seng, E. M. Dye, J. P. McArdle, A. Brodeski, H. D. Gordon, H. A. Morlock.

Freeport—Interstate Auto Federation, accessories and operate public garage.

Peoria—Graham-Seltzer Automotive Accessory Co.; $150,000.

Robinson—Automotive Equipment Co., 216 E. Main St.; tire shop; Harry Steel, G. H. Keeley.

Indiana

Indianapolis—Stanley Gauge Co.; $10,000; Albert and R. W. Stanley, Oscar Hill.

Kansas.

Baxter Springs—Jefferson Highway Auto Supply Co.; $40,000; Rey and Pearl M. Van Hern, R. R. Page.

Kansas City—Stephens Tire Stores Co., 210 S. Lawrence St.; Stephens tires; M. M. Harris, B. M. Shikler.

Topeka—Shelton Tire Co.; $15,000; John R. and Harriet H Shelton, J. G. Leopold.

Massachusetts.

Boston:

Champion Mfg. Co., auto accessories; $25,000; Myer Snorowsky, Harry and Ethel Shater.

General Auto Tire Co.; $25,000; Morris and Ethel Rosenfield, Philip H. Leven.

Hassler-New England Co., shock absorbers and autos; $50,000; Thos. M. Andrew, Jr., Herbert E. Spann, A. Hittle.

Templar Sales Corp; auto accessories; $50,000; Fred J. and Albert B. Caldwell, Asa S. Allen.

Springfield—Broadway Motor Mart, 72 Broadway; accessories, tubes and tires; Sayde Weinstein.

Michigan.

Detroit:

Curran Motor Products Co., 2018 Park Blvd.; accessories; $100,000; Dr. E. T. Curran.

Davis Steam Motors, Inc.; steam engines for use in passenger cars and trucks; $100,000; Merrill Davis, E. M. Bliss, F. D. Siebert, A. B. Eggert.

Port Huron—R. & R. Tire Store & Battery Service, 509 Grand River Ave; Wm. Reynolds, Mt. Clemens; Louis Robbins, Port Huron.

Minnesota.

Gary—Gary Implement Co.; $50,000; G. O. Eeg, M. E. Dahl, A. Elleraas.

Pine Island—Pine Island Hardware Co.; Carl Coen, Albert Noser, Arnold Hahn.

Missouri.

Kansas City—American Filling Station, 1728 Grand Ave.; $10,000; Clarence E. Harrell, 1718 Grand Ave.

Mansfield—All Ford Garage, to succeed Boyd Garage, W. North St.; parts and to operate garage and service and filling station; Russell Nicolas.

St. Louis:

Battery Supplies & Equipment Co.; $10,000.

Elbee Tire & Auto Co.; $15,000.

St. Louis Battery ales & Service Co., Murphysboro, Ill.; $75,000; principal Misosuri agt., John Henderson, 17th and Locust Sts., St. Louis; atty., Isaac Levy, Murphysboro, Ill.

Nebraska.

Kearney—Kearney Auto Accessories Shop, 7 W. 21st St.

New Jersey.

Passaic—Winoil Supply Co.; auto accessories; $100,000; Peter J. Wynn, Clifton; John Hanley, Thos. E. Duffy, Passaic.

New York.

Brooklyn:

Madison Square Auto Auction Sales Co.; $1800; J. Fisk, J. Palumbo, M. L. Peiser, 564 W. 160th St.

Manutil Corp., motors and engines; $10,000; W. C. Adams, A. J. Brislin, J. J. Munro.

Special Hardware Corp.; $12,000; A. L. Rose, J. Gunn, C. Chaumont, 562 W. 149th St.

Jamaica—Jamaica Electric Service & Implement Corp.; $10,000; P., P. J. and K. Guthy.

New York City:

Acme Rim Mfg. Corp., Manhattan; $15,000; W. P. White, L. B. Wishnevsky, L. N. Larson, 4814 New Utrecht Ave., Brooklyn.

Chain Auto Supply Stores, Manhattan; $10,000; A. J. Brothers, W. L. Monck, J. S. Epstein, 362 Riverside Drive.

Chas. E. Fitchen Co., Manhattan; auto hardware, etc.; $6000; H. C. Umland, J. H., C. E. Fitchen, 262 W. 31st St.

Gotham Tire Co., Manhattan; $10,000; M. Hillman, L. and J. Weise, 215 Audubon Ave.

Lake-Erbe Mfg. Co., Manhattan; electrical appliances for motorcycles; G. G. Erbe, A. O. and J. Lake, Jr., 1826 14th St., Brooklyn.

Lotus Equipment Co., Manhattan; $10,000; F. Michaels, J. W. Smith, H. A. Shea, 2 Rector St.

Maritime Hardware Co., Manhattan; $10000; R. B. Morse, H. K. Bleeker, J. J. Mead, 323 74th St., Brooklyn.

Peerless Automotive Equipment Co., Manhattan; $50,000; L. Schiavone, S. A. Burgio, J. F. O'Neill, 662 Park Place, Brooklyn.

Poughkeepsie—Storage Battery Parts and Equipment Co.; $50,000; H. Eggleston, J. W. Bitts, W. S. Lent.

Rochester—Murphy-Saumby Battery Co., electrical business and auto equipment; $10,000; J. Piriano, F. E. Shaumby, A. B. Murphy.

Utica—Camp Tire Co.; $20,000; G. E., H. H. and G. H. Camp.

North Carolina.

Charlotte—Monarch Supply Co.; $100,000.

Ohio.

Cincinnati—Avon Tire & Supply Co.; $10,000; F. Gaskins, M. Lundrigan, H. Marcus, M. Aaron, N. S. Blossom.

Cleveland:

Auditorium Tire Co.; $10,000; C. Weidel, M. I. Smith, I. Brick, C. L. Brueggemeyer, I. E. Guntsler.

Chriden Motor Supply Co.: $10,000; A. G. Levine, H. C. Christy, Jr., J. E. Sneddan, A. L. Carson, A. F. Nekvasil.

Miller Auto Accessories Co.; $30,000; G. J., J., E. F., Gertrude and D. F. Miller.

Texas.

Abilene—Giant Motor Supply Co., accessories, new Radford-Oldham Bldg., 932 N. 2nd St.

Dallas:

India Tire Co., office and service station, 2036 Commerce St., to absorb Tire Service Co.; pres., F. E. McLarty; vice pres. and gen. mgr., Walter Barron.

Martin-Parry Corp.; $10,000; R. F. Robinson, A. W. Spence, G. W. Hall.

Union Auto Supply Co.; $16,000; Sam. Roback, Joe Kurtz, A. M. Werner.

Ft. Worth—Federal Tire Service Co, Commerce and 2nd Sts., Federal tires and tubes and drive-in gasoline filling station; H. D. Dinkoglesby.

Houston—Goodson Filling Station; $2000; Ed. Sheffield, W. G. and Dot B. Fraser.

Strawn—Jones & Matthews, battery station and accessories.

Wisconsin.

Milwaukee—Federal Tire & Supply Co., Federal tires; $175,000; Arthur L. and Henry C. Grede, Herbert A. Ruhnke.

MISCELLANEOUS.

Alabama.

Birmingham—Alabama Aeronautical Society; C. W. Tindal.

California.

San Francisco—Henderson Securities Corp., to conduct auto financing agency; $100,000; Chas. P. Henderson.

Connecticut.

Norwich—Norwich Automotive Dealers' Assn.; pres., C. V. Pendleton; vice pres., Julian L. Williams; sec., Danl. J. McCormick; treas., Alfred G. Lillibridge; directors, Bernard Ring, J. L. Williams

Delaware.

Dover:

Autoapartments of the Missisippi & Missouri Valley, to erect garages; $1,500,000; Eugene E. Allison, Clement E. Paxson, New York City; H. T. Andrews, Darien, Conn.

Link Auto Finance Corp.; $600,000.

Union Transportation Lines of Indiana; $2,050000; C. B. Outten, S. L. Mackey, R. E. McCloskey, Wilmington.

Wilmington—National Motor Racing Assn.; $100,000.

Illinois.

Chicago—Surf Cab Co.; $2500; Jas. D. Maher, D. M. Brackney, A. A. Thompson.

Missouri.

Kansas City—Westport Auto Livery Co.; $4000; atty., Kirkpatrick, McCollum & Kirkpatrick, Gales Bldg.

Nebraska

Alliance—Alliance Taxi & Messenger Service, Buick Garage; G. C. Madsen.

New Jersey.

Long Branch—Interurban Bus. Co.; $50,000; Chas. E. Dennis, Harold C. Morford.

Newark—Midmon Bus Co.; $100,000; John Read, Michael Steinberg, Chas. Weiner.

New Brunswick—New Brunswick & New York Motor Express Corp., transportation; $100,000; A. Harry Freedman, Saml. Feller, Jos. Policastro.

New York.

Great Neck, L. I.—Universal Auto Bus Co. Service Corp.; $50,000; H. Venzke, R. W. McCreery, P. Nelson.

Newburgh—Auto Dealers' Assn. of Newburgh; pres., Leroy H. Crowley; vice pres., Otto Deisseroth; treas., Jas. E. Nugent; sec., Malcolm E. Parrott.

New York City:

Aldenhurst Auto Van & Express Co.; $15,000; E. Eisensetin, E. C. Kelly, M. Tachna.

Electric Auto Show; $30,000; G. Tiernan, F. H. Parcells, J. M. Purcell.

Greater New York Taxi League Cooperative Industries, Manhattan; $25,000; J. Ullman, H. A. Silver, E. Williams, 459 W. 43rd St.

Grieme Trucking Corp., Manhattan; $5000; H. Cohen, M. Ginsberg, J. Grieme, 242 W. 122nd St.

Rebuilt Motor Car Export Corp., Manhattan; $30,000; M. and D. Paris, R. Coughlan, 220 W. 109th St.

Reliable Motor Trucking Corp., Bronx; $50,000; H. J. Smith, W. J. Landes, I. Waldman.

Renton Auto Recovery Service, Manhattan; $100,000; W. C. Ackley, I. H. Phontez, W. B. Renton, White Plains.

Stoops-Laffay Motor Coach Corp., Manhattan; $20,000; R. J. Duerk, J. C. Stoops, R. B. Laffay, Hastings-on-Hudson.

Trinity Agrcultural Corp., Manhattan; $25,000; A. J. Phillips, B. D. Halloran, P. Erville, 572 W. 141st St.

Rochester—Rochester Motor Terminal, warehousing; $157,500; S. R. Parry, G. R. Neell, J. G. Commerford.

Ohio.

Cincinnati—American Finance Co. to specialize in the purchase of secured notes from truck, tractor and automobile dealers; $500,000; Geo. W. Platt, Joel C. Glore, Fred E. Wesselman, Jas. I. Stephenson.

Columbus—Central States Auto Assn. of Ohio Co.; $3000; G. G. Garrett, M. McMurray, W. E. White, E. Hauck, H. H. Orr.

Oklahoma.

Ardmore—Auto Dealers' Assn., Inc.; $1000; Tom Cooper, R. L. Beede, J. P. Brawley.

Oregon.

Oregon City—Oregon City Automotive Dealers' Assn.; pres., Ralph C. Parker; vice pres., Jacob S. Risley; sec., Wallace B. Canfield; treas., Lee Hall.

Portland—General Motors Acceptance Corp.; mgr., J. F. Storey.

South Dakota.

Sioux Falls—Mutual Auto Assn., Carpenter hotel, better roads, marking trails and protection against thievery; sec., Miss Mary E. Teahon.

Texas.

El Paso—Carl W. Newell Co., deal in garages; $10,000; Carl W. Newell, J. H. Nations, T. C. Holliday.

Houston—Maxwell Driverless Auto Co.; $3000; J. R. and Mrs. J. T. Tenison, Jr., W. N. Tenison.

San Antonio—American Motorist Protective League; $500; W. A. Hogan, M. D. Crawford, D. E. Wolfe.

Wisconsin.

Madison—Dalso Cab & Transfer Co.; $20,000; Rudolph and Ruth J. Jessner, Clarence Hanson.

Milwaukee:

Milwaukee Automotive Finance Corp.' to handle motor car, truck and tractor securities, notes, etc.; $100,000; T. J. Mahar, Wm. J. Sarres, Leonard M. Broenen.

Wisconsin Tire Dealers' Assn.; pres., Jas. Gudlip, Oshkosh; 1st vice pres., Henry O. Stenzel, Milwaukee; 2nd vice pres., V. H. Bosworth, Milwaukee; sec., Edwin H. Berge, Milwaukee; treas., J. E. Thompson, Milwaukee.

CAPITAL INCREASES.

Connecticut.

Hartford—Hartford Automotive Parts Co.; $1,500,000 to $2,000,000.

Delaware.

Wilmington:

Piqua Automotive Financing Corp.; $550,000 to $1,050,000.

PLATE XLI.

GREAT DEMAND FOR FILLING STATIONS

Accompanying Design Shows Superstructure of Brick Trimmed with Concrete Stone or Terra Cotta—Effect is Attractive.

FILLING stations have sprung up along lanes of traffic throughout the country, and there is a constant demand for new ones. At these one should be able to obtain oils, greases, gasoline and sundries of a nature that may be needed in emergencies, such as tubes, patches, cement, etc.

As the filling stations depend to a large extent on transient trade, it is advisable to make them as attractive as possible. As individual tastes in this respect may go into extremes, endeavor has been made in the accompanying design to simply illustrate a type.

Many persons think that a mere building with a "gas" pump at the curb makes a filling station complete, but the fact is that the real heart of a filling station is buried beneath the ground.

Units of Station.

In connection with a station, large storage tanks are required for the gasoline and usually there is need for several of them. The prospective dealer is advised to secure tanks of ample capacities, as it may happen that the demand from his customers is greater than the oil companies will be able to supply him on quick orders.

In this respect suggestion is made that a 1000-gallon tank be the average, and that nothing of a capacity of less than 500 gallons be considered.

As all stations must keep adequate supplies of lubricating oils and greases on hand at all times, this stock must be given proper consideration. In the building shown herewith provision has been made for oil storage in vertical tanks, placed in separate compartments as shown, the pumps being located directly over them, as will be seen from a glance at the plan.

Grease, lubricants, etc., may be kept stored below, with some for current use on the shelves of the store or salesroom.

Construction Details.

The foundation would be of concrete, with the main or outside wall at least 12 inches thick, while the interior or dividing wall would be eight inches in thickness. A study of the section at the right will explain fully just what the nature of the construction would be, and of its components.

The mixture for the mass concrete will be found satisfactory, if a 1-3-5 is used, which is a first class quality for foundation work. A footing has been placed underneath the walls to insure equal distribution of all loads and to prevent sinking or sagging caused by excessive weights upon concentrated areas of soil, the bearing pressure of which cannot resist the loads placed thereupon. The foundation has been allowed to extend above grade, forming the base course to receive the superstructure.

The superstructure is of brick, trimmed wih concrete stone or terra cotta, these trimmings comprising cornice and coping, or, if one so desires, the entire building may be constructed of any one of these materials, with an attractive effect being attained.

If brick is used a rough textured one is suggested, with large white joint ¾-inch thick, rough struck or raked out, either of these giving pleasing effects.

Reinforced Concrete Floor.

The floor is of reinforced concrete as shown, using a wire mesh for reinforcing, or small twist bars, the latter being placed six inches on centers, the short span, with rods running at right angles, spaced at about 16 inches on centers. Concrete for all slab work of this nature should be of a 1-2-4 mixture, good and rich.

The roof may be framed up as shown, on rafters if the building laws permit that type of construction in the district where the station is located, and, if not, a concrete slab may be erected. In either case they may be treated with a coating of tar, applying gravel according to the best tar and gravel finishes.

The interior finish may be of plaster, or the walls finished in white, unplastered. The warmth derived from plaster during the cold, damp weather, will well repay for its installation.

Cost of Building.

Heating may be obtained from a small heater placed in the basement, a hot air furnace being ample to take care of the same. A toilet and a wash stand are also situated in the basement, access being gained from the upper floor by a flight of stairs as shown.

All plumbing and piping may be of standard make, insuring satisfaction at all times. Lighting by electricity, with the outlets placed to owner's advantage, these being governed by the equipment of the station.

The cost of a building of this type and size, exclusive of fittings, would come in the neighborhood of $1500 to $1800. For further information address the Architectural Department of this publication.

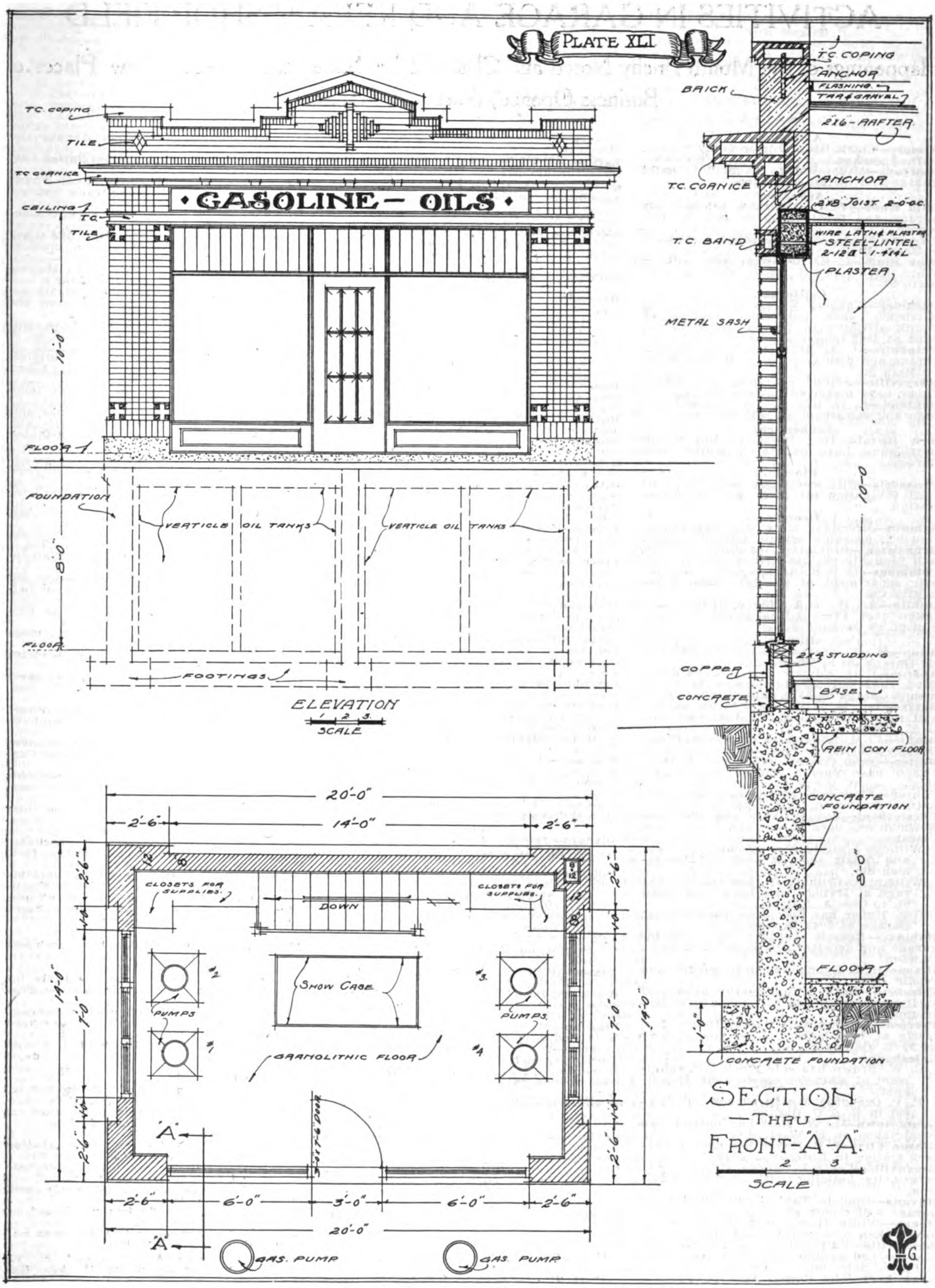


PLATE XLI
T.C. COPING
TILE
T.C. CORNICE
CEILING
T.C. TILE
GASOLINE — OILS
10'-0"
FLOOR
FOUNDATION
VERTICLE OIL TANKS
VERTICLE OIL TANKS
8'-0"
FLOOR
FOOTINGS
ELEVATION
1 2 3
SCALE
T.C. COPING
ANCHOR
FLASHING
TAR & GRAVEL
BRICK
2x6 - RAFTER
T.C. CORNICE
ANCHOR
2x8 JOIST 2'-0" O.C.
WIRE LATH & PLASTER
T.C. BAND
STEEL-LINTEL
2-12 B - 1-4x4 L
PLASTER
METAL SASH
10'-0"
2x4 STUDDING
COPPER
BASE
CONCRETE
REIN CON FLOOR
CONCRETE FOUNDATION
8'-0"
FLOOR
1'-0"
CONCRETE FOUNDATION
SECTION
—THRU
FRONT-"A"-"A"
2 3
SCALE
20'-0"
2'-6"
14'-0"
2'-6"
12
8
CLOSETS FOR SUPPLIES
DOWN
CLOSETS FOR SUPPLIES
SHOW CASE
#2
#3
PUMPS
PUMPS
#1
#4
GRANOLITHIC FLOOR
3'-0"x7'-6" DOOR
2'-6"
1'-0"
7'-0"
1'-0"
2'-6"
14'-0"
"A"
2'-6"
6'-0"
3'-0"
6'-0"
2'-6"
20'-0"
"A"
GAS. PUMP
GAS. PUMP

ACTIVITIES IN GARAGE AND REPAIR SHOP FIELD

Happenings of the Month Briefly Noted and Classified by States and Towns—New Places of Business Opened, Sales and Transfers.

Alabama.

Atmore—Clark Bros. will probably rebuild burned garage.

Florence—Miller-Buick Co. will rebuild garage and install equipment.

Arkansas.

Bald Knob—W. C. Grenshaw has sold his garage and repair shop to Roy T. Edwards.

Evening Shade—E. E. Carroll & Sons have enlarged their garage.

Pine Bluff—J. M. Reidinger and William Wolf have opened repair shop at 1030 State St.

California.

Berkeley—Thomas Eisenhuth and L. L. Kitchener have purchased interest of Frank Griffiths in Service Auto Repair Shop at 2062 Center St.

Ferndale—D. A. Branstetter has opened garage and display room in Matteri Bldg. on Main St.

Marysville—Arthur Schiveley and Edgar Taber have dissolved partnership.

Oakland—L. H. Rose Co. has opened garage and salesroom at 2345 Broadway.

Connecticut.

New Britain—Geo. Bloogood and Frank Berthieume have purchased Whitney St. Garage.

Florida.

Pensacola—City commissioners will install 500-gallon oil tank in their filling station.

Georgia.

Atlanta—Broadnax Motor Co., 253 Peachtree St.; probably rebuild burned garage.

Brunswick—Brunswick Automobile Co. will probably rebuild burned garage.

Columbus—G. S. Smith has taken over repair department of Chattahoochee Automotive Co.

Dublin—A. H. and Henry Grier have taken over Prest-O-Lite Battery Service Station on Jackson St.

Illinois.

Anna—H. W. Stokes has purchased Norris Garage on E. Vienna St.

Austin—J. D. Edwards, 5317 Washington Blvd., has purchased business of Paramount Garage at 5819 Lake St.

Barry—Geo. H. Wike has sold his garage and repair shop to W. E. Patterson and L. E. Elder.

Bluffs—J. M. Pine has purchased Priest Garage and Repair Shop.

Butler—Owen Garrett and Floyd A. Robertson have opened garage and repair shop.

Canton—Blew & Kepple have moved their battery station to 118 S. First Ave.

Chesterfield—Myron Gaher and Raymond Bowman will open garage and repair shop.

Chicago:

William J. Greig has purchased garage and repair shop at 79th and Sangamon Sts.

William A. Grunau, Jr., has sold his garage at Irving Park Blvd. and Ward St. to Geo. A. Matson.

Geo. Huber has purchased Green Front Garage at 5043 Broadway.

Dahinda—Russell Farquer has sold his garage and accessory business to Lorance Dawson.

Dixon—H. S. Lynch will open garage and repair shop.

Elizabeth—Bray & Goldworthy have sold their vulcanizing and battery shop to Ben Baumgartner.

Freeport—Starks Auto Supply House, formerly at 74 Adams Ave., is now located at 22 E. Galena St.

Galesburg:

C. W. Brown has sold stock and equipment of Main Garage to John Famulener.

F. P. Oseborne has purchased an interest in B. & O. Garage.

Georgetown—J. W. Hall has opened tire repair shop on E. West St.

Gibson City—J. B. Hayes has opened battery station in Enterprise Bldg.

Greenville—Central Garage Co. has enlarged its building with 2-story addition.

Havana—Daniels Taxi Service will open garage and repair shop on Grange St.

Henry—Willis Harris and F. Flensberg have taken over garage and repair shop.

Jerseyville—Phil Taylor and Lou Schnider have opened garage and repair shop in T. J. Butler Bldg. on S. State St.

Kankakee—John Rogers has sold his accessory business at Schuyler and Station Sts. to Asa Beeve.

Latham—John Harding has purchased interest of his partner, George Skelton, in garage and repair shop.

Lincoln—H. McMillan has purchased interest of his partner, Ray Wilson, in Wilson and McMillan Automobile Co.

Litchfield—Litchfield Tire Shop and Litchfield battery Service Station are now located in J. C. White Bldg. on W. Union Ave.

Loda—Ludwig Seaburg has purchased Iroquois Garage and Service Station.

McComb:

J. A. Atherton has moved his supply station from Park Garage to Scatt Bldg.

Gordon Sympson has purchased interest of his partner, V. Brewer, in garage and repair shop at 208 S. Lafayette St.

Macon—W. C. Chynoweth & Son have purchased C. O. Hebo Garage and Repair Shop.

Maroa—S. R. Nowlin has sold his garage business to Chas. Creekmur.

Monmouth—J. W. Gray has opened garage and salesroom.

Oakford—Benj. Boeker has opened garage and accessory shop.

Ottawa—Mundell Motor Co. has leased its repair shop to R. E. Wise.

Paris—R. W. Haynes will open repair shop.

Peoria—Everett Barlow has sold his battery service station to Harold A. Telburg and Chas. Trace.

Pinckneyville—Theo. Weihn has sold his garage and service station to John Reith.

Saybrook—John Sutton and R. Crawford will open garage on Harrison St.

Staunton—Henry and Walter Beinke have purchased business of Central Garage.

Strasburg—Clyde Lane has sold East End Garage to Ulmer Bros.

Topeka—A. H. Dissman has sold his garage and service station to William Koch.

Tuscola—Thos. Wright has sold his garage business to Earl Jones.

Waterman—Cecil W. Smith has purchased Waterman Garage.

Wateska—Leon J. Hargreaves has sold Wateska Battery Service to Warren Hoober.

Windsor—C. A. Curry has purchased the interest of his partner, A. V. Wallace, in Wallace & Curry Repair and Accessory Shop.

Worden—William Sogrecker will open garage and repair shop.

Indiana.

Advance—Harold Bennett has purchased interest of Otto Rodgers in Rodgers & Swindler Garage.

Anderson:

Fred Dixon has purchased Palace Garage at Meroidian and 14th Sts

C. J. Richardson has purchased Simmonds and Moneyhun Garage and Repair Shop on E. 9th St.

Chas. Weeks has sold Madison Battery Station on Main St. to Clifford Rhodins.

Angola—William Slick has purchased Helm Garage.

Bloomington—Millenberger & Sampson have purchased Hayes and Chestnut Garage at 4th and College Sts.

Bluffton—Main St. Garage has moved to Main and Elm Sts.

Clayton—C. A. Edmondsen has opened Ford sales and service station.

Cloverdale—King. Morrison & Foster have opened garage and service station on Market St.

Connersville—G. C. Decamp has opened garage and service station at 116-20 E. 5th St.

Covington—Leonard Bantz has sold his interest in Trott and Bantz Garage to Charles Lang.

Crown Point—William F. Carroll, Chicago, has leased Neunfeldt Garage on S. Court St. and will conduct it as garage and service station.

Delphi—William Harrison has sold his garage and repair shop to Foster & Dillinger.

East Chicago:

C. L. Cochran has opened garage and repair shop on Railroad Ave.

Paul R. Skinner and L. D. Williams have purchased Chicago Avenue Garage.

Elkhart—Geo. W. Polk has purchased Central Garage.

Greensburg—John Robbins and Frank Huntington have opened garage and repair shop on W. Main St.

Hamlet—Walter Jorgensen has purchased Hamlet Garage.

Hammond—William Herrington has taken over interests of Sid Kauffman in Herrington & Kauffman Auto Sales.

Howe—A. S. Atwater and W. D. Hudson have purchased Scherahorn Garage.

Laporte—G. S. Hillabald has sold his garage business to Geo. E. Wakeman and G. A. Croup.

Lebanon—Bert Miller & Son have sold their garage and service station on S. Lebanon St. to C. W. Patterson.

Liberty—Cecil Irwin has sold his interest in auto business to his partner, Albert Mitchell.

Marion—H. M. Miller has sold his business to Fisk Motor Sales Co.

Michigan City—Guy R. Stoddard has sold his interest in Auto Sales & Service Garage at 716 Franklin St. to his partner, Louis M. Gast.

Monticello:

E. C. Cullers have purchased Main Garage.

Ray Ward has sold his garage and accessory shop to O. Wells.

Monroeville—Arthur Stairheim has sold Peerless Garage to Grant Ginther.

Newport—W. Bert Conley has opened garage and accessory shop in Coffa Bldg.

Niles—H. F. Powell has purchased an interest in Price Garage.

North Manchester—Howard R. Roger has purchased interest of partner Samuel Leffel, in Roger & Leffell Garage.

Pleasant Lake—Kimber Weldin has purchased garage and repair shop.

Portland—Jacob Schmidt will open garage and repair shop on E North St.

Red Key—William Williams has sold his garage to Chas. A. Dull.

Richmond—S. J. Brower will open service garage and repair shop on N. Barron St.

Sullivan—C. T. Akin and E. G. Wilson have opened garage and repair shop on Section St.

Terre Haute—Steinhart Co. has removed its general auto business to 7th and Poplar Sts.

Union Mills—C. S. Hillabold has sold his garage business to Geo. B. Wakemann and C. A. Croup.

Valparaiso—Harry Pagin, who recently took over Motor Service Shop, is conducting it in connection with his garage.

Vincennes—W. H. McGinnis has purchased business of T. G. Rankin Motor Co., 11 S. First St.

Whiting—Samuel Reinschreib has sold his interest in service garage at 511-13 Tischrupp Ave. to his partner Louis Kauffman.

Winchester—Cales Garage has purchased business of People's Garage.

Iowa.

Algona—Herman Boettcher has purchased interest of his partner, F. J. Hasz, in Algona Tire and Repair Station.

Barclay—Geo. Kleckner has sold his interest in garage and repair shop to Fred Jensen.

Beaver—Dewey Wilson has sold his garage and accessory shop business to Cleve Sparks.

Council Bluffs—Zeph Fienhold has sold his garage and repair shop to Andrew Jackson.

Davenport:

W. Bashaw has opened garage, service and supply shop at 43 W. 3rd St.

A. G. McMann has sold his garage at 325 Harison St. to Roy Haskin.

Des Moines:

Alfred Miller will open service station and show room at 1420 Locust St.

Stewart Products Service Station has moved to 1600 Locust St.

Dodgeville—Iowa County Auto Co. will open garage on Iowa St.

Elkport—Jos. Kreppfle has purchased an interest in Hafner Garage.

Grundy—C. Ward has sold his garage and repair shop to F. D. Mullarky.

Marion—Elmer O. Anderson and F. W. Bailey have purchased Eighth Ave. Garage.

Mason City—L. E. Reed has purchased Mason City Garage and Repair Shop.

New Hampton:

- G. E. Hillson and Chas. Krieger have purchased stock, machinery and supplies of De Wilde Motor Co.
- V. E. Stone has purchased half interest in Blankenheim Garage.

Nora Springs—Geo. H. Heck, Morris, Minn., has purchased Thiele Garage.

Orange City—F. H. McDonald has sold his tire repair business to Henry Noordhoff.

Oskaloosa:

- Homer Darland has purchased Harper Garage.
- Floyd E. Lock has sold half interest in East End Garage at 311 S. 7th St. to Walter Bruerer.

Russell—Clifford Campbell has purchased Freight Garage.

Udell—Gus Gordon has purchased Fox Garage.

Villisca—C. J. Burnham has sold his garage and repair shop to Walter Books.

West Branch—Edward Kleineck has purchased interest of Chas. Pennock in Pennock Bros.' Garage.

Kansas.

Denmark—S. C. Page has sold his garage to Denmark Mercantile Co.

Emporie—Root Motor Co. has opened garage at 710 Commercial St.

Hutchinson—T. M. Hall has sold Bushton Garage and Repair Shop to M. W. Peterson.

Junction City—Fred C. Shane has opened battery station on W. 6th St.

Lawrence—J. K. Meinertz has taken over business of Palmer Tire Co., 11 and 13 W. 9th St.

McLouth—Silas Clark and William White have opened garage and repair shop.

Ness City—Buick Garage has moved from Hopper Bldg. on Sycamore St. to Osborn Bldg. on Pennsylvania Ave.

Parson—M L. Taylor and E. R. Berah have purchased Owl Garage at 1712-18 Washington Ave.

Scott City—C. W. Motor Co. has sold its garage and repair shop on W. 5th St. to W. A. Wright.

Wichita—Watkins Motor Co. has moved from 211-13 W. Douglas Ave. to 226 S. Lawrence Ave.

Kentucky.

Boston—R. H. Walters has opened garage and accessory shop.

Burgin—H. H. Clark has purchased an interest in garage of Bert Van Arsdall.

Danville—Willis Williams Co. has converted livery stable into garage and repair shop.

Georgetown—Frank M. Thompson has purchased a half interest in Howe and Morgan Garage and Repair Shop.

Lagrange—Ralph Raylor has sold Lagrange Garage to F. S. Taylor and C. B. Taylor.

Lexington—Easley & Son have sold their garage and service station at 109 W. High St. to Kittrell and Callaway.

Marcellus—J. M. Edwards will open garage and repair shop.

Paris—Verna Owens has purchased Citizens Garage and Service Station.

Parksville—Thomas Morgan will open garage and repair shop.

Sanders—Smith Bros. have taken over Sanders Garage.

Stanford—Stanford-Buick Co. has opened garage and repair shop on Main St.

Winchester—Baldwin & Flynn have purchased business of H. W. Davis Motor Co. on Lexington Ave.

Michigan.

Bay City—John W. Lawler has purchased Martin Garage.

Bellevue—F. W. Nicholson has sold his garage and repair shop to Lew & Holder.

Belding—North Side Garage is now operated by Frank Van Gleisen.

Charlevoix—O. D. Hammond has purchased an interest in Lakeway Garage, at State and Antrim Sts.

Charlotte:

- Grant Kiplinger has purchaser interest of Nelson E. Gibbard in vulcanizing shop of Gibbard and Simpson.
- Garn & Larke have sold their vulcanizing and accessory business to Percy Young.

Detroit—Sutton Sales Co., 821 Genessee Ave., will open garage and sales room.

Dowagiac—Claude Upson has purchased garage business from H. A. Welcher.

Gaylord—Floyd H. Sisson has purchased interest of partner, A. H. Van Doran, in Otsego Garage.

Grand Rapids—John Feitz and Carl Zumwalt have opened garage and service station at 14 Wealth St.

Holt—Walter Reece and Carol Fiedler will open garage and repair shop.

Iron Mountain:

- Victor Bellagamba will open service station at S. Stephenson Ave. and E. F. St.
- Max Sells has sold Wismer Garage on Quinnesec St. to Irving Riddler.

Jackson—Mutual Oil Co. will open filling station.

Monroe—Gus Litzen has opened auto painting shop and garage at 322 E. Elm St.

Muir—Decker & McClow have purchased Kenney Garage and Accessory Shop.

Sault Ste. Marie—Austin J. Lipsett and Jacob Bambridge have purchased Dixie Garage.

South Lyon—Chas. Conely has purchased interest of partner, C. E. Dewey, in Dewey & Conely Garage and Accessory Shop.

Tecumseh—Louis and Karl Schneider have purchased Garlinghouse Garage and Repair Shop on S. Evans St.

Three Rivers—Howard Plummer and L. C. Bent have purchased business of Battery & Electric Co.

Minnesota.

Chisholm—Earl Thomas and Warren Brown have opened garage and accessory shop at 313 W. Lake St.

Dawson—C. O. Holtan has purchased interest of D. T. Lund in Barkens & Lund Garage.

Mapleton—Business of Mapleton Motor Co. has been purchased by Joe McQuiggan and Burnham Greely.

Marshall—Jas. S. Scott and W. O. Jefferson, who conducted Marshall Radiator & Repair Shop, have dissolved partnership.

Melrose—Syvrud & Meyers have purchased garage and repair shop from A. M. Stuntebeck.

Middle Rivers—John Lund has purchased Peterson Garage and Service Station.

Minneapolis—Arthur Larson has purchased Patrick Lynch Garage at 1416 E. Lake St.

Motley—C. W. Akin has sold his garage and repair shop to W. A. Sears.

Nashwauk—P. G. Drong Browerville has taken over Motor Inn Garage.

North Branch—Dave Therrieu has sold North Branch Garage to Anderson Auto Co.

Red Wing—M. J. Seufort and E. W. Olson have opened garage and repair shop in Miller Bldg. on 4th St.

Rochester—Arthur Domke has taken over repair department of Motor Inn Garage on N. Broadway.

Rothsay—Oscar Mobraatin has sold his interest in Mobraatin & Lindberg Garage and Repair Shop to his partner, John Lindberg.

Taunton—Rudolph Amundson and Victor Gits have leased Ross Garage.

Waconia—Herbert Kemski has sold Waconia Tire Shop to L. W. Schwalbe.

Missouri.

Hannibal—Hinton Bros. have sold their garage and service station at 4th and Church Sts. to John T. White.

Jefferson City:

- Keisinger Bros. have sold their garage and repair shop on Main St. to Billman Bros.
- W. H. Remmert has purchased interest of J. H. Altheff in Main Garage and Repair Shop.

Kirksville—M. E. Cook has purchased an interest in Cannon Ball Garage.

Marshall—Celsus Durrett and A. L. James have purchased Tucker-Page Garage.

New London—H. A. Bartell has leased Hulse Garage.

Princeton—O. C. Davis and Darcy Higgins have purchased garage and repair shop in Goodman Bldg.

Rock Port—Rock Port Auto Co. has sold its garage and repair shop business to Benj. Travis.

St. Louis—Strauss Motor Car Co. will open service station.

Shelbyville—Nicholas Motor Co. has sold its accessory business to J. A. Claggett and C. S. Gatchel.

West Plains—Earl Woodree has sold his interest in Woodree Garage on E. Main St. to G. W. Hazell.

Montana.

Missoula—Sontesley Bros. have purchased Lake City Garage.

Nebraska.

Gering—Graham & Burch have purchased Gering Garage.

Kearney—Manhattan Oil Co. has opened garage, salesroom and service station at Lincoln Way and Ave. A.

Omaha:

- National Auto Accessory Co. has purchased store and garage of W. S. Auto Supply Co., 2012 Farnam St.
- Union Outfitting Co. will open garage and repair shop.

New Jersey.

Morristown—Fred McGoldrick will open garage and repair shop on Elm St.

New Mexico.

Lordsburg—Jas. Edgar has sold his garage and accessory shop to Highway Garage & Trucking Co.

New York.

Lockport—T. J. Sullivan has sold Central Garage and Repair Shop to Daniel Kill & Son.

Greensboro—Coble & Starr will probably rebuild burned garage.

North Carolina.

Reidsville—Harry T. De Lancy has opened garage and repair shop on W. Market St.

North Dakota.

Fort Rice—Herman Schoonever has opened garage and repair shop.

Ohio.

Ashtabula—Interlocking Cord Tire Co. of Akron has purchased business of Pearce Tire & Rubber Co.

Bowling Green—P. D. Hite and B. R. Ballinger have purchased Dixie Garage at 250 S. Main St.

Cambridge—Chas. Miller has purchased Cambridge Auto Service & Supply Co., 209 Dewey Ave.

Centerburg—D. D. Larimore has sold his garage and repair shop business to E. E. McGuire and French Walker.

Chillicothe—Ralph Flesher has sold his garage and repair shop on E. Springfield St. to Jas. A. Abernathy.

Du Pont—Motor Sales Co. will open sales and service station at 7002 Euclid Ave.

Marion—B. E. Baumgartner has sold his interest in Marion-Overland Garage to other stockholders.

Middletown—Standard Oil Co. has opened service station at 3rd and Leibee Sts.

Newark:

- Clyde Bowman has sold his tire and accessory shop at 47 S. 2nd to H. B. Winn.
- W. P. Winn has purchased business of Reinbald Tire Co.

N. Canton—Motor Service & Supply Co. has enlarged its service and supply shop.

Richmond—Paul Thompson has opened garage and repair shop.

Springfield—Springfield Storage Battery Co. has leased entire first floor of new Kennedy building on S. Jefferson St.

Oklahoma.

Enid—H. E. McBride has sold his garage and accessory shop to John Bennett.

Portland—Gerald Goodsell has sold his interest in Palace Garage Co. to his partner, C. W. Pilcharld.

Pennsylvania.

Titusville—O. W. Jones will open garage on W. Mechanic St.

South Carolina.

Anderson—Petroleum Oil Co., S. Main and River Sts.; rebuild filling station.

Greenville—Jackson Motor Sales Co. has purchased plant of Akron Tire & Battery Co.

Greer—C. P. Mills and W. M. Thompson have opened garage and accessory shop.

South Dakota.

Armour—Ira Smith has purchased Armour Garage.

Sioux Falls—Henry A. Homan has opened his garage and repair shop on 9th St.

Spearfish—Roy Cook has taken over C. B. Craig's garage and repair shop.

Tripp—Daniels & Moon have purchased A. B. Banker's repair shop.

Tennessee.

Dunlap—Dunlap Auto Co. has opened garage and service station.

Lafolette—J. M. Agle and Emmett Moore have opened garage and repair shop on Tennessee Ave.

Oneida—Jas. Bell Nashville will open garage and repair shop.

Texas.

Austin—Parke Houston and Richard Yett have leased Miller's Garage and Filling Station.

Dallas—Lamberttl Motor Co., Mann and Washington Sts., will rebuild garage.

El Campo—Magnolia Oil Co. will open filling station.

Galveston—Jasper Automobile Garage will probably rebuild burned building.

Hereford—Albert Murphy has purchased Hereford Garage, including filling and storage station.

Hondo—Yantis Motor Co. will probably rebuild garage.

Houston—Alamo Tire Co. has moved to 1401 Main St.

Miami—Cooperative Oil Co. will open filling station and storage tank.

Seymour—F. L. Knight will remodel garage.

Waco:

- E. M. Brown Motor Co., 929 Austin Ave., will enlarge its building.
- Hall & Fisher Tire Co. have moved to 421-23 Franklin Ave.

Vermont.

Jeffersonville—Ralph Bourne has sold his garage and repair shop.

Swartz Gasser Converts Gasoline into True Gas

THE Swartz Electric Co. of Indianapolis, Ind., whose factory is located at the Speedway, announces the development of a new device called the Swartz Gasser, and which is intended to be placed on the market in a short time. The Swartz Gasser is an automatic mechanical device for converting gasoline into a true gas, instead of a mixture of air and finely subdivided particles of the fluid held in suspension, such as is commonly used as the fuel supply of ordinary internal combustion engines, and it is stated that some exceedingly broad and fundamental claims have been filed in the United States patent office covering the process.

Attention is drawn to the fact that carburetors, of which there are scores of types in everyday use, are all made on practically the same principle, the aim being to secure as perfect a "mixture" of gasoline and air as is possible. Differences in details of constructions are devoted to improved methods of insuring such a mixture and also to the control of the proper proportions of gasoline and air supply. The Swartz Gasser is claimed to be an entire departure from the carburetor principle. Instead of the cylinder of the engine being fed with a more or less rich mixture through the carburetor, the Gasser supplies it with real gas which, when combined with the proper proportions of air forms an explosive compound which tests show develops about 100 per cent. more power a gallon of gasoline consumed than is obtainable by the best of the present methods. It is well known that gasoline under normal conditions is very volatile and gives off an inflammable explosive gas. But because of the fact that only a portion of the gasoline could be volatilized, the remainder, being too heavy, accumulated and as a constant supply of fresh gasoline was added it causes such an accumulation of this residuum that it has to be drained off or otherwise disposed of at frequent intervals.

Construction and Operation of Swartz Gasser.

The Swartz Gasser is claimed to be the first successful attempt to utilize both the volatile and heavier constituents concurrently. It is a metal gasoline reservoir connected with the main gasoline tank by an ordinary feed pipe with a float control of the usual construction. The top of the reservoir forms a gas dome which opens into the intake manifold with an improved automatic auxiliary air intake.

As the piston falls on the intake stroke it draws this gas from the dome into the cylinder. At the same time it draws through a needle valve from the bottom of the reservoir a small amount of the heavier and less volatile fluid, which goes over with the gas and is exploded with it in the cylinder. By a simple adjustment the proportion of volatile and non-volatile materials is adjusted so that the varying grades of gasoline can be used without the possibility of the accumulation of residuum. As the gas is drawn from the dome by the action of the piston head there is a vacuum created above the surface of the gasoline and this vacuum is replaced with hot air from an exhaust manifold air heater, which surges into and through the gasoline reservoir from beneath and, by means of heat and violent agitation, accelerates the formation of the gas in the dome.

Ira T. Swartz, President of Swartz Electric Co., Indianapolis, Ind.

Three Fundamental Principles.

There are three fundamental principles involved in the operation of the Swartz Gasser that are distinctive and unique.

First—Putting the gasoline under a vacuum instead of atmospheric pressure accelerates the evolution of the gas.

Second—Relieving of this vacuum by means of a current of hot air passing through the gasoline not only heats, but violently agitates the gasoline and this in turn increases the evolution of the gas.

Third—The residue which would, under ordinary conditions, rapidly accumulate is carried away as rapidly as it collects by means of the needle valve. In fact, there is no residuum at any time, because it is used concurrently with the gas evolved from the surface of the gasoline.

The final perfection of the Swartz Gasser is stated to be the result of years of work in the experimental laboratory of the Swartz Electric Co. under the personal direction of Ira T. Swartz, the president of the company, and A. E. Weaver, experimental engineer. Its future possibilities can only be surmised, inasmuch as it is applicable not only to automobile engines, but also to all styles of stationary internal combustion engines, to submarine and aeroplane use, and to the production of an economical source of gas for domestic heating, lighting and cooking. Many exhaustive tests in actual use on automobiles and stationary engines have shown an average of double the economy from a given amount of fuel consumed. An automobile which would make 10 miles on a gallon of gasoline under the ordinary method will, it is claimed, average 20 with the Swartz Gasser.

One of the Chief Difficulties.

One of the chief difficulties said to have been encountered in the perfection of the device was that the gas was so powerful and explosive that it was difficult to obtain proper control of it. One enthusiast remarked that there was as much difference between the explosive power of Swartz gas and that of the ordinary gasoline mixture as between exploding dynamite and burning wood. Swartz gas explodes, while a gasoline mixture simply burns rapidly.

CONDITIONS NEAR NORMAL SAYS HASSLER HEAD.

That business conditions are now on a solid and practically a normal basis again, with a good healthy volume of sales already in sight, is the statement made recently by Robert H. Hassler, president of Robert H. Hassler, Inc., Indianapolis, manufacturer of the Hassler shock absorber.

"We see every reason for optimism in the immediate future," said Mr. Hassler. "There is no danger of a further business apathy, because we have got back to the point where every dollar the buyer invests calls for reasonable value in merchandise based on a normal labor and material cost.

"Orders for Hassler shock absorbers are coming in splendidly, in a volume that compares quite favorably with the best seasons we have had. In fact, we confidently expect our business of this year to surpass by a large margin that of any previous season. This is expected, notwithstanding the fact that during the early months of this year we felt keenly the buying apathy, receiving practically no orders for a couple of months, just as did most other manufacturing concerns.

"I should like to say in this connection that I don't believe this nation ever saw such a wonderful change back to normal conditions, a change which entailed so little business distress, and which left all industries capable of continuing their normal courses with practically no interruption."

GASOLINE PRICE CUT.

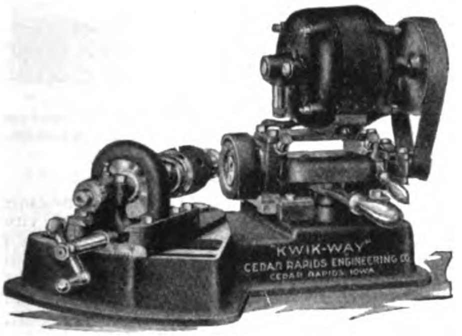
The Standard Oil Co. of New York announced on March 9 a reduction in the selling price of kerosene and motor gasoline of one cent per gallon, effective throughout New England.

"The reduction," said an official of the company, "will become operative in Maine, New Hampshire, Massachusetts, Vermont, Connecticut and Rhode Island. Outside of that territory I have no authority to make any announcement, as the matter will be handled by other headquarters."

ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The Kwick-Way Valve Facing Machine has recently been perfected and is now being built for the purpose of refacing motor valves preparatory to grinding. The valve is held by an especially designed chuck and rotated while the face is being trued up with a high speed grinding wheel. The chuck shaft, grinding wheel and motor are mounted on a symmetrical cast iron base. Electric current may be obtained from any lighting circuit.

The base is a one-piece casting, heavily ribbed and reinforced, insuring rigidity and freedom from vibration, features positively essential to obtain accuracy. The grinding wheel shaft or spindle is hardened and ground to an accuracy of one-half thousandth of an inch. It runs on high grade ball bearings, made dust proof and packed in grease.



The grinding wheel is of special shape, with a special grit, produced expressly for this machine by the Norton company. These wheels are regularly stocked by the manufacturer as well as ourselves.

The engineering force has designed a chuck that will properly center a worn valve for refacing. It is really two universal three-jaw chucks in one, working independent of each other. This especially designed and patented chuck centers the valve stem at two points 2¼ inches apart on that section of the valve stem that works in the valve guide. This insures extreme accuracy in centering a used valve for refacing. The chuck and chuck shaft are one unit. All parts are hardened and ground, being held to the closest possible limits for accuracy. The chuck shaft runs in reamed bearings, adjustable for wear, and is driven at a speed of 200 revolutions per minute by a set of worm gears from the grinding wheel shaft, which has a speed of 6000 revolutions per minute. Both grinding wheel shaft and chuck shaft are mounted on sliding carriages, the ways of which are gibbed to compensate for wear. The grinding wheel is moved across the face of the valve by means of a hand lever on front of carriage. The adjustment of the valve relative to the face of the grinding wheel is accomplished by turning the small crank at the left end of the chuck carriage.

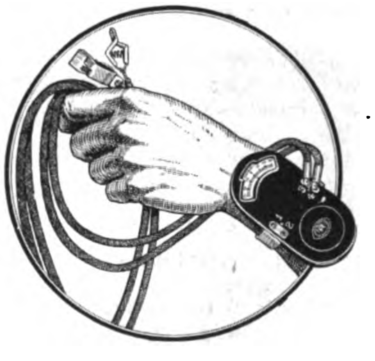
This machine will take any size valve up to and including three-inch head and one-half inch stem. It will true up the face of a valve at the rate of one a minute. By means of the graduated dial the machine can be set to grind any angle from 25 to 65 degrees. The machine has a direct motor drive through a friction cluch pulley on the grinding wheel shaft.

The same care and accuracy are stated to be incorporated in its manufacture as that employed in making the highest grade of machine tools.

Manufactured by the Cedar Rapids Engineering Co., Cedar Rapids, Ia. Literature and prices on request.

The Onan Wrist Meter is a compact little device that should appeal to every mechanic, garage and repair shop man in that it affords a practical testing instrument of the various electrical components of the car. It is worn on the wrist like a watch and is always at hand the instant it is wanted.

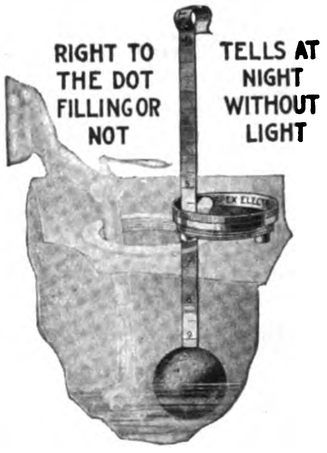
As will be noted from the cut, it is a combination instrument, comprising an ammeter automatically protected against burn-out, a circuit signal which will indicate a circuit or the absence of the same, an automatic breaker with condenser for testing all kinds of ignition systems, spark plugs, secondary parts or even for starting a high-tension magneto with the use of battery current, as well as a storage battery drop tester. In short, it is stated to be to the mechanic what a thermometer is to a doctor, and is just as well made as a watch. Each device is accompanied by an instruction book full of shop kinks gained from experience in this class of repair work.



Manufactured by David W. Onan, 43 Royalston avenue, Minneapolis, Minn. List price, including test cables and instructions, $15.

The Apex Gasoline Gauge for Ford and Chevrolet cars is claimed to be designed in such a manner as to insure accuracy at all times and under all conditions, at the same time with the least possible number of operating parts. Among its many features of decided importance attention is called by the maker to its extreme simplicity, the ability of the driver to ascertain the contents of the gasoline tank in the dark, as well as by day light, and convenience of reading the gauge while filling the tank. It is not necessary to remove the gauge while filling.

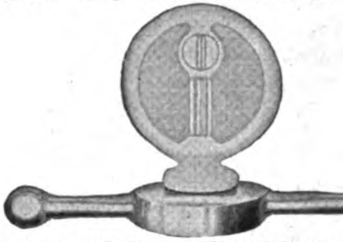
The best grade of material is guaranteed to be used in the construction of the Apex Gasoline Gauge. The indicator is of imported clock tempered spring steel and the indicating figures, are etched thereby assuring a permanent and accurate graduation.


RIGHT TO THE DOT FILLING OR NOT
TELLS AT NIGHT WITHOUT LIGHT

No tools are necessary for the installation of the Apex gauge; the old radiator is simply replaced by the device.

Manufactured by the Apex Electric Manufacturing Co., 1410 West 59th street, Chicago, Ill. List price, $1.

The Illinois Racing Type Radiator Cap for all makes of cars, which is shown in the illustration, is one of a number of types made by the Illinois Brass Manufacturing Co. and combines the features of practicality, classy appearance and durability. The Illinois Radiator Caps are made of special Illinois nickel silver alloy; the long arms make them easy to unscrew and they will not burn the fingers when the radiator is hot; there is no nickel plate to wear off and no rubber to crack or melt.



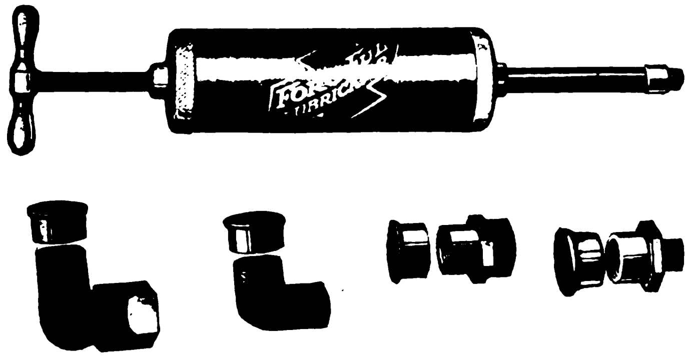
The company also markets the Durable Hub Cap and the Stutz Spare Wheel Lock Arm.

Manufactured by the Illinois Brass Manufacturing Co., 224 North Ada Street, Chicago, Ill. Prices on request.

The Forc-Ful Lubricator is especially designed for the convenient and economical lubrication of the wheels of the Ford car. The usual method of lubricating these members is to fill the hub caps with hard grease and then to screw them on to the end of the hub, thus forcing the grease into the bearing. With the Forc-Ful device the end cap of the lubricator is removed and the lubricator filled with grease, is screwed on the hub in place of the cap, and after being thoroughly seated on all the threads the plunger is screwed down and the entire contents of the lubricator may be, if desired, forced into the hub, pushing the old grease out ahead of it through the opening around the inner wheel bearing.

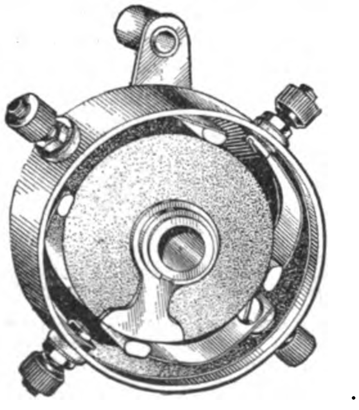
By this means every bearing of a Ford car designed for hard grease lubrication may be thoroughly cleaned and filled with fresh grease in no more time than is often spent in trying to force grease into a single bearing by the grease cup method.

The Forc-Ful lubricator equipment includes a powerful screw plunger grease gun with automatically closed nozzle, and fittings for all parts of the Ford car designed for hard grease lubrication, as follows: Four straight line connections for rear transmission bearing, universal joint and two rear wheel bearings; one special straight connection for the differential housing; two elbow conections, one each for the fan and steering post bearings; four special elbow connections for the steering pins, or king bolts, and tie rod bolts.



Manufactured by the I. C. Manufacturing Co., Chicago, Ill. Sales Department, the Ziske Co., 1323 Michigan avenue, Chicago. Jobbers' proposition on request.

The U. & J. Timer is built on a principle that is new in timers, it is claimed, but that has been proven practical for years in electrical dynamos and generators—namely, the rotor principle. The rotor is the only moving part of the dynamo—similarly the rotor is the only moving part in the U. & J. Timer, there being no rollers. The rotor of the U. & J. Timer is made of specially prepared insulating material so hard, dense and tough that it canont gather moisture, it is stated.



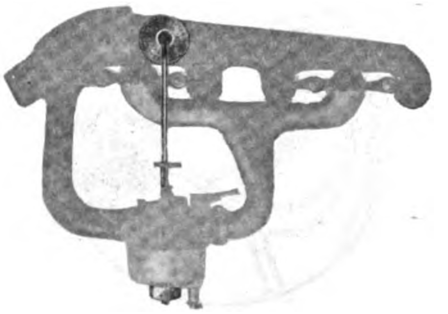
It, therefore, gives a clean wipe contact, insuring a hot spark to each plug, because the pressure exerted by the contact, determined in the design of the timer, remains uniform at all speeds. The result, the manufacturer states, is long life and perfect operation. With the U. & J. the roller is absolutely abandoned. The contact blocks are set on steel springs that exert a constant pressure. They cover the whole face of the rotor, making groove wear impossible. The springs are high tension and heat treated. They never lose their "spring" and "snap," it is claimed, even under excessive heat. Since the rotor is the only movable part revolving inside the contact blocks, all sediment falls into the base of the timer—centrifugal forge throws all dirt or grease off the rotor, so that the timer cannot become clogged. The shell of the timer back of the contact blocks is lined with insulating material, making, it is claimed, short circuits impossible. The edges of the contact blocks are rounded, both front and back, so that a reversal of the motor cannot cause damage from back fire.

The timer is strong and heavily made throughout. The terminals are strong and tight and cannot loosen.

Manufactured and sold by the U. & J. Carburetor Co., 505 West Jackson Boulevard, Chicago, Ill. Installed on a 15-day trial and guaranteed to give perfect satisfaction. Retail price, $2.50.

The Duro Fuel Converter is a new attachment for the carburetors of Ford cars which, by heating the gasoline immediately before it is sprayed into the air stream, is able to effect economies in fuel consumption that should attract widespread attention in view of the present cost and low grade of motor gasoline.

Many inventions have been offered to the motorist for the saving of fuel, ranging from new carburetors of high price and complex construction, to simple attachments to the intake manifold whose sole function is to admit additional air to the mixture without passing it through the carburetor.

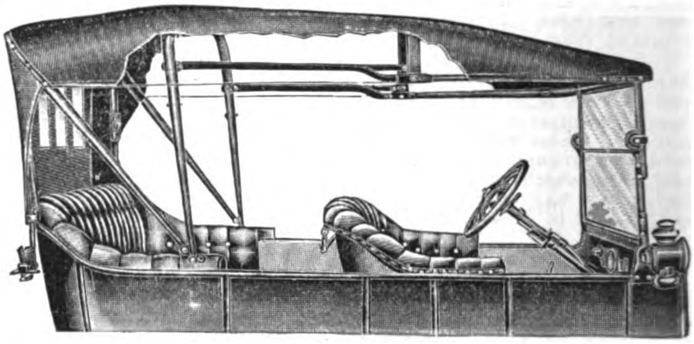


The Duro Fuel Converter is based on the principle that liquids become more fluid by heating them and on the assumption that low grade gasoline is less fluid than high grade. Its function is to reduce the viscosity of motor fuel in order that the pulverizing effect of the air stream through the carburetor shall result in a spray of the finest possible division. It is intended that the fuel in this condition: i. e., liquid, shall be carried to the cylinder in order that the highest possible volumetric efficiency shall be obtained, while at the same time having so great a fluid surface exposed to the air in which the fuel is entrained that the resultant heat due to compression and explosion shall vaporize completely and thus render available all the energy contained in the fuel at the proper time. It is obvious, therefore, that the heating of the fuel is merely intended to accomplish a fine division of spray and not intended to force vaporization, which would result in reduced volumetric efficiency.

At present the Duro Fuel Converter is being produced for attachment to Ford motors only, but the maker is preparing to equip many other standard makes of cars on which successful trials have been made.

Manufactured by the Duro Co., 96 North 15th street, East Orange, N. J. Information as to prices, etc., on request.

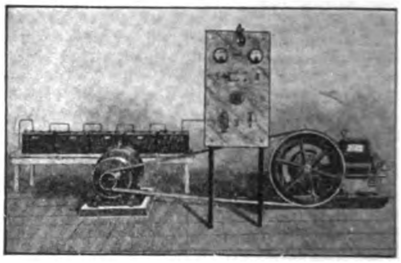
The Top Converter for Ford Cars has been developed by the manufacturer to supply Ford owners with a type of converter which quickly changes the old style top into a one-man type by simply removing the two front bows and substituting the bows and irons of the converter. With this device the top is fastened to the top of the windshield as in the one-man top, while provision is made for raising and lowering the top equipped with the converter when desired.



Manufactured by the Fulton-Houston Co., 1146-1150 South Michigan Avenue, Chicago, Ill. Price on request.

The Main MCF Lighting and Charging Set is a new outfit recently added to the well known Main line, especially designed for lighting the suburban garage and also to supply equipment for the charging of automobile batteries. It consists of the Main MCF plant using a 600-watt, 40-volt, direct current generator, a 1½-horsepower gasoline belted engine and a 16-cell sealed glass jar type battery for the lighting of the garage and an extra panel on the switchboard for charging from one to 10 six or 12-volt batteries to automobiles at a time.

This equipment is of the same high quality of construction as is characteristic of the entire line of the Main Co.

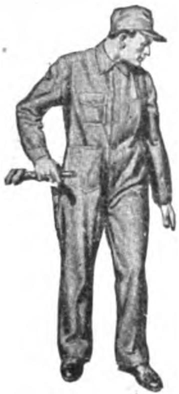


By the use of the MCF plant any garage or repair man is absolutely independent of any outside source of current and is in a position to earn big returns on the investment, by the charging of storage batteries alone, the maker states, to say nothing of the convenience of having such an outfit available at all times.

Manufactured by the Main Electric Co., Cleveland, O. List price for complete plant, $290.

The No. 028 Medium Weight Khaki Outerall, shown herewith, is one of the popular forms of Outerall Economy garments for motorists and repair men. It is especially suited to the needs of the regular garage mechanic and repair man, and its detailed description is as follows:

Jacket collar and patch pockets, four in front and two in back; combination watch and pencil pocket; convenient rule pocket; two-button cuff; special side opening for giving easy access to pants pockets; all pockets double stitched and reinforced; all seams double stitched and felled, giving double strength and no raw edges; upper sleeve extra large, permitting easy movement of shoulders; no binding when stooping or in other working positions. Fast color; best grade khaki cloth. All buttons protected throughout to prevent scratching of smooth surfaces. Sizes, 34, 36, 38, 40, 42 and 44. Extra sizes furnished upon request at additional charge.



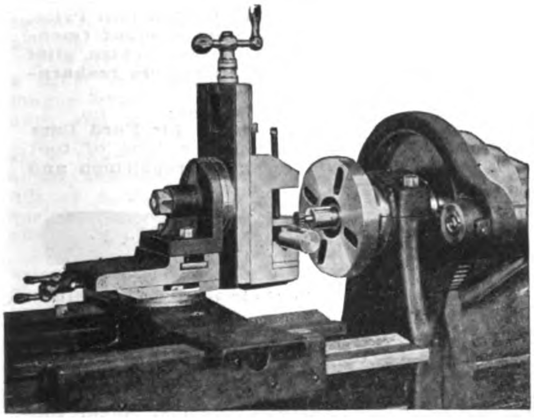
This thorough construction is typical of the entire Outerall line, which includes a nobby tourist motor coat, and there is a special garment for every trade.

Manufactured by the Michigan Motor Garment Co., Greenville, Mich. Description and prices of full line on request.

The Barnes Milling Attachment fits any of this make of sliding extension gap lathes which are now in use; i. e., 12-22 inch, 13-22 inch and 14-24 inch, and can also be fitted to other makes of lathes, 12 inch to 18 inch, equipped with compound rests.

The milling attachment is stated to be a very handy vise for a wide variety of work, including the cutting of seats for Woodruff keys, splining and squaring shafts, sawing, splitting bushings and drilling and boring small parts.

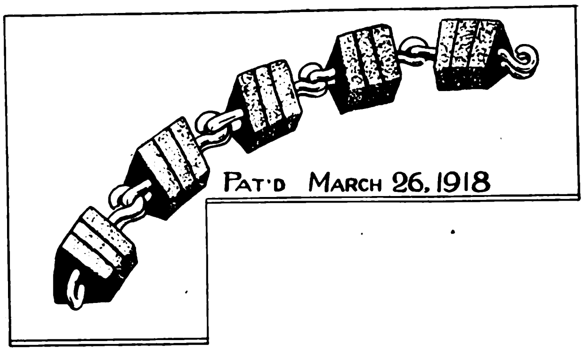
The illustration shows the style of mounting used at present. The vise swivels and is graduated 180 degrees in the vertical planes, while the collar on the vertical screw is graduated in one-thousandths of an inch.



The equipment consists of the milling attachment, complete, as shown, with steel V block steel plate, gib and bolts for attaching and ball crank handle. Cutters and arbors are not included. Specifications: Vertical feed, six inches; cross feed, 12 inches; vice will hold 4½ inches; depth of jaws, 1¾ inches; width of jaws, five inches.

Manufactured by the Barnes Drill Co., 814-830 Chestnut Street, Rockford, Ill. Prices and literature on request.

Master Link 10.000 V Belting for Fans is made from selected sole leather and steel wire links. The steel links are embodied into the leather V shaped blocks in such a way as to prevent the steel from touching the pulley at all, the leather blocks doing all the gripping and at the same time not being subjected to any bending or strain whatever, as the bending is all done at the link joints and the strain is all on the steel links. This makes it very powerful in tensile strength and the caterpillar link principle gives it a superior fan pulling ability.

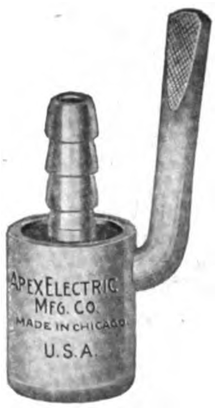


Every link is a new pull and it is claimed to be impossible for this belt to slip on the pulley. The leather V shaped blocks wedge into the pulley, grabbing and gripping it with the tenacity of a bull dog—the pulley has simply got to travel if the belt travels. And the belt does not necessarily have to be fitted tightly on the pulley. In fact the maker recommends only a moderately tight adjustment.

Master Link V-Belting is furnished on spools containing 25 feet. It can be easily disconnected with screw driver or similar tool and easily reconnected, making any length of belt desired. No special tools are required. It is guaranteed to run 10,000 miles.

Manufactured by the Master Link Belt Co., Oklahoma City, Okla. Prices, per foot: ⅝ inch, retail, 60 cents; wholesale, 40 cents; ¾ inch, retail, 75 cents; wholesale, 50 cents.

The Apex Pump Connection can be instantly attached to the tire valve by a half turn of the lever which compresses the rubber bushing, fastening the connection securely to the tire valve, thereby permitting it to become positively locked, so that it will not leak nor blow off. An upward turn of the lever releases the connection. There are no threads to become burred.

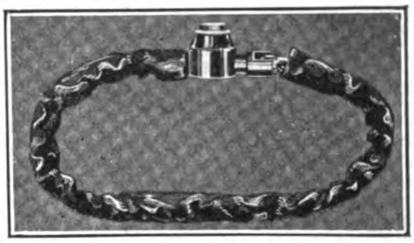


The Apex connection will fit on any tire valve and is claimed will positively hold tight under any pressure. Owing to its construction it can be conveniently used on wire wheels as well as disc.

The best grade of material is used and the device is guaranteed against any imperfections.

Manufactured by the Apex Electric Manufacturing Co., 1410 West 59th street, Chicago, Ill. Price, 35 cents each.

The Able Chain Tire Lock, as will be seen from the illustration, is a chain loop of sufficient size to attach a spare tire in its case or rack to an adjoining substantial part of the car frame, and is, furthermore, equipped with a special combination theft proof bar lock. The following extract from the report of the Underwriters' Laboratories on this device will show its efficiency under the strenuous tests of this organization:



"1. The steel chain forming the loop resisted all attempts to cut it with bolt cutters.

"2. It was impossible to even start the hack saw blade in the material or to mark it with a file.

"3. No success was had in the attempts to break the lock or loop with a two-pound machinist's hammer.

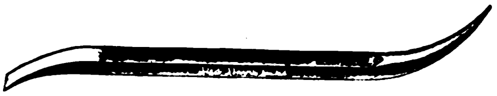
"Practicability: The installation tests show that the ordinary automobile owner can install this device in a few minutes' time without the use of any tools. The locking of the tire by this device does not require the use of a key, thereby eliminating the possibility of the automobile owner forgetting or losing the key.

"Durability: This device is capable of withstanding the deteriorating effects of wear and tear for a reasonable period of time. The device is made of a good grade of material. It is therefore believed that this device will be sufficiently durable to last for the life of the automobile on which it is used.

"Summary: From the conclusions drawn it will be noted that this device is practical to install and use; that it is durable and that it is uniformly manufactured."

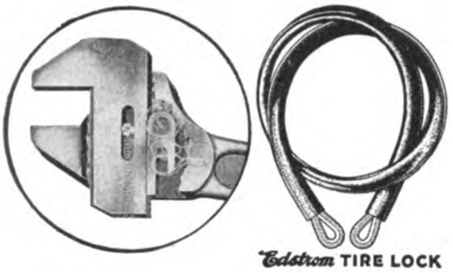
Manufactured by the Able Manufacturing Co., Inc., 731 Folsom street, San Francisco. Ill. Prices on request.

The Red Devil Cotter Pin Extractor is designed to fill an essential place in the tool kit of every motorist. When it is realized that in an average car at least 80 cotter pins are used and that they frequently become rusted or lost in the process of repairs, thus making frequent replacements necessary, it will be readily seen that some such device as the Red Devil Cotter Pin Extractor is as worthy a place in the motor car equipment as a jack or tire pump. The Red Devil is strongly made from octagon tool steel, 90-point carbon Swedish analysis.



Manufactured by the Smith & Hemenway Co., Inc., Irvington, N. J. Price on request.

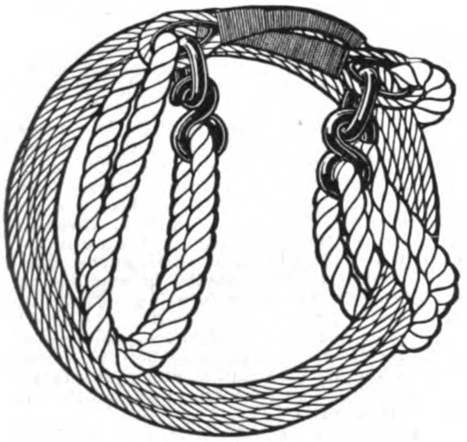
Edstrom Tire Locks are stated to be made from the same high tensile strength aeroplane strand of wire cable as the Kantkick Towline, with the ends machine wire wound to prevent fraying and the lock is covered with a high grade of chrome tanned leather, which harmonizes with the car finish.


Edstrom TIRE LOCK

Another article manufactured by this company which has superior merit is the pipe wrench, which is fitted with special jaws for pipe and round stock. It is stated that the wrench is instantly adjustable and locked by the action of the thumb lever. The improved jaws are made of tool steel, easily replaced when worn at small cost.

Manufactured by Jessop & Thompson, 1421 South Michigan Ave., Chicago, Ill. Prices of the tire lock, 36 inch length, $1.75 each; 42 inch length, $2.10 each. Price of wrench on application.

The Kantkink Towline is claimed by the manufacturer to be the big-little towline that is guaranteed not to kink, snag or snarl. It is big in service and small in bulk, which is made possible by the special Roebling aeroplane strand of high tensile strength, from which the towine is made.


Edstrom KANTKINK TOWLINE

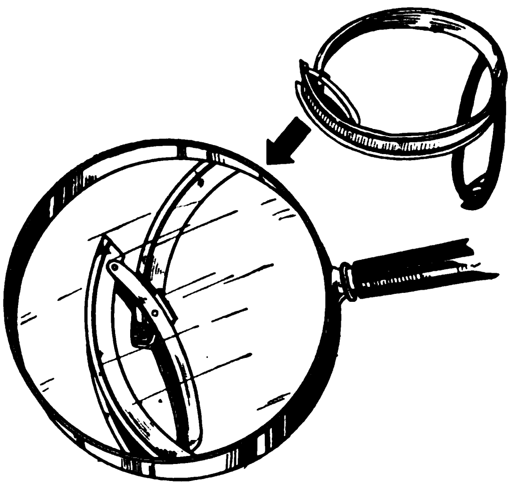
A feature of the towline that recommends it to motorists is that the towline will uncoil straight and when folded stows in a small space in the car. The ends are machine wrapped to prevent the ends from fraying and are fitted with manilla rope slings and special hooks for quick hitching to the car axle.

Made in three sizes for the Ford, touring car and heavy trucks.

Manufactured by Jessop & Thompson, 1421 South Michigan Ave., Chicago, Ill. Prices according to size, $5, $6.50 and $9.50.

Raymond Demountable Rims operate on an improved principle which renders them distinct from others of the split type in that a U shaped lever is provided which affords an exceedingly easy method of reducing the circumference of the rim, allowing an easy slip-off or slip-on of the tire. This patent lever device, when the tire is on the rim, acts as a lock to hold the rim ends in alignment.

It will be noticed that the lever operating the rim extends out from the flange of the rim. To mount on the felloe band already on the wheel, place the Raymond rim on the felloe band, allowing the drive member to seat (this driving member may be either a depression or a stud drive) properly in the felloe band, carefully mark the position the extending end of the lever strikes the felloe band. By taking an ordinary monkey wrench or a hammer the edge of the flange of the felloe band can be bent so as to allow the rim to seat on the felloe band perfectly.



The three points of superiority claimed for the Raymond are, first, that it is possible to change a clincher tire without the aid of a tire tool in a moment's time; second, that the materials entering into its construction, together with the thorough workmanship required, insure a surplus of strength far in excess of actual requirements; third, that, as reducing the circumference of a rim is the simplest method known to modern engineering in making a tire change, by designing this patent rim to perform this duty of a circumference reducer as well as a rim lock, an idea has been evolved which makes the device so simple a child can operate it.

The Raymond demountable rims are designed to accommodate all sizes of clincher rims.

Manufactured by the Raymond Rim & Wheel Co., Jackson, Mich. Prices and literature on request.

The Lincoln Tire Gauge is a scientifically designed precision instrument intended to make tire inflation an easier and more satisfactory operation. This is accomplished by eliminating alternate inflating and testing. In service it is only necessary to set it for the pressure desired, fasten it to the tire valve by the simple movement of a lever and turn on the air, which enters through the check valve at the top. A whistle notifies the operator when the tire is inflated.

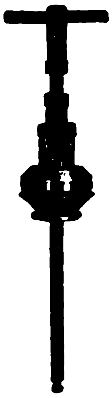
LINCOLN
PATENTS PENDING

To set the knurled head is turned to right or left, micrometer fashion, for the exact pressure desired. The body of the gauge is hard brass, finely polished and nickel plated, while compression springs are made from crucible steel wire.

Manufactured by the Lincoln Products Co., 161 Massachusetts Avenue, Boston, Mass. Price and literature on request.

The Halburn Adjustable Reamer is an improved valve seat reamer with an expansion of wide range, it is asserted by the manufacturer. Other claims made for it are that this one tool will do more work than four sets of solid reamers, thus effecting a saving of 80 per cent.; and it is quickly adjusted to dimension by the turning of two nuts, after which the cutters are locked in position by turning one of these nuts—a simple, quick operation.

The Halburn adjustable reamer is designed for strength; the cutters are properly hardened and ground tool steel that slide in a slot having a 45-degree base. This brings the pressure against the solid body of the tool, making it impossible for the cutters to flip out, it is stated, and giving the same effect as a perfectly solid tool. Owing to the cutters seating in a 45-degree slot, the pressure drives them toward the center, preventing them from getting out of alignment. The center stem is solid throughout, giving, it is claimed, absolute accuracy to the guiding of the cutters. The pilot stems are made interchangeable by slipping them over the solid stem. A cross bar wrench is supplied so that the pressure will be directly over the center of the tool. The tool can be lowered through a small port hole and expanded after it is inside the port.

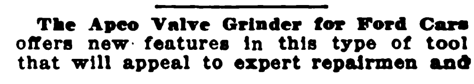


The 45-degree cutters are specially designed to cut all regular 45-degree valve seats. The base is only 1 1/16 inches, small enough to be used in the Northway engine. Interchangeable cutters for 30 and 60 degrees and concave cutters for the Fordson tractor can be supplied at a slight additional cost. The cutters can be quickly sharpened.

The Halburn Adjustable Reamer is packed in a substantial box and is accompanied by full instructions. Two sets of 45-degree cutters, 5/16, ⅜ and 7/16-inch pilot stems, and wrench are included.

Manufactured by the Halburn Co., 317 West Pico Street, Los Angeles, Cal. Price, $12; extra cutters, $2 a set of eight (mention whether large or small); extra pilot stems, any size, $1 each; cutters resharpened, 25 cents a set.

The Apco Valve Grinder for Ford Cars offers new features in this type of tool that will appeal to expert repairmen and motorists who do their own valve grinding.



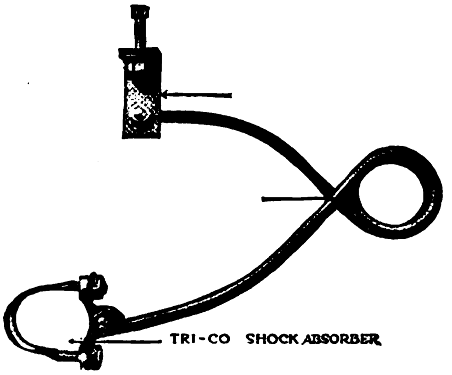
When in operation the Apco grinder holds the valve firmly so that it may be raised from its seat. A universal joint makes possible the grinding of the last valve, while the revolving disc under the handle prevents the hand from slipping down, when turning the handle between the palms of the hands. The grinder is well finished, weighs one pound and measures 12 inches over all.

Manufactured by the Apco Manufacturing Co., Providence, R. I. Price, 50 cents each.

The Tri-Co Shock Absorber is stated to be especially designed for the purpose of stabilizing, snubbing and softening road shocks—all in one. The attachment of this shock absorber is made directly from the running gear to the body, independent entirely of the springs, with the idea of eliminating any spring interference. The regular springs on the Ford car, in this manufacturer's estimation, are ample for all purposes for which a spring is intended and modification of their action brings about a very undesirable result.

The Tri-Co shock absorbers are effective in snubbing the up throw of the car on bad roadways. They also act as a cushion on the down throw when bad roadways with extraordinarily bad holes are encountered. The stabilizing effect is gained principally through the front end of the car where the upper end of the snubber is attached to the lamp post bracket and the lower end of the device to the front axle. When the shock absorbers are placed in position on the car down pull is exerted to provide constant tension on the body and lessen the up throw and swaying action.

The front attachment is made by removing the nut on the lamp post bracket of the front light to which the bracket of the shock absorber is attached and the nut replaced. The lower end encircles the front axle where two steel fillers are placed to strengthen the clamp attachment of the front absorber. The bar of the shock absorber is ½ inch in diameter and is treated by one of the best known processes for bringing out a fine coiled spring, which is said to be sufficiently heavy to be very effective in adding to the riding quality of the car.



The rear absorber is attached by removing the ordinary body bolt found on all Ford cars; a longer bolt is replaced in the same opening. The lower end of the shock absorber is carried direct to the car housing.

When the down pull is exerted in all four springs the settle of the car is stated to be equivalent to a weight of about 40) pounds.

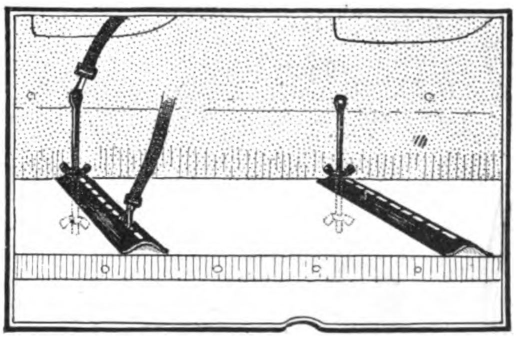
The attachment, when in position, gives a short wheelbase car the quality of a longer wheelbase car in effecting the balance and stabilizing the driving quality.

Exhaustive tests made with the springs show them to be serviceable not only as shock absorbers, snubbers and stabilizers, but as a sure method of prevention of spring leaf breakage, as they are very effective in the cushioning of severe jolts.

Manufactured by Trico Products Corporation, 624-628 Ellicott street, Buffalo, N. Y. Price, complete set, front and rear, ready to attach, $15, in U. S. A.

The Loxtite Carrier can be fitted to any automobile in less than a minute; two narrow metal strips and two small metal uprights are fastened to the running board. These two uprights slip through perforations in the running board, being held securely in place by wing nuts and serve to lock the metal strips in place The wing nuts when tightened enable the uprights to bear most of the strain. Four straps which snap into metal strips and uprights and buckle at any point, lock tightly in position luggage of any size or shape. The luggage held in place by these uprights cannot rub against the body of the car to scratch or mar it. Unscrewing the lower wing nuts allows the complete equipment to be removed in less than a minute.

The flat metal strips are rounded on top and therefore offer no obstruction to the use of the running board. If desired they may be swung back to lie against the car body and are almost invisible.



The uprights are so small as to be hardly noticeable when not in use.

The metal parts are black enamelled; the straps similar to the Webb military equipment are black also. When the carrier is in use nothing but the luggage and the two straps is visible.

When detached the entire Loxtite Carrier weighs one pound, is contained in a cover and can easily be carried in the door pocket of any car or a coat pocket.

Apart from its simplicity and the fact that it can be attached or detached so quickly, one of the chief advantages claimed for the Loxtite Carrier is its great adaptability. The Loxtite will hold securely in place any material which can be put on the running board of a car, from a large trunk or case, or sacks, to a small flat package, or package of irregular or round shape. The materials used in its construction are stated to be the best obtainable. The tensile strength of the steel parts is sufficient to hold 1000 pounds and, of the straps, sufficient to hold 400 pounds.

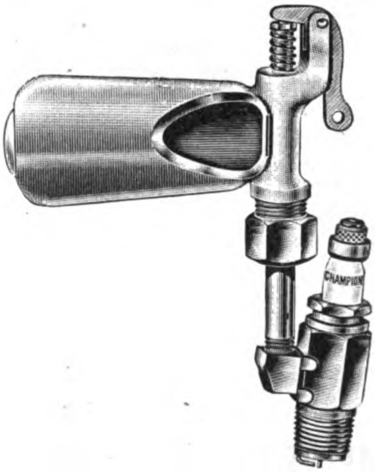
The Loxtite is made in two sizes: The standard is for any luggage extending not more than four inches beyond the running board. This carrier has metal strips 8¾ inches long and uprights five inches high. The larger size is for any luggage extending more than four inches beyond the running board and the metal strips are 11½ inches long and the uprights seven inches high giving additional support and added protection.

Manufactured by the Loxtite Carrier Co., 1776 Broadway, New York City. List prices: Standard size, $3.50; large, $4.25.

The Illinois Nopowerloss Explosion Whistle is especially adapted for use on automobiles, motor trucks, motor boats and motorcycles. Its installation is stated to be very simple and its operating cost is nothing. It is stated to embody the following principal features: When the whistle is in operation no loss of power is noticeable; the engine will not knock; there is no strain on the engine bearings; the car will run smoothly with the whistle in operation; it will not crack the porcelains when attached to a spark plug; the aluminum whistle will not melt from heat; air cannot be drawn into the cylinder through the whistle and poor combustion and loss of power from this source are eliminated; it is absolutely fool proof.

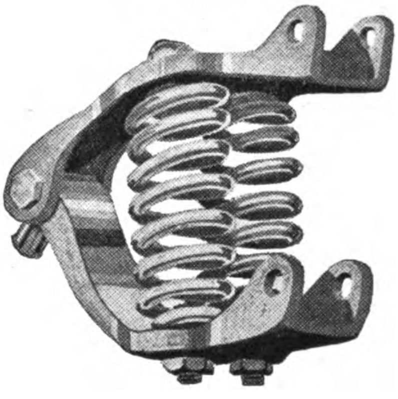
The Illinois Nopowerloss Explosion Whistle for priming cup is made of pure cast aluminum, highly polished. The fittings are of cold rolled steel, nickel plated. A special cord is attached for its operation.

The cut shows the Nopowerloss whistle with spark plug attachment. Its construction is otherwise similar to the priming cup type. The elbow and four-prong lock washer by which it is attached are made of cold rolled steel. The elbow is screwed against the washer to the spark plug and the prongs of the washer are bent downward against the spark plug. The other two prongs are bent upward against the elbow, making a positive lock.



Manufactured by the Illinois Brass Manufacturing Co., 224 North Ada street, Chicago, Ill. Price, for priming cup, $3.50 each; with spark plug attachment, $4.75 each. Illinois elbows, separately, 20 cents each; lock washers separately, five cents each. Order by number, as follows: No. 1 for priming cup; No. 2 for ½-inch spark plug; No. 3 for ⅞-inch spark plug.

Hayes Shock Absorbers have been proven, it is stated, after three years' satisfactory service, to afford in the highest degree, riding comfort, car protection, more mileage to the gallon and decreased tire wear. They have the effect of lengthening the springs to more than double their normal length, allowing the wheels to pass over all road obstructions, reducing the force of the shock to the body of the car, its mechanism and passengers and are stated to make a car ride as easily with one passenger as when fully loaded.



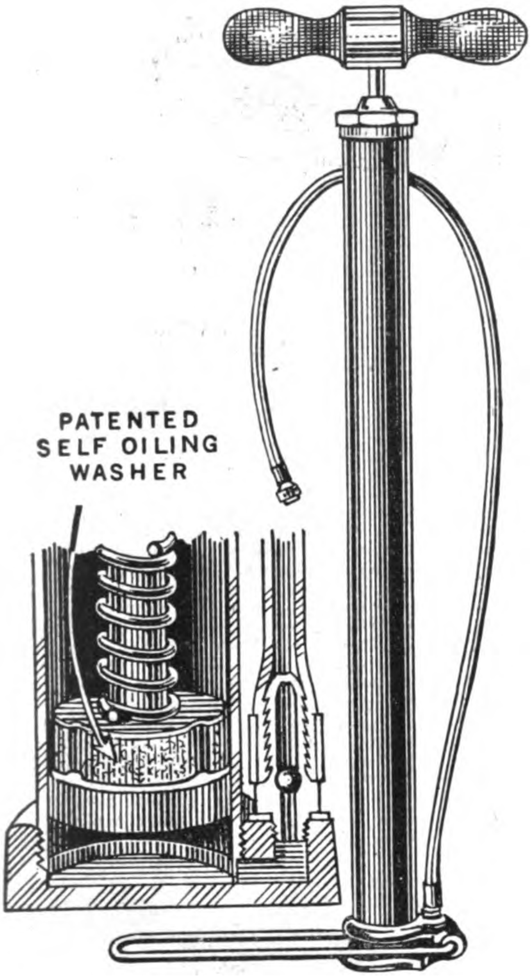
A single spring model is especially adapted for the front end of cars fitting between the rear end of the front spring and the car frame. A double type is designed for attachment at the rear, which fits at the end of the spring. A special underslung type is also made for Dodge rear attachment, or for any car equipped with three-quarter elliptic spring, which is easily installed with the original grease bolts on the spring.

The Hayes shock absorber fits practically every model of car except the Ford, and can be installed on front or rear springs. Full particulars for equipping any car will be furnished on request.

Manufactured by the Hayes Shock Absorber Co., Minneapolis, Minn. List prices: Single spring, front, per pair, $17.50; double spring, rear, per pair, $20; set of four, $37.50.

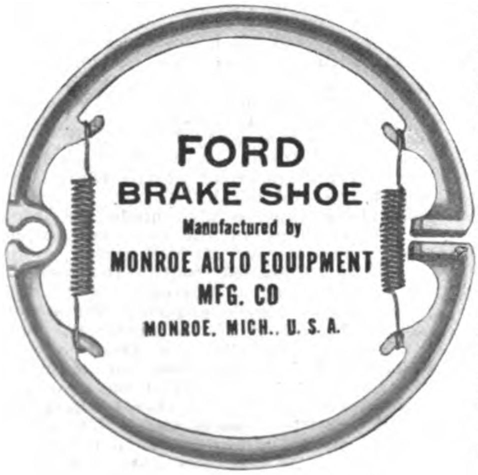
The Monroe Self-Oiling Tire Pump is offered as standard equipment on high grade cars in that through its patented self-oiling washer feature, shown in the cut, it is always in serviceable condition at an instant's notice.

A complaint is born the moment a tire pump cannot respond to a call for its service. Lying in a tool box, the leather washer is apt to get dry, and it is useless; it disappoints when it should serve and the dealer is blamed for selling an article that is "no good."

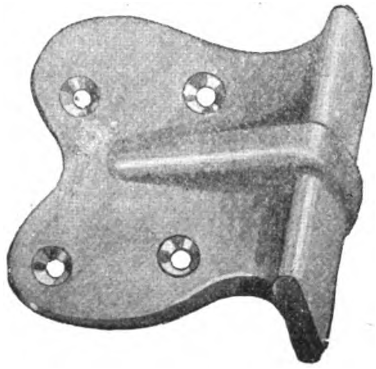


Monroe self-oiling pumps always respond. The leather is always soft and pliable. The oiled felt washer feeds a little oil to the leather on every up-stroke of the pump through the spring action (see illustration) and a full barrel of air goes into the casing—no exertion, no slipping and no loss of time.

Monroe pumps are made in two models: The No. 10 is 21⅞ inches in height, the cylinder is 1½ inches in diameter, and it is finished in black enamel with nickel ferrule and cap. The No. 5 is the same as the No. 10 except that the cylinder is 1½ inches in diameter, and there are minor differences in shape of handle and foot standard.

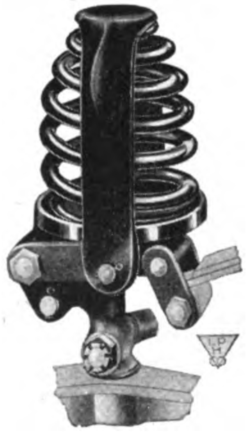


The same concern also specializes on the Ford brake shoe, which is cast to fit any Ford, and sedan and closed car spot light brackets. These latter are curved or flat to fit either style of post, are machined of heavy cast iron and are finished in black enamel, baked on. These brackets will fit the following cars: Dodge Brothers, Ford, Buick, Overland, Oakland, Hudson, Chalmers, Packard and many others.



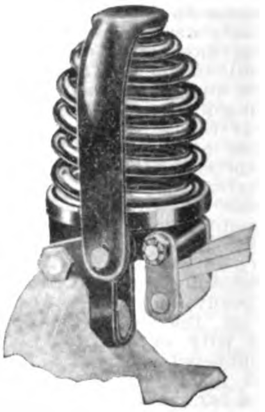
Manufactured by the Monroes Auto Equipment Manufacturing Co., Monroe, Mich.; sales representative, the Fulton Co., Milwaukee, Wis. Prices: Monroe Self-Oiling Tire Pump, No. 10, $2.75; No. 15, $3. Sedan and closed car brackets, 75 cents each. Ford Brake Shoe, 70 cents a pair.

The Halladay Direct Suspension Shock Absorber is stated to be especially designed for and effective in service on the Ford car in that it works on the principle of preventing the rebound by eliminating the cause. A leaf spring, violently and excessively forced out of the normal curvative will recoil nearly as far in the opposite direction. The only way to avoid such recoil is to prevent the original deflection. The accompanying sketches show the front and rear attachments.



The maker of the Halladay Direct Suspension Shock Absorber has been designing and manufacturing shock absorbers for years and this latest product is stated to be the result of all this beneficial experience and to be the last word in shock absorber efficiency. As will be noted, it is of the well known "bee-hive" form and has all the late improvements, such as bushed bearings and extra heavy yokes, eliminating liability of breakage and excessive wear. There are no frictional bearings to interfere with the spring action and no light breakable parts to be lost. It is stated to place no additional load on the leaf spring or strain of any sort to cause bending or breaking.

Halladay Direct Suspension Shock Absorbers are built in touring or coupe, sedan or light commercial truck, and roadster models and are packed in a durable carton with complete directions as to attachment. In ordering, the make of car on which the absorbers are to be used should be specified.

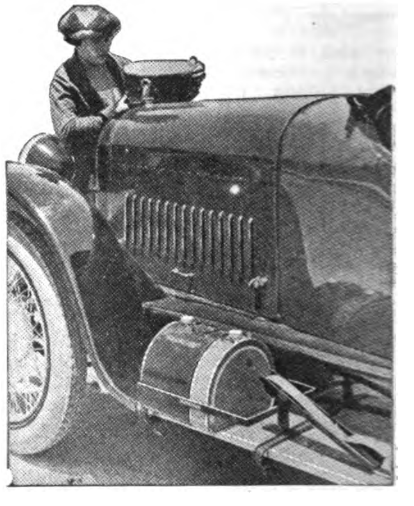


Manufactured by L. P. Halladay Co., Streator, Ill. Price, per set of four, $18.50.

Boyco Service Units are combinations, in compact, handy form of Boyco Autocans for gasoline, oil and water. They are made in various sizes and combinations to accommodate the particular needs of every user.

The Boyco Service Unit is now becoming recognized as a practical necessity. It does away with odd sized, separate cans. It is easily carried, well built, sturdy and of actual value wherever gasoline motive is used.

As will be noted from the illustration the Service Unit is securely and snugly fastened to the running board and cannot work loose. The Autocans are combined in a neat, substantial frame, equipped with two clamps for fastening to the running board or like object and a top channel bar through which a heavy web strap passes and buckles at the side. With this construction they are securely and snugly held, having four places of contact.



The top channel bar holds the handles in place and eliminates all rattles. The strap running through it protects the caps and acts as a stopper in case they are mislaid.

Its substantial build, sensible pattern and actual usefulness appeal in every locality at all times of the year.

The Boyle Manufacturing Co. also markets an extensive line of canteens and carriers, camp grates and other touring equipment, as well as articles to make life better worth living for car owners who make their own repairs, such as the Boyco Allcar Creeper.

Manufactured by the Boyle Manufacturing Co., Santa Fe avenue and 51st street, Los Angeles, Cal. Descriptions and prices on request.

The Able Combination Auto Lock is a compact device made of high grade bronze; the working parts cannot rust or corrode. It becomes a permanent part of the car and will last the life of any car upon which it is installed.

It is as easy to lock or unlock the Able combination as it is to turn on the batteries—but it is absolutely impossible to unlock it without knowing the combination. The combination device on the Able lock is non-pickable and positively theft proof.

Few people will bother to use an auto lock that requires the least inconvenience in locking or unlocking. One failure to lock may be fatal. The Able Combination Auto Lock gives security without inconvenience. It is easily and quickly operated from the seat and there is no mud, dust or grease to soil hands, gloves or clothes.

LOCKS
ABLE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

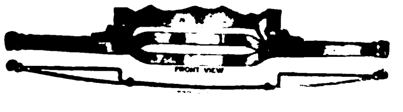
The Able lock is placed in such a position on the steering post that it is practically impossible to use a cold chisel, hack saw or Stillson wrench on it in an effort to break it from the steering post and thus unlock the car.

The driving tests showed that a thief would be unable to steer the car in such a manner that he could drive for any considerable distance down the street, nor could he turn a corner in order to get the automobile to a point where he could work on it at his leisure.

Manufactured by the Able Manufacturing Co., Inc., 731 Folsom street, San Francisco, Cal. Prices and literature on request.

The Halladay Twin-Bar All-Steel Truss Spring Bumper is designed to appeal to anyone desiring a bumper of massive appearance and exceptional strength, without unnecessary weight. The truss spring bumper feature is still retained, as it is considered by the maker to be positively the best type of construction to stand the severe concussions to which a bumper is subjected. The flexibility of a double, full length spring steel bar of highest grade insures the greatest possible protection.

The fittings of this bumper are also made of spring steel, thus presenting an all-steel construction, eliminating breakage. It is handsomely finished in either black japan with nickel end caps and name plate bolts, or buffed nickel plate over a heavy coat of buffed copper, preventing rust.



The Halladay Twin-Bar Bumper is supplied complete, as shown in cut, or the manufacturer will furnish it with any other of the regular Halladay fittings, either front or rear. It is packed in a standard carton, four by six by 60⅓ inches, and is shipped in cases containing 10 cartons each unless otherwise specified. The weight of the bumper bar is only 26 pounds.

Manufactured by L. P. Halladay Co., Streator, Ill. Price, with any style fittings: Twin-bar, two by 5/16 inch, Japan finish, $16; nickel plate finish, $18.

The Allen Combination Gas-Air Blow Torch, Soldering and Branding Tool, for either gas or gasoline, is stated to be a new device equally well adapted for precision, medium or broad surface work. Heat is projected into an opening inside the shank of the tip of the tool, keeping the outside surface of the tip clean and at an even heat and free from carbon Its use obviates the frequent going back and forth to the fire, whether the tool is required as a portable or stationary equipment. The temperature range is 1300 to 1900 degrees Fahrenheit.

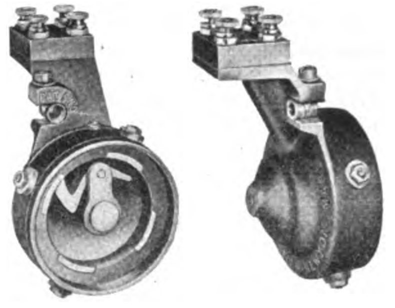
The flow and proportioning of air and gas are under positive control and intense heat is concentrated at a point. Rapidity of operation and fuel economy are claimed for the Allen tool. All parts are interchangeable and flexible steel tubing may be supplied in any length for air and gas.

It may also be supplied with a holding post which holds the torch, leaving both hands free for the manipulation of the work. The tool may be raised or lowered, on the post, tilted up or down or swung in a circle. Cups are also attached to this post convenient for holding flux.

Soldering tips of pure copper, cast or wrought, are supplied, standard or special, as extras, either straight or elbow. The Allen gas soldering tool, blow torch and branding tool is also supplied for gas only, with a temperature range of 1290 to 1700 degrees Fahrenheit.

Made by the L. B. Allen Co., Inc., 4521 North Lincoln Street, Chicago, Ill. Literature and prices at request.

The Newton Timer for Ford Cars, front and rear views of which are shown herewith, presents, among other features, a bone fiber terminal block mounted on a hollow arm projecting from the main part of the case, which is made of cast iron, and in the terminal block are four numbered terminal screws, each connected by an internal wire to its corresponding contact segment of the contact race. This race is of the usual construction, consisting of a bone fiber ring and steel contact segments set into the ring. With this design the lead wires are removed from contact with oil and dirt in the drip pan and kept from chafing against the adjacent parts of the engine. The rotor or contact assembly consists of a brass composition brush holder and a special bronze alloy brush; the latter is actuated and pressed into contact by a steel wire spring coiled about the pivotal pin of the brush, the ends extending outwardly, one end bearing against the barrel of the brush holder and the other end against the arm of the brush. The design of the brush is stated to be such as to allow a generous amount of wearing material and, as the brush wears, continually presents a forwardly projecting cleaning edge, which keeps the contact race bright. By the bronze brush making contact with the steel and also by reason of the peculiar shape of the brush, an excellent electrical contact is said to be made and the wear of the contact race is very slight and uniform in character.



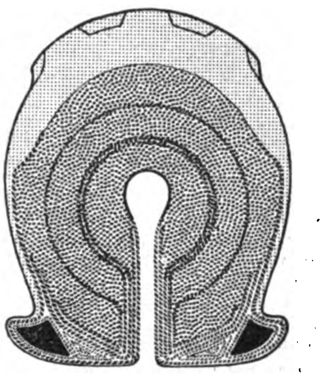
The principle amount of wear occurs on the brush, which is guaranteed by the maker to be good for 10,000 to 15,000 miles of service, and as the case will outlive several brushes, it is evident the device is economical as well as efficient. A steel bearing for the operating rod is provided and held in place in a slot in the arm by a conical pointed clamping screw, the point of which engages with a groove in the bearing piece. The oiler is placed at the top of the case at the rear of the projecting arm.

Manufactured by the Newton Timer Co., 42 Parsons Street, W. Newton, 65, Mass. Retail price of timer, complete, consisting of case and contact assembly, $3.50; extra contacts, 75 cents.

The Liberty Airless Tire is a tubeless cushion tire of high resiliency, composed wholly of rubber and fabric, and with a small central cavity to further increase easy riding.

Tested side by side with a properly inflated pneumatic it is said to be fully as resilient.

The tread and outer walls are composed of extremely tough and wear-resisting rubber, and the interior consists of highly resilient red rubber, reinforced by layers of fabric.

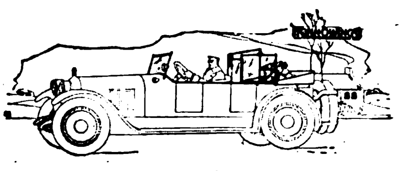


The tire looks exactly like a pneumatic on the wheel, and is interchangeable with any pneumatic on the same rim.

Being airless, it cannot puncture, or blow out, it is stated, and its makers report an average mileage in service between 25,000 and 30,000 miles with no trouble, care or repair.

This tire is manufactured by the Liberty Airless Tire Corporation of Carey, O., who has just completed and put into operation a modern three-story plant.

Gemco Tonn-O-Wings. A device recently placed on the market, is stated to be meeting with success from dealers and jobbers handling it. Tonn-O-Wings are attached in a few minutes time to the top rest at each side of the tonneau. They are so designed that a 12-inch wing of plate glass can be adjusted to any position desired by the occupants. In this way complete protection from the discomforts usually found in driving is afforded, but a conversation can be easily carried on between the occupants of the front and those of the rear seat.



A big feature of this device is that the wings can be quickly and easily attached without changing or damaging the car. This gives it the added advantage of being inexpensively and easily installed.

Tonn-O-Wings are made in four sizes, ranging in price from $51 to $60, and the manufacturer will be pleased to make recommendations to car owners if furnished the make and year of the car for which the wings are desired.

Manufactured by the Gemco Manufacturing Co., Milwaukee, Wis. Circulars on request.

S. A. E. Announces 1921 Standard Divisions

THE organization of the 1921 Standards Committee of the Society of Automotive Engineers has been completed. It contains 25 divisions, with a total personnel of over 200. B. B. Bachman of the Autocar company is to continue as chairman.

The 1920 miscellaneous division has been divided into the screw thread and the parts and fitting divisions. The latter division will consider such subjects as ball studs, horn mountings and serrated shaft fittings.

A passenger car body division also has been appointed and will consider subjects the standardization of which will be advantageous to both body users and manufacturers.

The complete list of the 1921 divisions and the more important subjects assigned to them follows:

Aeronautic—Engine nomenclature, elastic cord for shock absorbers, engine name plates, fabric tests, hose and hose clamps, performance and static tests, synchronizer attachments and wheels.

Ball and Roller Bearings—Roller bearings, thrust ball bearings and clutch release bearings.

Battery—Industrial truck and tractor batteries.

Chain—Rollerless bushing chains and roller chain sprockets tooth forms.

Electric Vehicle—Lamp voltage and vehicle motor ratings.

Electrical Equipment—Automobile wiring, generators and starting motor mountings, insulated cable and flexible disc magneto couplings.

Engine—Fan hubs and V belts.

Frames—Passenger car frames.

Iron and Steel—Molybdenum steels, physical characteristics of S. A. E. steels, sheet steel and steel tubing.

Isolated Electric Lighting Plant—Storage battery rating and knife switches.

Lighting—Bases, sockets and connectors, head lamp brackets and nomenclature.

Lubricants—Lubricants.

Motor Boat—Engine brackets and exhaust manifold connections.

Motorcycle—Priming cups.

Non-Ferrous Metals—Die casting alloys, physical characteristics of non-ferrous alloys and wrought non-ferrous alloys.

Parts and Fittings—Ball studs, brake lining specifications, exhaust pipes, pipe fittings, horn mountings, serrated shaft fittings and universal joint companion flanges.

Passenger Car Body—Body standardization.

Radiator—Radiator standardization.

Screw Thread—Carriage bolts, pressure gage connections and drain cocks.

Springs—Test for parallelism.

Stationary Engine—Flywheel pulley lugs, oval pipe flanges and stationary engine pulleys.

Tractor—Anti-freezing solutions, belt speeds, plowing speeds and testing forms.

Transmission—Clutch facings, transmission drive for speedometers and tire pump mountings.

Truck—Body installation dimensions, power take-off, three-joint propeller shaft front shaft rear ends.

A questionnaire was recently sent out to several hundred automotive manufacturers requesting suggestions as to parts and materials standardization of which would be advantageous to the industry. Any such suggestions received by the society will receive prompt consideration by the council and assigned to the proper division of the standards committee.

S. A. E. Issues New Hand Book.

The Society of Automotive Engineers has recently sent copies of the revised edition of volume one of the S. A. E. hand book to all of its members. Although the data contained in the revised edition are in general the same as those in the old edition, some new matter has been added as, for instance, the report of the nomenclature division on automobile nomenclature and the report of the research division on passenger car performance tests.

The standards have been grouped into 10 sections, the pages of each having a different prefix letter, as follows: A, Power Plant B, Electrical Equipment; C, Parts and Fittings; D, Materials; E, Transmission; F, Axle and Wheel; G, Tire and Rim; H, Frame and Spring; J, Controls; K, General. Thus all "G" pages refer to tire and rim standards.

The S. A. E. hand book is published by the Society of Automotive Engineers, Inc., 29 West 39th street, New York city. Copies are sent gratis to all members of the society, but non-members may obtain copies at $10 each, and may subscribe to the additional sheets as they are issued. Leather binders with one inch rings, the S. A. E. hand book being of loose leaf form, may be obtained from the society at $4 each. Separate data sheets may be obtained at six cents each if desired.

S. A. E. HOLDS STANDARDS MEETINGS.

Several meetings of the S. A. E. Standards Committee divisions were held during March. Among these were the frames division meeting on March 10 in Cleveland, the Die-Casting Alloys subdivision and the Passenger Car Body division meetings on March 11 in New York, the Screw Thread division meeting on March 12 in Detroit, the joint meeting of the Transmission division and the subdivision on Thrust Ball Bearings on March 14 in Detroit, and the Truck division meeting on March 15.

Reports on ball studs, clutch release type thrust ball bearings, motor truck body installation dimensions and three-joint propeller shafts, were discussed at length.

The society has undertaken the standardization of three-joint propeller shaft ends, a sub-division of the truck division having been appointed to obtain information on present practise and draw up a tentative specification. J. R. Coleman of the Selden Truck Corporation is chairman of the subdivision, the other members being H. B. Knap of the Packard Motor Car Co. and J. W. B. Pearce of the Spicer Manufacturing Co. The only part which the subdivision will undertake to standardize at present is the shaft end at the rear of the front shaft of the three-joint propeller shaft assembly.

N. A. C. C. OFFERS $5000 FOR SAFETY ESSAYS BY SCHOOL CHILDREN.

Five thousand dollars in prizes for essays on safety by school children has been voted by the National Automobile Chamber of Commerce as part of a campaign to educate the careless motorist; or, if he cannot learn, to drive him off the streets.

Public opinion is regarded as the best weapon. Interest on the part of school children is calculated to impress the subject of automobile safety on their elders, and to bring up the younger generation with consideration for human life.

Millions of motorists are suffering for the sins of the few. Fatalities in relation to number of cars have been cut in half in five years; but the total number of automobiles is so great that even a small fraction of reckless drivers presents a serious problem.

Pedestrians 78 Per Cent. Responsible.

Added to the harm of the careless driver is the reckless pedestrian. Police Commissioner Enright of New York says that his records show that 78 per cent. of the automobile accidents are the fault of pedestrians, failing to cross at corners, running past the traffic officer, jay-walking. Education can minimize this evil.

Playgrounds are the remedy, however, the car makers believe, for the hazards of children playing in the street. "Children have a right to play" is one of the main principles of this campaign; and any safety programme implies advocacy of adequate play areas.

The National Automobile Chamber of Commerce has, over a long period of years, campaigned for proper brake mechanism, uniform traffic legislation and adequate instruction for new drivers. It believes, however, that proper enforcement of the present laws and stimulation of an active public interest in safety will prove the best means of reducing accidents.

Details of Prize Plan to Be Given Later.

Full details concerning the distribution of these prizes and methods of awards will be announced in the near future. The car makers will work through recognized official, safety and playground agencies so that the benefit of the best experience may make the prizes most effective.

AUTOMOBILE ISSUE OF WRIGHT HOISTS.

So insistent has been the demand on the part of garages and automobile shops throughout the country for more and specific information pertaining to the high speed hoist that the Wright Manufacturing Co., Lisbon, O., has prepared a special book on the particular use of their product. It is just off the press and is captioned, "The Automobile Issue of Wright Hoists." A copy will be gladly forwarded to the readers of this paper on request.

The use of steel tires on motor vehicles is prohibited in Connecticut.

Ninety-Six Per Cent. of Total Revenues from Car Registrations Used on Roads

A TOTAL of 9,211,295 motor cars, including commercial vehicles, were registered last year in the 48 states and the District of Columbia, according to figures compiled by the Bureau of Public Roads of the United States Department of Agriculture in a study of revenue available for road building purposes. There were also registered a total of 238,146 motorcycles. The registration and license fees, including those for chauffeurs, operators and dealers, amounted to $102,034,106.26.

The use made of the revenues has changed with the passing of years. In 1906 the total registrations were approximately 48,000 cars, paying a gross revenue of about $193,000. In 1906 the gross registration revenues were equal to less than three-tenths of one per cent. of the total rural road and bridge expenditures for that year.

The registration revenues in 1920 were equal to about 25 per cent. of the total rural road and bridge expenditures for the calendar year 1919. In 1906 practically none of the motor vehicle revenues was applied to road maintenance or construction while, in 1920, 96 per cent., or a total of $97,997,160.60, was used for this purpose. The remaining four per cent. not applied to road work was expended very largely for number plates and in carrying out the provisions of the motor vehicle registration laws in the several states. Of the total amount applied to road work, 79 per cent., or $77,531,582.57, was expended under the control or supervision of the several state highway departments.

Increasing Amount Spent for Road Work.

For a number of years the general tendency toward devoting an ever increasing portion of the motor vehicle revenues to road work under the control and direct supervision of the state highway departments has been very noticeable. Prior to 1912 only a very small portion of the motor vehicle registration was devoted to this purpose. In 1920 76 per cent. of the revenue, or $77,531,582.57, was applied to road work by counties or other local supervision, but with little or no direct supervision from the state highway departments.

In most states the motor vehicle revenues are devoted to maintenance and repair of the state roads or other improved highways. These states seem to have solved fairly well the difficult problem of securing funds for the maintenance of the more important roads under the ever increasing traffic requirements. As both the traffic and the revenues increase with the number of cars, there apparently exists a possibility of so adjusting the registration rates as to keep pace with the ever growing maintenance changes.

A number of the states, having in general but a small mileage of improved roads, have recently adopted the plan of capitalizing the motor vehicle revenues and devoting these funds to road construction. The states doing this are Illinois, Maine, Minnesota, Missouri, Nevada, Utah and Wyoming. In them bonds have been voted or issued for road construction, and the principal, in some instances also the interest, is to be paid entirely from the motor vehicle revenue.

Highway and County Bond Issues.

In this connection it is interesting to note a summarization of the state and county highway bond issues made by the Portland Cement Association, 111 West Washington street, Chicago, Ill., comprising returns from 42 of the 48 states of the country. This gives the total amount authorized from Jan. 1, 1919, to Jan. 1, 1920, as $594,132,072, this sum including $60,000,000 state bonds authorized in Illinois in 1918 and $50,000,000 state bonds authorized in Pennsylvania in 1918. The total authorized in 1920 was $404,821,068, and this makes a grand total of state and county bond issues for the two years, 1919 and 1920, of $998,953,140, including the $110,000,000 1918 state bonds in Illinois and Pennsylvania.

These figures do not include the states of Connecticut, New Hampshire, North Dakota, Ohio, Rhode Island and South Dakota or the District of Columbia.

Limit Load of Motor Trucks.

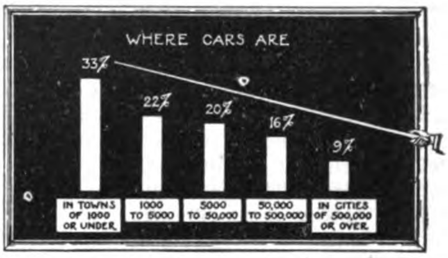
At the beginning of 1921 there were still seven states in which motor trucks were registered at the same rate as passenger cars, but in recent years there has been a very decided tendency in most states to increase the fees required for motor trucks over and above those required for passenger cars. This increase is usually based on the weight of the truck and its carrying capacity, its horsepower, or a combination of these factors. The most general practise seems to be toward definitely limiting the maximum total road weight of the vehicle and basing the registration fee on the capacity of the truck. Some few states have adopted a scale of fees which, in actual practice, serves to make the operation of very heavy trucks impracticable.

In Colorado, New Mexico and Oregon, in addition to the registration fees, a state tax on gasoline or other products used for the propulsion of motor vehicles is also levied. In some states motor cars are taxed as personal property in addition to the required registration fees. In Alabama, Delaware, Idaho, Iowa, Michigan, New Hampshire, New York, North Dakota, Oklahoma, Oregon, South Carolina, Pennsylvania, Tennessee and Vermont the registration fees are in lieu of all personal property taxes.

The first tramp tour on record for a motor vehicle is a truck running from Green Bay, Wis., to the Pacific coast, earning all travelling expenses by picking up a load whenever possible.

FARMERS THE LARGEST BUYERS OF AUTOMOBILES.

More automobiles are owned by farmers than by any other single buying class. Thirty-three per cent. of cars are in districts under 1000 population and 22 per cent. in communities between 1000 and 5000, according to a survey by J. M. Gunn, president of the United States Tire Co.



These figures check up with state registration statistics, which indicate the heaviest use of cars in farming regions, such as Iowa, where there is one car for every six persons.

Figures compiled by the National Automobile Chamber of Commerce show that the 12 largest cities, viz., all over 500,000, have but nine per cent. of the car registration.

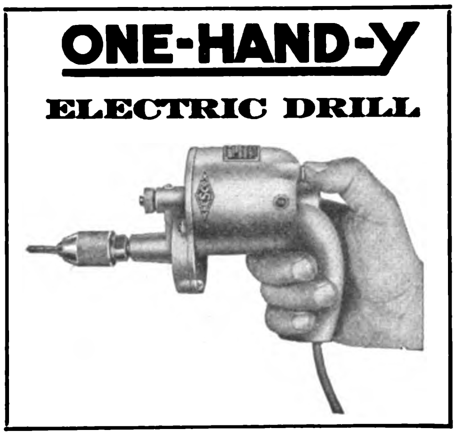
IMPORTS TO MALAGA, SPAIN.

The imports to Malaga, Spain, during the first nine months of 1920, show the following items, the record having been made in terms of kilograms, which are reduced to American pounds:

From the United Staes, 229,440 pounds of automobiles, 15,052 pounds of automobile chassis and parts, 11,343 pounds of motors, electric accumulators, batteries, etc., 11,669 pounds of gasoline and 317,775 pounds of lubricating oils.

The corresponding figures from other countries are as follows: Belgium, 26,840 pounds of automobiles and trucks; from France, 26,763 of automobiles and trucks, 87,848 of motors, etc.; 2273 of rubber and its products; from Germany, 484,799 of agricultural machinery and irrigation pumps, 27,925 of automobiles, 529,362 of auto trucks and chassis, 20,911 of motors, etc.; Great Britain, 44,253 of agricultural machinery and irrigation pumps, 1828 of automobiles, chassis and parts, 2683 of motors, etc., 32,395 of lubricating oils, 12,423 of paraffin in bulk and refined, and 5617 of rubber goods; from Italy, 10,912 of automobiles, 65,978 of auto trucks and chassis, 47,454 of hydraulic and electric motors and dynamos; from Portugal, 171,600 of gasoline.

Deaths from automobile accidents in 1919 were 7969, an increase of 444 over 1918 in the registration area of the Federal Census Bureau which covers about 80 per cent. of the total population.



ONE HAND-Y ELECTRIC DRILL.

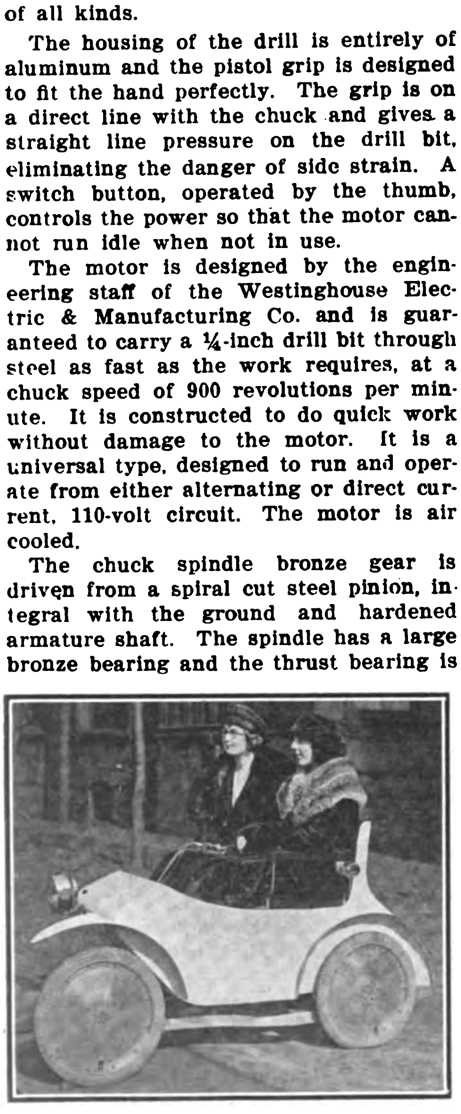
The Knight Engineering & Sales Co., Los Angeles, Cal., has developed and recently placed on the market a one-hand electric drill for drilling small holes in wood or metal. This is claimed to be one of the lightest, most efficient drills ever placed on the market and is especially designed for drilling holes for oil, cotter pins, name plates or any small holes in metal, also for boring holes for wood screws in cabinet work, dowel-pin holes in window sashes and applying hardware of all kinds.

The housing of the drill is entirely of aluminum and the pistol grip is designed to fit the hand perfectly. The grip is on a direct line with the chuck and gives a straight line pressure on the drill bit, eliminating the danger of side strain. A switch button, operated by the thumb, controls the power so that the motor cannot run idle when not in use.

The motor is designed by the engineering staff of the Westinghouse Electric & Manufacturing Co. and is guaranteed to carry a ¼-inch drill bit through steel as fast as the work requires, at a chuck speed of 900 revolutions per minute. It is constructed to do quick work without damage to the motor. It is a universal type, designed to run and operate from either alternating or direct current, 110-volt circuit. The motor is air cooled.

The chuck spindle bronze gear is driven from a spiral cut steel pinion, integral with the ground and hardened armature shaft. The spindle has a large bronze bearing and the thrust bearing is a loose steel ball in bronze bushings. A knurled nut on the extended end of the armature shaft makes a quick and simple method of holding the chuck spindle stationary while removing the drill bit.

The One Hand-Y Drill is regularly equipped with six feet of cord, with separable plug and a three-jaw chuck, and takes a ¼-inch drill bit or smaller.


Unique Small Car to Be Known as the Scootamobile.

SCOOTAMOBILE, WEIGHS 150 POUNDS, SEATS TWO PASSENGERS.

One of the entirely new type of vehicles to make its bow to the public at the Boston Automobile Show was the "Scootamobile," a two-passenger automobile, the total weight of which is under 150 pounds. It is claimed it will have a maximum speed of 30 miles an hour; will travel 75 miles on a gallon of gasoline; will seat two people side by side and will be completely housed in for protection in all weather.

This little car, which is a radical departure from the conventional, was designed by C. H. Martin, president of the Martin Rocking Fifth Wheel Co. of Springfield, Mass., in conjunction with E. R. Gurney, consulting engineer. The designers say the car is made almost entirely of aluminum alloy and magnesium metal; has a five horsepower opposed motor and sliding gear transmission; has no universal joints or differential. Every possible ounce of weight that could be spared has been taken out. Yet it is amply strong to withstand all kinds of road shocks. The wheel arrangement and spring suspension are such that it will ride as comfortably as a heavy, expensive car.

The parking problem and garaging problem are getting serious. This machine is made narrow enough to be pushed through an ordinary doorway and can be parked in the office or in the front hall.

Mr. Martin says: "Although it will not be ready for the market for some time, we are exhibiting it for the purpose of inviting criticism and suggestions from dealers and users. Before offering it to the public we propose subjecting it to months of gruelling tests. We cannot yet determine just what the selling price will be, but because of the cost of the material of which it is made, from 90 cents to $2 a pound, it will probably be the highest priced automobile for its weight in the country."

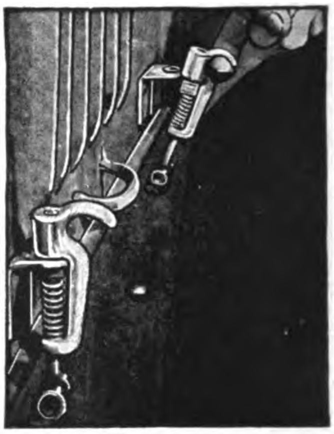
DAVEY SPRING HOOD CLIP FOR FORDS.

The Davey Spring Hood Clip for Ford cars appeals to all Ford owners. It is easily installed in a few minutes without drilling or any alterations other than removing the old clip and installing the Davey Spring Clip in the same hole.

The spring is enclosed inside the cylinder and is adjustable to any desired tension, allowing the hood to be clamped tightly.

The Davey Hood Clip is very neat and compact and adds to the appearance of the car.

It is patented and manufactured by the Holton Hood Clip Co., 513 Shelby street, Detroit, Mich.


Holt-On Hood Clips for Chevrolet Cars.

HOLT-ON HOOD CLIPS FOR CHEVROLET CARS.

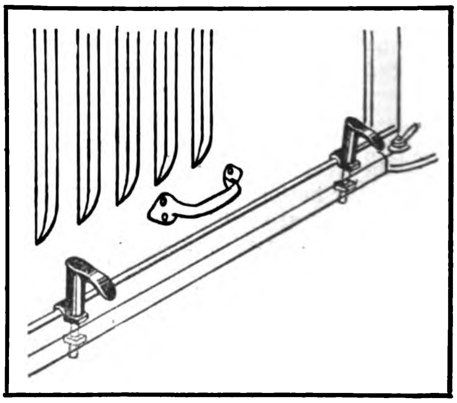
The Holt-On Hood Clips for Chevrolet cars are especially designed to save time and trouble as they are easily installed and no tools are necessary. It is a spring clip that can be put on in a minute's time by removing the thumb screws formerly in use and attaching the Holt-On Spring Clip to the same bolt. It is claimed that they will never slip or rattle and are adjustable to any tension.

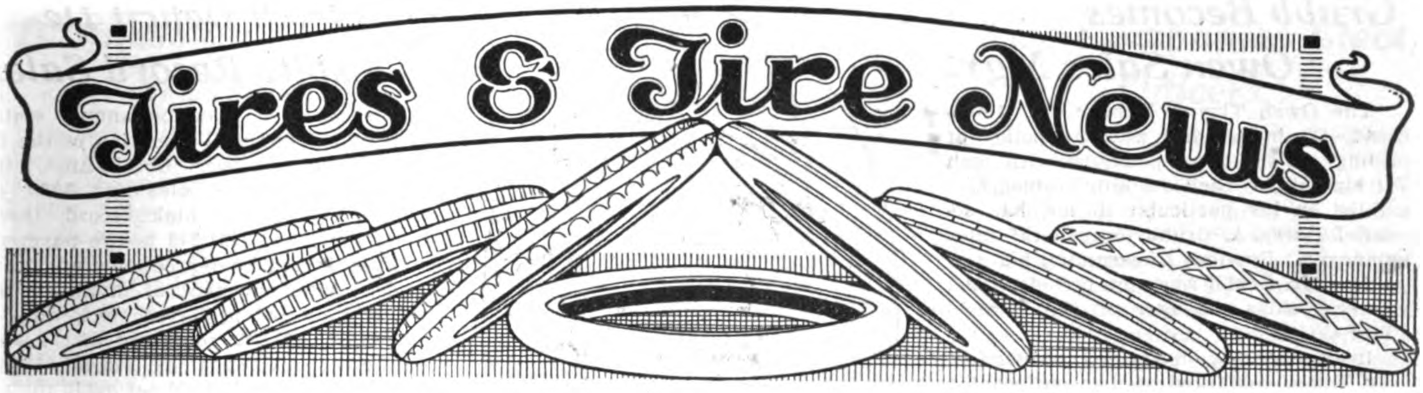
They are patented and manufactured by the Holton Hood Clip Co., 513 Shelby street, Detroit, Mich.

ETCHING HARDENED STEEL.

When it is desired to cut a hole through hardened steel, which turns the edge of ordinary tools, a good method is to etch the hole. Cover the steel with melted bee's wax. When thoroughly coated and cold, make a hole in the bee's wax with a fine pointed needle, or other tool, the size of the hole required. Put strong nitric acid upon it; after an hour rinse off and apply more acid, repeating the process until the hole is cut as desired.

The average cost of automobiles increased 12 per cent. last year, while prices of commodities during the same time rose 165 per cent.


Davey Spring Hood Clip for Fords.



Plant of Bergougnan Rubber Corp.

The home of the Bergougnan Rubber Corporation, is conveniently situated along the main line of the Pennsylvania railroad at Trenton, N. J. In addition to this factory there are also factories located abroad in France, Italy, Russia and Belgium.

The completion of the third unit of this plant during the early part of December permits of a normal production of 500 tires a day.

The Bergougnan products are known throughout the industry as "the tire with a bonded guarantee." The Bergougnan Rubber Corporation stands squarely behind its 8000-mile cord and 6000-mile fabric guarantees and, in addition, the National Surety Co. of New York City, the largest company of its kind in America, issues a bond on every tire sold certifying that the guarantee will be lived up to in every respect. It is needless to say that the National Surety Co. made exhaustive tests before accepting the responsibilities referred to.

The quality and service built into Bergougnan products are stated to have been so satisfactory as to result in a wonderfully increased volume of business, as well as resulting in numerous inquiries from dealers as to the exclusive distributor's proposition.

NET INCOME OF KELLY-SPRINGFIELD.

Kelly-Springfield Tire Co., New York city, reports a net income, before federal income and excess profits taxes, for 1920, equal, after preferred dividends, of $4.01 a share on the 323,370 common shares outstanding, compared with $13.20 a share on 214,479 shares in 1919 and $20.56 a share on 198,288 shares in 1918.

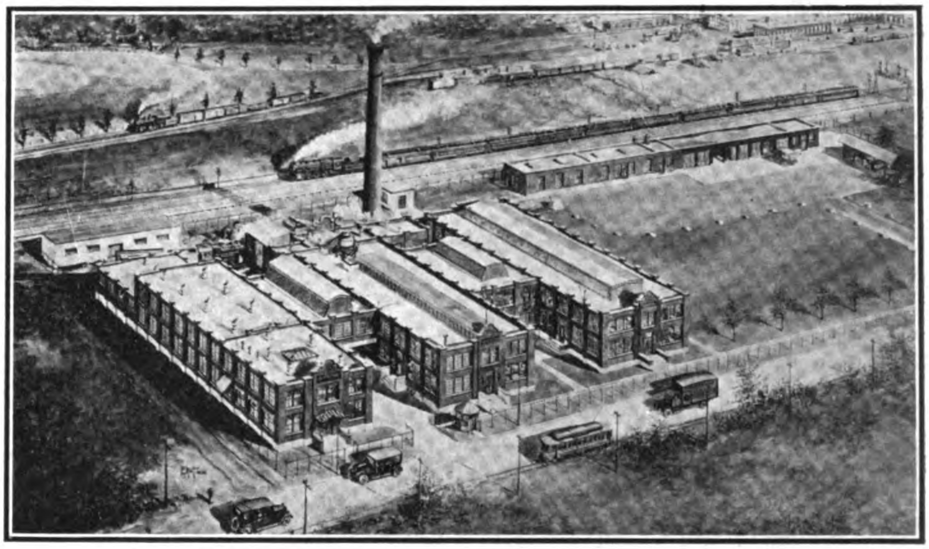
CONTINENTAL ELECTS OFFICERS.

At the annual meeting of the Continental Rubber Works, Erie, Pa., T. R. Palmer was re-elected president and general manager; Alexander Jarecki, vice president; A. E. Caldwell, secretary, and C. S. Coleman, treasurer. J. A. Vey, superintendent of the company, has been elected to the board of directors to succeed F. C. Jarecki, deceased.

H. S. BERLIN HEADS VICTOR RUBBER CO.

The Victor Rubber Co., Springfield, O., announces the election by its board of H. S. Berlin as president and general manager. Mr. Berlin was formerly in an executive capacity with the Firestone Tire & Rubber Co. at Akron, and has been connected with the rubber tire industry for several years. He will be assisted in the management of the Victor Rubber Co. by the following operating personnel: Secretary and treasurer, H. H. Durr; factory manager, Frank R. Talbott; sales manager, C. A. Swinehart; comptroller, J. J. Anzalone; purchasing agent, P. C. Leffel.

The Victor Rubber Co. has for 21 years been a producer of rubber carriage tires and sundry products, and has, for the past seven years, been a manufacturer of high quality automobile tires. The company produces a complete line of black tread cord and fabric in non-skid, ribbed and plain tread designs.


New Factory of Bergougnan Rubber Corporation at Trenton, N. J.

TIRE CONCERNS DISSOLVED.

The Ehman Tire & Rubber Co., 176 N. Michigan avenue, Chicago, Ill., has discontinued the manufacture of tires.

Cortland Tire & Rubber Co., manufacturers of Cortland pneumatic automobile tires, Belleville, N. J., has discontinued the manufacture of tires.

DISTRIBUTORS OF SYRA-CORD TIRES.

The Syracuse Rubber Co., Inc., Syracuse, N. Y., announces that the distribution of Syra-Cord tires in the Chicago territory has been taken over by the National Auto Supply Co. This concern operates three stores in the western metropolis and is well known in tire circles there. W. C. Erkert is its president.

The Reed Motor Supply Co. of St. Paul, Minn., wholesaler of automobile accessories and supplies, has recently taken over distribution of Syra-Cords in Minnesota. Edgar A. Reed is secretary-treasurer and general manager of the St. Paul concern and H. H. Orme is president.

OFFICERS OF OLDFIELD TIRE CO.

On behalf of the Oldfield Tire Co. of Akron, O., of which he is president, Barney Oldfield announces the appointment of J. M. Dine as vice president and general manager.

Mr. Dine has been identified with the rubber industry in various capacities for the past 14 years, first with Goodyear and later with Firestone.

Other officers recently chosen were: Secretary, B. M. Robinson; treasurer, H. L. Allsopp, and assistant treasurer, M. E. Moffett.

Grubb Becomes Owen Sales Mgr.

The Owen Tire & Rubber Co., Cleveland, O., in keeping with its policy of filling its executive positions with men of big caliber, each a highly trained specialist in his particular duties, has secured Harry A. Grubb for general sales manager. Previous to assuming his new duties Mr. Grubb was vice president and general sales manager of the Oldfield Tire Co.

In commenting on his new connection, Mr. Grubb remarked: "The outlook for the year is good. Tire stocks are reduced to a hitherto unheard of minimum, there being less than sufficient tires with dealers over the country to provide one spare tire for each car in service. Granting that buying practises have undergone a change and dealers are much more conservative in anticipating their requirements, yet on a hand-to-mouth basis alone there is good business in sight.

"A great change is taking place in the selling and distributing of tires. Hereto extravagant methods must give way to economy of operation and sound business practises. Quality must be faithfully maintained if the manufacturer would profit by that greatest of all good will builders, 'Enthusiastic Word of Mouth Advertising.'. That is what cuts sales costs and builds solidly for the future."

Harry A. Grubb, New General Sales Manager of Owen Tire & Rubber Co.

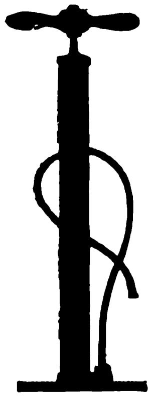
KENTUCKY THOROUGHBRED TIRE PUMP.

The Kentucky Thoroughbred Tire Pump embodies special features in design that are radically different.

First, it is constructed with a hollow piston rod, having the air intake valve on the top end of this rod and directly through the handle. Air is taken in through this valve, passing through piston rod and into the cylinder of the pump, and at the beginning of the downward or compression stroke this valve instantly closes and remains closed until the stroke is completed. The air has direct passage into the cylinder and enters through a hollow piston rod, getting through cup leathers and piston construction in this manner instead of passing in around the rod or through a vent and then by the cup leather to gain entrance to the cylinder.

Second, by this arrangement is eliminated all cause for a leaky piston, as the cup leather is always in shape and position, and is not required to be left loose in order to allow the air to intake or enter the cylinder from above and pass by the cup leathers.

Third, air entering the Kentucky Thoroughbred Tire Pump is pure and clean and enters at a point where no dirt or dust is present to be drawn into the pump, as would be the case where air enters by a valve placed at the bottom of pump.



Fourth, pumps which have their intake around the piston or through a vent in top cap are apt to deliver greasy or dirty air into the tire. This is not so with the Kentucky Thoroughbred, as the air enters through a hollow piston direct to cylinders and into the tire and is not required to pass the greasy cup leather or around the piston.

Fifth, the patent valve is screwed on to the top end of piston and is made of hex steel, turned and counterbored to receive the valve casing, which is secured on top by the valve cap, which contains the valve seat, making a compact and serviceable arrangement.

Sixth, the Kentucky Thoroughbred Tire Pump, immediately on the starting of the downward or compression stroke, begins forcing air into the tire, as the cylinder and hollow piston are both full of air at the end of the upward stroke.

Seventh, a handle of the best quality of hard wood, varnished and polished, securely fastened by special valve arrangement. No small screws to loosen and cause loose handle.

Eighth, the Thoroughbred Tire Pump is constructed of the best material obtainable; cylinder and piston of drawn seamless steel tubing. The valve, valve cap, top cap on the cylinder, guide and cup nut on the piston and bottom hose connection are all machined from solid bar stock, cold rolled steel and machined and fitted by skilled men.

Ninth, the hose is two feet long, four-ply high pressure air hose and is fitted with Schrader standard ferrules and connections.

Tenth, the base or foot piece is cast from best grade gray semi-steel.

Eleventh, the pump is black enamelled and baked, with polished caps, and handle varnished and polished.

The Thoroughbred Tire Pump is made by the Kentucky Tire Pump Co., Inc., Madisonville, Ky. The list price of the No. 1 is $5.

Goodrich Deficit Despite Record Sales

It is reported that the annual statement of the financial condition of the B. F. Goodrich Rubber Co., Akron, O., shows that, despite sales for 1920 of $150,007,345, a new high record, there was a deficit of $921,248 before payment of taxes, inventory depreciation and dividends. After payment of dividends on the common and preferred stock the deficit was $5,371,792, compared with a surplus after dividends of $12,657,813 in 1919. Had the $8,000,000 set aside for inventory depreciation and the $3,057,000 for taxes and $2,000,000 for cost of notes been charged against last year's operations the deficit would have been enlarged by these sums. The items were charged against the profit and loss surplus of previous years, thereby reducing that account from $41,203,046 on Dec. 31, 1919, to $22,706,498. Net profits of $17,304,813 in 1919 were equal to $25.09 a share on the $60,000,000 of common stock outstanding.

B. G. Worth, president of the company, in his remarks to stockholders, said in part:

"In view of the decline in the market values of crude rubber and fabrics, the directors have deemed it advisable to appropriate out of surplus the sum of $8,000,000 which, added to the reserve for contingencies of $2,000,000 provided out of profits in prior years, leaves a total reserve on Dec. 31, 1920, of $10,000,000 to cover possible losses on future commitments and contingencies.

"The directors feel that, taking into consideration the depression in the rubber industry during the last half of 1920, the operating results shown are satisfactory and the financial position of the company is excellent.

"Plants are in a thoroughly efficient working condition, prepared for any emergency, and it should therefore not be necessary to incur any further expenditures during current year for additional expansion of fixed properties."

MOWE FOUND BUSINESS IMPROVING.

John V. Mowe, general sales manager of the Kelly-Springfield Tire Co., New York city, recently completed a trip through the central west, including Chicago, Kansas City, St. Louis and Cincinnati. He held conferences at each point with the branch managers and their forces and found through a series of reports at these meetings that stocks of the dealers were lower than they have been for years. There was an undercurrent of feeling that the tire business was improving.

KELLY-SRINGFIELD TIRE DIVIDEND.

The Kelly-Springfield Tire Co., New York city, has declared a quarterly dividend of $1.50 a share on its six per cent. preferred stock, payable April 1.

Business on Increase at Akron

Business in the tire industry already is showing improvement according to the latest reports from Akron, O., to the Rubber Age.

Each week sees a quickening of the business pulse. Orders for tires are being received in larger numbers. The open winter has been a godsend to the industry, creating a demand for tires greater than in any other year. The effect of this demand is now becoming apparent.

Rubber manufacturers in Akron feel that the depression will ultimately react to the benefit of Akron's industrial life. They believe that the future growth of the rubber industry will be gradual and healthy. They expect no sudden leap back into the "peak" activity of a year ago, nor will there be "overnight" expansions which brought thousands of laborers in the past.

In announcing that the number of employees would undoubtedly be materially increased within the next three months, tire company executives emphasize the point that only Akron men will be taken back first. Men who have homes in Akron will be given first chance at the jobs. Many months will probably elapse before men from other cities can find work.

In commenting on the prospects for the future an official of one of the largest companies said:

"Each week is showing improvement over the week before. How long it will be before a normal status returns is merely a matter of conjecture, and one person's guess is as good as another's. It is certain, however, that spring will bring with it an increased demand for tires. We confidently believe that the last six months of the year will be normal.

"In considering what the future has in store one fact must be taken into consideration. That is that the tire industry differs from other industries in respect to the certainty of the demand for its products. Over a period of time, two years, for instance, the demand can be estimated to a very accurate degree. The number of tires needed during that period will not fluctuate greatly regardless of the business conditions of the country.

"For a time motorists may stop buying tires, using their spares and their old casings until they are worn to ribbons. The cessation of buying, however, cannot exist over a long period of time, simply because without tires passenger cars and motor trucks are useless. Sooner or later new tires must be bought, and the longer the period of non-buying the greater the accumulative demand."

GOODYEAR CALIFORNIA ACTIVITIES.

It is reported by officials that during a period of six months of actual operation since the completion of the new plant of the Goodyear Tire & Rubber Co. of California, the production has averaged over 900 tires a day.

MILLER RUBBER CO. PASSES PREFERRED DIVIDEND.

The Miller Rubber Co., Akron, O., recently passed the quarterly dividend of $2 a share due on preferred stock, the first time this company has omitted a preferred dividend payment. Early in January the common stock dividend was reduced from $2 to $1 a share. The company issued an explanatory statement to the effect that in closing the books it was deemed advisable to give full effect to and charge off the entire shrinkage representing the difference between the cost of raw materials and the market value, and also to the reduction in the value of goods in process and finished merchandise on hand, as well as settlement for cancellation of certain rubber contracts.

Shrinkage in inventories on this basis aggregated $3,193,086, it is stated, and payments in settlement of contracts were $215,951, a total of $3,409,037. The net profit before the charge-off amounted to $2,791,158. After all charge-offs the loss for the year, together with premiums paid on old preferred stock, resulted in a deficit of $735,016.

Sales for 1920 were reported to have been in excess of $31,000,000.

FISK CO. ON FULL TIME AT CHICOPEE.

It is announced that beginning Monday, March 14, the Fisk Rubber Co. resumed a full time schedule at its Chicopee, Mass., plant. It is also stated that a 10 per cent. reduction in wages was made. Since the beginning of the industrial depression the plant has been running on a schedule of three days a week with a reduced number of operators.

TOZIER RESIGNS PRESIDENCY.

On account of the absorption of the Polack Tyre & Rubber Co. of New York city by the Buckeye Rubber Products Co. of Willoughby, O., E. B. Tozier has resigned as president and general manager of the Polack Co. He has made no announcement as to his future plans, but will make his headquarters for the present at the New York office of the Buckeye Co., 527-529 West 23rd street.

CLARK RUBBER CO. ORGANIZED IN MASSACHUSETTS.

The Clark Rubber Co. has been organized to operate a factory at Franklin, Mass., with a capital of $100,000, $70,000 preferred and $30,000 common. The officers are: President and treasurer, Maurice L. Clark; clerk, Herbert L. Metcalfe.

HOOD RUBBER CO. RETIRES STOCK.

The Hood Rubber Co., Watertown, Mass., has notified the Massachusetts commissioner of corporations of the surrender and cancellation of 1500 shares of new preferred stock, having a total par value of $150,000.

Tire Companies Elect Officers

Wilson Rubber Co., Canton, O.—Directors: John S. Willis, Charles Willis, Wendall Herbruck, Henry Bernhard, F. J. Wilson, Harry S. Payer, all of Canton, and Jacob DeKaiser, Louis M. Faber and Dr. Thomas A. Burke of Cleveland. President, John S. Willis; vice president and general manager, F. J. Wilson; secretary and treasurer, Wendall Herbruck.

Announcement is made that this company has begun the construction of a three-story addition, 50 by 100 feet, to its factory, of brick and steel construction, with concrete floors. The plan of construction is such as to permit the ultimate addition of two or more stories when further expansion may demand.

A 10 per cent. dividend was declared to all common stockholders for the year 1920, and announcement was made that the capital had been increased from $150,000 to $500,000.

Kelly-Springfield Tire Co., New York City—A. B. Jones has been elected president to succeed F. A. Seaman, and Mr. Seaman becomes first vice president. The new president is a graduate of Princeton university and was educated for the engineering profession. Following a connection of some length with the Pennsylvania railroad, he became identified with the Diamond Rubber Co., and later with the B. F. Goodrich Rubber Co., having resigned the office of vice president with the latter company several weeks ago.

Black Hawk Tire & Rubber Co., Des Moines, Ia.—Directors re-elected: William Moran, J. J. O'Malley, E. A. Lewis, A. J. McColl, John C. Kirby, Fred German. E. A. Lewis is secretary of the company, H. G. Curtis sales manager, Paul Anderson factory superintendent, and C. E. Riess chemical engineer.

Victor Rubber Co., Springfield, O.—President, H. S. Berlin; vice president, W. L. Timmonds, Cleveland; secretary and treasurer, H. H. Durr; sales manager, C. A. Swinehart, Cleveland; factory manager, Frank Talbott.

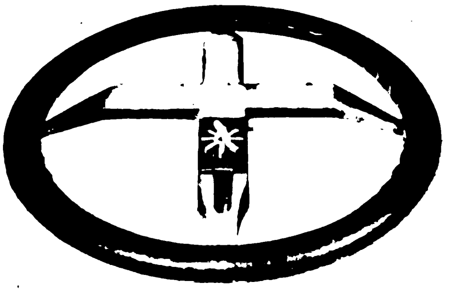
Climax Rubber Co., Columbus, O.—President, Irving S. Hoffman; vice president, Herman A. Longshore; secretary and treasurer, Clyde B. Turner; sales manager, E. W. Pavey.

CANADIAN K. & S. UNDER PRODUCTION.

It is stated that the new tire and tube factory of K. & S. Tire & Rubber Goods, Ltd., Toronto, Ont., Can., is completed and is turning out 200 tires and 300 tubes a day, and that orders are on hand to warrant a 24-hour working day until the end of the tire season.

COLUMBIA MOVES OFFICES TO MANSFIELD, O.

The Columbia Tire & Rubber Co. has moved from Columbiana, O., to its new offices, West Sixth street, Mansfield.



Keeno Keyless Auto Steering Wheel and Lock.

KEENO KEYLESS AUTOMOBILE STEERING WHEEL AND LOCK.

The Keeno Keyless Locking Steering Wheel combines the distinctive and attractive features of an approved keyless lock with a 17-inch steering wheel having an aluminum spider and corrugated mahogany finished rim. The aperture of the spider fits around a double bushing, which rotates on a double row of ball bearings. Between the two rows of bearings is a circular, tapered aperture into which fits a tapered bolt, passing through the outside bushing and extending into the inner bushing, preventing rotation. The retraction of the bolt releases the outer bushing from the inner bushing, leaving the wheel free to rotate on the balls.

This bolt is actuated by four or more discs, one of which is a cam, drawing the bolt against the tension of a spring, and, at the same time, throwing the driven discs out of alignment. These discs are a part of the permutation combination locking device, mounted on one of the spokes of the steering wheel spider, and operated by permitting the locking bolt, carried by a plate which carries the means, to enter the notched discs when the same are in alignment. These discs are operated by means of a spindle carrying an indicator bar set on the outside and top of the locking device. Directly under the indicator bar and fastened to the top of locking device are eight raised radial ribs, numbered 1 to 8. The locking bolt is encased in a steel cover riveted to the spider arm.

The Keeno Keyless Locking Steering Wheel is intended as a theft preventative device for all makes of automobiles, including Fords. On the Ford car the inner bushing is already secured to the wheel in the assembly. The old wheel and steering gear cover are removed, which also removes the inner pinion of the planetary gear.

When in a locked position the steering wheel is disengaged from the steering post, allowing the same to rotate on the ball bearings. In order to unlock the device the indicator bar is turned in such a position as to align the discs with the roller bearing on the angle plate, which allows the bolt to be forced by tension of the spring into the bushing secured to the driving shaft. To lock the car it is necessary to press the button and turn the indicator car, which causes the cam to retract the bolt. The number of combinations and permutations possible is 358,400. Raised, radial ribs permit the operation of the lock with or without a light, also without removal of gloves.

In the Keeno free wheel type the greatest possible security is built into the lock and its driving position. The wheel cannot become disengaged while driving. The lock bolt is bolted into driving position with a safety bolt, which springs to place automatically. The driving position of this wheel is just as solid and secure as any regular factory installed wheel. The wheel cannot become loose through wear or vibration, because the ball race bushings are made in one piece and case hardened and the lock bolt is tapered, automatically taking up all play.

The Keeno Keyless Locking Steering is made by the Keeno Keyless Lock Co., 2037 Wabash Ave., Chcago, Ill. Prices: Ford model, $16,50; Dodge model, $18.50. Special wheels and locks are also made for other types of cars, information in regard to which will be supplied on request.

NEW C-O UNIVERSAL BURNING-IN MACHINE.

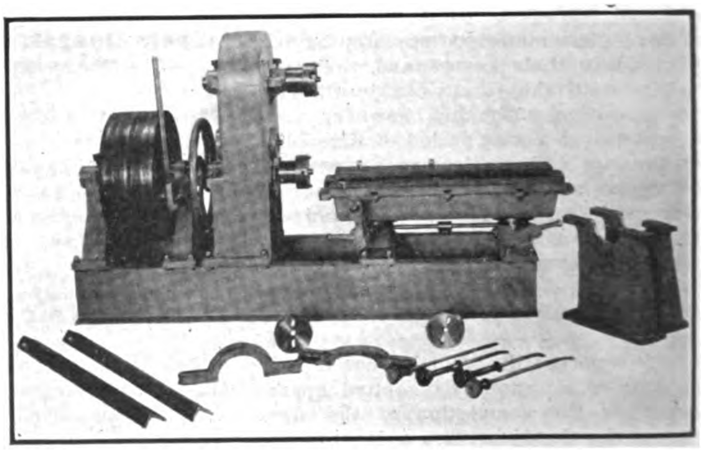
One of the most interesting recent announcements in the automotive trade, especially to jobbers and garage repair men is word of the development of a universal burning-in and running-in machine, designed and built by the Canedy-Otto Manufacturing Co. of Chicago Heights, Ill. This company has pioneered many noteworthy improvements in forges, blowers, drills, motor stands and other repair equipment for garage work. The manufacturer claims for this machine that it will positively burn-in and run-in the bearings of any type motor. Only one attachment is required and this is needed only for burning in valve-in-head V type motors. It is quickly attached and comes as part of the regular equipment. This attachment will also handle motors which do not have detachable heads, an operation which has puzzled the repair man for many years.

For simplicity and flexibility it is stated also to be notable. The table is raised and lowered by a single control. This table is grooved like all high class machine tool tables and the motor clamps can be adjusted to the size of motor. The table also serves as a sump or crankcase for the motor, so that the crankshaft splashes in fresh oil, in every way similar to the actual performance of the motor in operation.

The clutch is an extra heavy toggle type, driving through a silent chain, which is claimed to be so noiseless that the operator can test the timing of the motor or detect noises after the bearings have been run-in.

The machine requires a floor space of only 90 inches over all, with an actual base measurement of 79 inches. Twenty horsepower is sufficient to run the machine to capacity under the most severe conditions with the largest of motors. A single lever controls the raising and lowering of the table with a tension lock. All parts are highly machined to the usual standard of accuracy maintained in all Canedy-Otto equipment.

The price has been established, on a large production basis, at $635 f. o. b. factory, Chicago Heights, Ill. An illustrated bulletin and other literature will be gladly sent to anyone who is interested by an inquiry direct to the manufacturer.



New C-O Universal Burning-In Machine Made by Canedy-Otto Manufacturing Co., Chicago.

THERE IS ONLY ONE VENUS DE MILO.

The recent appearance of an attractive card in garages and service stations emphasizes a point which motorists are quick to appreciate. This card carries a picture of the Venus de Milo and it calls attention to the fact that "There is only one genuine Venus de Milo," despite the fact that it has been copied many times.

The card then urges the use of genuine Delco, Klaxon and Remy parts, which are made and guaranteed by the makers of the original equipments and which are distributed through United Motors Service, Inc., whose general offices are in Detroit.

The use of genuine parts is a protection both for the repair man and motorist and is an indication of genuine service as well.

NEW SELLING PLAN ON RELINERS.

The National Mail Order House, Inc., with offices in the Greenwood building, Sixth and Vine, Cincinnati, O., is about to put into operation an extensive advertising campaign on reliners, which will be sold, exclusively, through agents and distributors through the United States and Canada, all business in this line being done through the mail and goods to be shipped direct from the mill.

DIRECTORY OF PASSENGER CARS

(Continued from February Issue.)

Leach Biltwell Motor Co., Los Angeles, Cal.

Trade Name	Model	Type	Price
Leach	20-A	5-Pas. Touring	$5,200
	20-B	7-Pas. Touring	5,700
	20-C	3-Pas. Roadster	5,700

President, M. A. Leach. Pur. Agent, F. P. Richardson.
Secretary, J. H. Faircloth. Prod. Man., R. A. Wilson.
Sales Man., R. P. Pennock.

Lexington Motors Co., Connersville, Ind.

Trade Name	Model	Type	Price
Lexington	Series T	Touring	$2,985
	Series T	Sedanette	4,150
	Series T	Salon Sedan	4,250
	Series S	Thorobred	2,285
	Series S	Touring Car	2,285
	Series S	Tex-Sedan	2,785
	Series S	Coupe	3,250
	Series S	Sedan	3,350

President, Frank B. Ansted. Ad. Man., Emery Huston.
Vice Pres., F. I. Barrows. Pur. Agent, J. F. Davenport.
Vice Pres., Emery Huston. Prod. Man., L. A. Henson.
Treasurer, L. A. Hanson. Export Man., J. T. McKinney.
Secretary, L. A. Hanson. Chief Engineer, J. C. Moore.
Sales Man., J. Dewey.

Lewis Spring and Axle Co., Chelsea, Mich.

Trade Name	Model	Type	Price
Hollier Six	206 B	Touring	$1,985

Liberty Motor Car Co., Detroit, Mich.

Trade Name	Model	Type	Price
Liberty	10-C	5-Pas. Touring	$1,795
	10-C	2-Pas. Roadster	1,795
	10-C	4-Pas. Speedster	1,885
	10-C	Sedan	2,850
	10-C	Coupe	2,825

President, Percy Owen. Sales Man., Cliff Knoble.
Treasurer, D. E. Williams. Ad. Man., Verne E. Burnett.
Secretary, D. E. Williams. Pur. Agent, J. R. Collins.
As. Gen. Man., J. E. Fields. Chief Engineer, G. B. Allen.

Lone Star Motor Truck & Tractor Asso., San Antonio, Tex.

Trade Name	Model	Type	Price
Lone Star	B-T-4-30	Touring	$1,595
	T-4-30	Touring	1,395
	B-R-4-30	Roadster	1,595

President, H. C. Feldman. Ad. Man., J. W. Oswald.
Vice Pres., Leo. M. J. Dielmann. Pur. Agent, A. D. Shaw.
Treasurer, H. C. Heilig. Prod. Man. A. D. Shaw.
Secretary, Leo M. J. Dielmann. Export Man., J. W. Oswald.
Sales Man., J. W. Oswald. Chief Engineer, J. W. Oswald.

Louisiana Motor Car Co., Shreveport, Ind.

Trade Name	Model	Type	Price
Bour-Davis	21-S	Touring	$2,585

President, W. F. French. Sales Man., J. E. French.
Vice Pres., H. B. Hern. Pur. Agent, F. G. Ross.
Treas., Paul W. Southerland. Prod. Man., William Ross.
Sec., Paul W. Southerland.

McFarlan Motor Corporation, Connersville, Ind.

Trade Name	Model	Type	Price
McFarlan	142	2-Pas. Roadster	$6,300
	145	Sport	6,300
	147	Touring	6,300
	151	Town Car	7,500
	153	Coupe	7,500
	154	Knickerbocker Cabriolet	9,000
	155	Sport Sedan	7,500
	156	Touring Sedan	7,500
	157	Suburban Sedan	7,500
	158	Limousine	7,500
	161	Continental Landaulet	8,000

President, A. H. McFarlan. Ad. Man., B. M. Barrows.
Vice Pres., B. M. Barrows. Pur. Agent, R. F. Oliger.
Treasurer, B. M. Barrows. Prod. Man., P. G. Norris.
Secretary, E. W. Cotton. Export Man., P. T. Barrows.
Sales Man., B. M. Barrows.

Maibohm Motors Co., Sandusky, O.

Trade Name	Model	Type	Price
Maibohm	B	Phaeton	$1,575
	B	Roadster	1,575
	B	Sedan	2,395
	B	Coupe	2 395
	B	Sport	On Application

President, H. C. Maibohm. Ad. Man., T. W. Cushing.
Vice Pres., T. W. Cushing. Pur. Agent, W. J. Corr.
Vice Pres., W. C. Maibohm. Prod. Man., W. C. Maibohm.
Treasurer, I. O. Bormann. Export Man., C. J. Jerosch.
Secretary, I. O. Bormann. Chief Eng., H. H. Holton.
Sales Man., L. G. Parkhurst.

Martin-Wasp Corporation, Bennington, Vt.

Trade Name	Model	Type	Price
Martin-Wasp	2011		$6,500

President, Karl Martin. Treasurer, Richards Kellog.
Vice Pres., Robert Healy. Secretary, Richards Kellog.
Pur. Agent, Karl Martin. Chief Eng., Karl Martin.

Maxwell Motor Co., Detroit, Mich.

Trade Name	Model	Type	Price
Maxwell		Touring	$995
		Roadster	995
		Coupe	1,595
		Sedan	1,695
		Cowl & Chassis	915

President, W. L. Mitchell. Ad. Man., W. J. Mattimore.
Treasurer, W. M. Anthony. Pur. Agent, R. M. Hood.
Secretary, L. W. Lineaweaver Prod. Man., C. Adams.
Sales Man., A. E. Barker. Ex. Man., H. W. Russell.

Mercury Motor Car Co., Chicago, Ill.

Trade Name	Model	Type	Price
Mercury	H	2, 4, 6-P. Open	On Application
		Closed	On Application

Meteor Motor Sales Co., Piqua, O.

Trade Name	Model	Type	Price
Meteor	R	Touring	$5,500

Metz Sales Corporation, Boston, Mass.

Trade Name	Model	Type	Price
Metz Master Six		Roadster	$1,995
		Touring	1,995
		Coupe	2,795
		Sedan	2,895

President, C. H. Metz. Secretary, E. H. Metz.
Treasurer, R. A. Pickens.

Mitchell Motors Co., Inc., Racine, Wis.

Trade Name	Model	Type	Price
Mitchell	F-40	Touring	$1,750
	F-40	Roadster	1,750
	F-40	Sedan	2,900
	F-40	Coupe	2,800

President, D. C. Durland. Ad. Man., H. L. Van Wyck.
Treasurer, L. S. Nold. Pur. Agent, M. C. Bias.
Secretary, L. S. Nold. Export Man., C. D. Turner.
Sales Man., John Tainsh.

Moline Plow Co., Stephens Motor Works, Freeport, Ill.

Trade Name	Model	Type	Price
Stephens	82	Roadster	$2,400
	84	4-Pas. Touring	2400
	86	6-Pas. Touring	2,400
	85	Sedan	3,100

President, G. N. Peek. Ad. Man., How. W. Harrington.
Treasurer, H. S. Lord. Pur. Agent, O. T. Lawson.
Gen. Man., H. J. Leonard. Prod. Man., Charles E. McCool.
As. G. Man., C. Roy Clough. Export Man., H. S. Evans.
Sales Man., F. T. Larson.

Monitor Motor Car Co., Columbus, O.

Trade Name	Model	Type	Price
Monitor	Series 3 B-50	5-Pas. Touring	$2,475
	B-51	Roadster	2,475
	B-52	Sedan	3,475

President, Charles C. Cummins. Secretary, F. S. Cummins.
Treas., F. S. Cummins. Sales Man., H. S. Warwick.
Vice Pres., H. P. Jeffers. Pur. Agent, Chas. C. Cummins.
Vice Pres., H. S. Warwick. Prod. Man., J. F. Knecht.

Monroe Motors Corporation, Indianapolis, Ind.

Trade Name	Model	Type	Price
Monroe	S-9	Touring	$1,440
	S-10	Roadster	1,440
		Sedan	2,500
		Coupe	2,400

President, William Small. Ad. Man., George Seibert.
Vice Pres., R. O. Mallot. Pur. Agent., A. Goossen.
Treasurer, W. G. Todd. Prod. Man., H. C. Dunning.
Secretary, W. G. Todd. Chief Eng., Louis Chevrolet.
Sales Man. George Seibert.

Moon Motor Car Co., St. Louis, Mo.

Trade Name	Model	Type	Price
Moon	6-48	Touring	$1,985
	6-48	Roadster	2,085
	6-48	Sedan	2,985
	6-48	Coupe	2,985
	6-68	Touring	2,485
	6-68	Sedan	3,485
	6-42	Touring	1,585

President, Stewart McDonald. Ad. Man., N. E. McDarby.
Vice Pres., E. J. Moon. Pur. Agent, G. F. Heising.
Treasurer, A. F. Moberly. Prod. Man., J. T. Gardner.
Secretary, G. H. Shelp. Export Man., E. H. Serrano.
Sales Man., F. H. Rengers. Engineer, G. H. Kublin.

Moore Motor Vehicle Co., Danville, Ill.

Trade Name	Model	Type	Price
Moore	F-30	Touring	$1,095

Murray Motor Car Co., Newark, N. J.

Trade Name	Model	Type	Price
Murray	30-F	Touring	$2,800

Nash Motors Co., Kenosha, Wis.

Trade Name	Model	Type	Price
Nash	681	5-Pas. Touring	$1,695
	682	7-Pas. Touring	1,875
	684	7-Pas. Sedan	2,895
	685	4-Pas. Coupe	2,650
	686	2-Pas. Roadster	1,695
	687	4-Pas. Sport	1,850

President, Charles W. Nash. Sales Man., Charles B. Voorhis.
Vice Pres., Robert Herrick. Ad. Man., Ellis J. Travers.

Vice Pres., Charles B. Voorhis.
Vice Pres., James T. Wilson.
Treasurer, George H. Eddy.
Secretary, Horace J. Mellum.
Pur. Agent, Harold E. Long.
Prod. Man., Robert E. Elliott.
Export Man., John R. Rose.
Chief Eng., Eric Wallberg.

National Motor Car & Vehicle Corporation, Indianapolis, Ind.

Trade Name	Model	Type	Price
National	Sixtet	Touring	$3,750
	Sixtet	Phaeton	3,750
	Sixtet	Roadster	3,750
	Sixtet	Coupe	4,900
	Sixtet	Sedan	4,950

President, George M. Dickson.
Vice Pres., O. J. Thomen.
Vice Pres., Col. Wm. Guy Wall.
Treasurer, M. E. Elstin.
Secretary, M. E. Elstin.
Sales Man., James M. Clarke.
Ad. Man., Frederick Wellman.
Pur. Agent, Thomas J. Moore.
Prod. Man., Otto Moller.
Export Man., H. R. Averill.
Chief Eng., Col. Wm. Guy Wall.

E. A. Nelson Automobile Co., Detroit, Mich.

Trade Name	Model	Type	Price
Nelson	E	Touring	$1,700

President, J. M. Hibbard.
Treasurer, Chas. F. Dalbridge.
Secretary, Fred P. Harvey.
Sales Man., C. H. Dunlap.
Ad. Man., C. H. Dunlap.
Pur. Agent. Fred P. Harvey.
Export Man., C. H. Dunlap.

Noma Motor Corporation, New York, N. Y.

Trade Name	Model	Type	Price
Noma		Tourson	$3,200
		Roadster	3,000

Nordyke & Marmon Co., Indianapolis, Ind.

Trade Name	Model	Type	Price
Marmon	34	Speedster	$5,300
		Roadster	5,000
		4-Pas. Touring	5,000
		7-Pas. Touring	5,000
		Coupe	6,150
		Sedan	6,600
		Limousine	6,800
		Town Car	6,800

President, W. C. Marmon.
Vice Pres., F. E. Moskovics.
Vice Pres., H. C. Marmon.
Treasurer, A. R. Heiskell.
Secretary, H. G. Shafer.
Sales Man., H. H. Rice.
Ad. Man., A. J. Rogers.
Pur. Agent, A. B. Wagner.
Prod. Man., R. B. Little.
Export Man, H. A. Raseley.

Norwalk Motor Car Co., Martinsburg, W. Va.

Trade Name	Model	Type	Price
Norwalk	4-30 K-S	5-Pas. Touring	$1,285

President, C. B. Skadden.
Treasurer, L. E. Ernst.
Secretary, L. E. Ernst.
Sales Man., W. W. Gawthrop.
Pur. Agent, M. M. Yontz.
Prod. Man., H. B. Boyer.

Oakland Motor Car Co., Pontiac, Mich.

Trade Name	Model	Type	Price
Oakland	34 C	Roadster	$1,395
	34 C	5-Pas. Open	1,395
	34 C	Coupe	2,065
	34 C	Sedan	2,065

President, Fred W. Warner.
Sales Man., C. J. Nephler.
As. Gen. Man., W. H. Masten.
Pur. Agent, J. S. O'Rourke.
Prod. Man., W. D. Kelly.
Treasurer, M. L. Prensky.
Secretary, D. S. Merrill.

Ohio Motor Vehicle Co., Cleveland, O.

Trade Name	Model	Type	Price
Ferris	C 20	Touring	$3,350
	C 20	4-Passenger	3,350
	C 20	2-Passenger	3,350
	C 20	Sedan	4,875

President, Charles A. Riegler.
Treasurer, J. M. Black.
Secretary, W. E. Ferris.
Sales Man., C. Floyd Greene.
Ad. Man., C. Floyd Greene.
Prod. Man., J. D. Wiggins.

Olds Motor Works, Lansing, Mich.

Trade Name	Model	Type	Price
Oldsmobile	6	Touring	$1,450
	6	Roadster	1,450
	6	Sedan	2,145
	6	Coupe	2,145
	8	Touring	2,100
	8	Sport	2,100
	8	Sedan	3,300

President, Ed. Ver Luiden.
Vice Pres., Leon German.
Treasurer, Leon German.
Sales Man. Charles A. Tucker.
Sales Pro. Man., T. O'Brien.
Pur. Agent, Loyd Maxson.
Prod. Man., Jack Lilly.

Olympian Motors Co., Pontiac, Mich.

Trade Name	Model	Type	Price
Olympian		Touring	$1,585

Owen Magnetic Motor Car Co., Wilkes-Barre, Pa.

Trade Name	Model	Type	Price
Owen Magnetic		7-Pas. Touring	$7,000
		4-Pas. Touring	7,000
		Coupe	8,000
		Sedan	8,500

Packard Motor Car Co., Detroit, Mich.

Trade Name	Model	Type	Price
Packard	Twin-Six	Touring	$6,000
	Twin-Six	Phaeton	6,000
	Twin-Six	Runabout	6,000
	Twin-Six	Dup-Sedan	8,450
	Twin-Six	Dup-Coupe	8,250
	Twin-Six	Limousine	8,350
	Single-Six	Touring	3,640
	Single-Six	Roadster	3,640
	Single-Six	Sedan	4,950
	Single-Six	Coupe	4,835

President, Alvan Macauley.
Vice Pres., E. F. Roberts.
Vice Pres., J. G. Vincent.
Vice Pres., H. H. Hills.
Treasurer, F. S. Jandron.
Secretary, F. R. Robinson.
Sales Man., R. E. Chamberlain.
Ad. Man., W. H. Holmes.
Pur. Agent, F. W. Boynton.
Prod. Man., R. O. Gill.
Export Man., Fred H. Cardway.

Paige-Detroit Motor Car Co., Detroit, Mich.

Trade Name	Model	Type	Price
Paige	6-42 Light Six	5-Pas. Touring	$1,770
	6-42 Light Six	4-Pas. Sport	1,990
	6-42 Light Six	Roadster	1,770
	6-42 Light Six	Coupe	2,525
	6-42 Light Six	Sedan	2,645
	6-66	7-Pas. Touring	2,795
	6-66	4-Pas. Sport	2,895
	6-66	Coupe	3,675
	6-66	Sedan	3,750

President, Harry M. Jewett.
Vice Pres., Frederick L. Jewett.
Treasurer, Gilbert W. Lee.
Secretary, William B. Cady.
Sales Man., Henry Krohn.
Ad. Man., H. C. Dart.
Gen. Man., Frederick L. Jewett.
Pur. Agent, T. Bradley.
Prod. Man., W. A. Wheeler.

Pan-American Motors Corporation, Decatur, Ill.

Trade Name	Model	Type	Price
Pan-American	E-6-65	5-Pas. Touring	$2,450
	F-6-55	2-Pas. Roadster	2,450
	G-6-55	7-Pas. Sedan	3,600
	E-6-55	Artcraft	3,000

President, Edward Danner.
Vice Pres., J. A. Clayton.
Treasurer, W. A. Phares.
Pur. Agent, Fred Peebles.
Prod. Man., John Herron.
Export Man., W. P. Arthur.

Parenti Motors Corporation, Buffalo, N. Y.

Trade Name	Model	Type	Price
Parenti	H 1921	5-Pas. Touring	$2,000
	S	Sedan	3,000

President, J. S. Parenti.
Vice Pres., D. R. Parenti.
Treasurer, F. W. Krofft.
Sales Man., W. C. Wheeler.
Ad. Man., W. C. Wheeler.
Pur Agent, H. C. Gortzig.
Chief Engineer, H. S. Vawter.

W. A. Paterson Co., Flint, Mich.

Trade Name	Model	Type	Price
Paterson	6-50	7-Pas. Touring	$1,925
	6-50	5-Pas. Touring	1,895
	6-50	Sedan	2,895
	6-50	Coupe	2,895
	6-50	Touring, Artcraft Top	2,500

President, W. A. Paterson.
Treasurer, W. R. Hubbard.
Secretary, W. S. Paterson.

Peerless Motor Car Co., Cleveland, O.

Trade Name	Model	Type	Price
Peerless	56	Touring	$3,230
	56	Roadster	3,200
	56	Coupe	3,920
	56	Sedan	4,140
	56	Sedan-Limousine	4,400

President, Lewis H. Kittredge.
Vice Pres., T. W. French.
Vice Pres., W. H. Staring.
Treasurer, E. H. Cavert.
Secretary, E. H. Cavert.
Sales Man., R. J. Schmumk.
Ad. Man., C. S. Bailey.
Pur. Agent, R. T. Scott.
Prod. Man., W. H. Staring.

Peters Motors Corporation, Trenton, N. J.

Everybody's Car

Phianna Motors Co., Newark, N. J.

Trade Name	Model	Type	Price
Phianna		Touring	$6,000
		Limousine	11,500
		Closed	11,500

Piedmont Motor Car Co., Lynchburg, Va.

Trade Name	Model	Type	Price
Piedmont	4-30	Touring	$1,485
	6-40	Touring	1,945

President, W. A. Taylor.
Vice Pres., Fred Harper.
Treasurer, A. L. Stephens.
Secretary, A. L. Stephens.
Sales Man., Paul Moore.
Ad. Man., Paul Moore.
Pur. Agent, George L. Hay.
Prod. Man., H. W. Kriner.
Export Man., H. W. Kriner.

Pierce-Arrow Motor Car Co., Buffalo, N. Y.

Trade Name	Model	Type	Price
Pierce-Arrow	38 H. P.	Touring	$7,500
	38 H. P.	3-Pas. Runabout	7,500
	38 H. P.	4-Pas. Roadster	7,500
	38 H. P.	3-Pas. Coupe	8,500
	38 H. P	Brougham, Flat Roof	8,800
	38 H. P.	French Brougham	8,800
	38 H. P.	Brougham Landaulet	8,800
	38 H. P.	Town Brougham	8,800
	38 H. P.	Vestibule Brougham	9,000
	38 H. P	Sedan	9,000
	38 H. P.	4-Pas. Sedan	8,800
	48 H. P.	3-Pas. Runabout	7,900
	48 H. P.	4-Pas. Touring	7,900
	48 H. P.	4-Pas. Roadster	7,900
	48 H. P.	5-Pas. Touring	7,900
	48 H. P.	6-Pas. Touring	8,000
	48 H. P.	7-Pas. Touring	8,000
	48 H. P.	3-Pas. Coupe	9,000

Trade Name	Model	Type	Price
	48 H. P.	Brougham Flat Roof	9,300
	48 H. P.	French Brougham	9,300
	48 H. P.	7-Pas. Suburban	9,500
	48 H. P.	7-Pas. French Suburban	9,500
	48 H. P.	Vestibule Suburban	9,700
	48 H. P.	Subunban Landaulet	9,500

President, George W. Mixter.
Vice Pres., George M. Graham.
Treasurer, M. E. Forbes.
Secretary, E. C. Pearson.
Sales Man., George M. Graham.
Ad. Man., E. H. Rounds.
Pur. Agent, Floyd H. Smith.
Prod. Man., H. W. Lake
Export Man., W. Y. W. Rabb.

Pilgrim Motor Car Co., Detroit, Mich.

Pilgrim		Touring	$895

Pilot Motor Car Co., Richmond, Ind.

Pilot	6-45	Touring	$1,895
	6-45	Military Roadster	1,950
	6-45	Coupe	2,850
	6-45	Sedan	2,900

President, George Seidel.
Vice Pres., Clarence Kramer.
Sales Man., Joseph W. Connor.
Treasurer, Theo. Hill.
Secretary, Horace Kramer.
Ad. Man., Joseph W. Connor.
Pur. Agent, Frank S. Stinger.
Prod. Man., A. C. Culp.
Export Man., H. H. Chipman.
Service Man., C. L. Wood.

Premier Motor Corporation, Indianapolis, Ind.

Premier	C-D	7-Pas. Open	$4,600
	C-D	4-Pas. Open	4,600
	C-D	2-Pas. Open	4,600
	C-D	7-Pas. Closed	6,100
	C-D	Coupe	5,600

President, L. S. Skelton.
Vice Pres., F. P. Nehrbas.
Vice Pres., C. S. Crawford.
Treasurer, I. F. Schaeffer.
Secretary, I. F. Schaeffer.
Sales Man., E. W. Hurd.
Pur. Agent, E. E. Westman.
Prod. Man., E. F. Theis.

Preston Motors Corporation, Birmingham, Ala.

Premocar	6-40 A	5-Pas Touring	$1,295
	4-80	5-Pas. Touring	3,865
	6-40 S	5-Pas. Sedan	2,290

President, Ross A. Skinner.
Vice Pres., Joseph T. Driver.
Vice Pres., O. B. Harris.
Treasurer, Preston Orr.
Secretary, Preston Orr.
Sales Man., Jos. T. Driver.
Ad. Man., A. B. Powell.
Pur. Agent, I. L. Paisley.
Prod. Man., J. B. Souders.
Chief Eng., Ross A. Skinner.
Export Man., Jos T. Driver.

Rauch & Lang, Inc., Chicopee Falls, Mass.

Raulang Electric	6-55	Coach	
	B-46	Brougham	

President, Paul A. Frank.
Vice Pres., H. H. Doering.
Vice Pres., N. Platt.
Treasurer, M. R. Leathers.
Secretary, M. R. Leathers.
Sales Man., H. H. Doering.
Ad. Man., H. H. Doering.
Pur. Agent, P. D. Le Veness.
Prod. Man., R. W. Stanley.
Export Man., N. Platt.
Chief Eng., E. I. Rusk.

Reo Motor Car Co., Lansing, Mich.

Reo	T 6	Touring	$1,850
	U 6	Roadster	1,850
	T 6 8	Sedan	2,750
	U 6 C	Coupe	2,700

President, R. E. Olds.
Vice Pres., H. P. Thomas.
Vice Pres., R. H. Scott.
Treasurer, D. E. Beggs.
Secretary, D. E. Beggs.
Manager, R. H. Scott.
Sales Man., R. C. Rueschaw.
Pur. Agent, G. E. Smith.
Factory Man., H. C. Teel.
Engineer, H. T. Thomas.

Revere Motor Car Corporation, Logansport, Ind.

Revere		4-Pas. Touring	$4,650
		Roadster	4,650
		Speedster	4,650
		Sedan	6,500

President, Newton Van Zandt.
Vice Pres., A. A. Seagraves.
Treasurer, C. H. Wilson.
Secretary, E. R. Mattingly.
Pur. Agent, J. M. Ryan.

Rock Falls Manufacturing Co., Sterling, Ill.

Rock Falls Car	1921	Limousine	$4,800
	1921	Sedan	5,000

President, E. G. Brookfield.
Vice Pres., H. J. Brookfield.
Secretary, C. E. Bensinger.
Treasurer, E. G. Brookfield.
Sales Man., E. J. Kelly.
Ad. Man., E. G. Brookfield.
Pur. Agent, P. J. MacDonnell.
Prod. Man., E. G. Brookfield.
Chief Engineer, W. H. Thomas.

Rolls-Royce of America, Inc., Springfield, O.

Rolls-Royce		Chassis	$11,750
		English Chassis	13,500

R. & V. Motor Co., E. Moline, Ill.

R & V Knight	6 Cylinder J	7-Pas. Touring	$3,350
	6 Cylinder J	7-Pas. Sedan	4,200
	6 Cylinder J	4-Pas. Sport	3,350
	6 Cylinder J	4-Pas. Coupe	4,000
	6 Cylinder J	2-Pas. Roadster	3,350
	4 Cylinder R	5-Pas. Touring	
	4 Cylinder R	5-Pas. Sedan	

Trade Name Model Type Price

President, W. H. Van Dervoort.
Vice Pres., H. A. Holder.
Vice Pres., Rufus Walker, Jr.
Treasurer, Rufus Walker, Jr.
Secretary, G. A. Shallberg.
Sales Man., C. H. Van Dervoort.
Ad. Man., Roy A. Sears.
Pur. Agent, G. L. Walker.
Export Man., Adam Sulima.
Gen. Supt. A. Y. Miller.

Saxon Motor Car Corporation, Detroit, Mich.

Saxon	125	Touring	$1,895
	125	Sedan	2,795
	125	Coupe	2,795

President, C. A. Pfeffer.
Vice Pres., H. L. Bill.
Treasurer, D. C. Bayne.
Secretary, D. C. Bayne.
Sales Man., Carl Page.
Ad. Man., M. A. Hollinshead.
Pur. Agent, E. H. Heck.
Prod. Man., Fred Wilkens.
Export Man., M. S. Keller.

The Sayers & Scoville Co., Cincinnati, O.

Sayers	Avondale	Touring	$2,195
	Derby	Roadster	2,595
	Glendale	Sedan	3,295

President, F. M. Sayers.
Vice Pres., F. F. Scovill.
Treasurer, F. F. Scovill.
Secretary, S. G. Schott.
Sales Man., C. A. Eisenhardt.
Ad. Man., C. A. Eisenhardt.
Pur. Agent, Walter Lang.
Prod. Man., Frank Nagele.
Export Man., J. Fluxmon.

Scripps-Booth Corporation, Detroit, Mich.

Scripps-Booth	B-39	Touring	$1,545
	B-40	Roadster	1,545
	B-41	Sedan	2,295
	B-42	Coupe	2,215

President. A. H. Sarver.
Vice Pres., W. H. Little.
As. Treas., Robert Dittenhaver.
Secretary, H. F. Herberman.
Sales Man., L. D. Haas.
Ad. Man., J. Peterson Adams.
Pur. Agent, C. G. Selden.
Prod. Man., J. E. Burnett.
Chief Engineer, Mark Harris.

Seneca Motor Car Co., Fostoria, O.

Seneca	L	5-Pas. Touring	$1,185
	O	2-Pas. Roadster	1,185

Severin Motors Co., Kansas City, Mo.

Severin	L 20	5-Pas.	$1,185
		Touring	2,550

President, H. Severin.
Vice Pres., J. Platt.
Treasurer, Roy O. Maddox.
Sales Man., J. Platt.
Vice Pres., J. Platt.
Pur. Agent, U. Severin.

Walden W. Shaw Livery Co., Chicago, Ill.

Shaw		Touring	$5,500

Sheridan Motor Car Co., Muncie, Ind.

Sheridan	B-40	Touring	

President, D. A. Burke.
Gen. Man., D. A. Burke.
Sales Man., J. G. Wilmoth.
Ad. Man., M. M. Roberts.
Pur. Agent., F. J. Martin.
Prod. Man., W. Farr.
Chief Engineer, H. Law.

Simms Motor Car Corporation, Atlanta, Ga.

Simms	4-A	5-Pas. Touring	

Simplex Automobile Co., Long Island City, N. Y.

Simplex-Crane		Touring	$7,000

Singer Motor Co., Inc., Mt. Vernon, N. Y.

Singer		Open	$6,500
		Closed	8,600 up

Skelton Motors Corporation, St. Louis, Mo.

Skelton	35	Touring	$1,295
	35	Roadster	1,295

President, L. S. Skelton.
Treasurer, Sydney Penniman.
Secretary, John T. Lockton.
Vice Pres., W. A. Chapman.
Gen. Man., W. A. Chapman.
Ad. Man., Glen Hutchinson.
Pur. Agent, John A. Schroeder.
Prod. Man. John A. Schroeder.

Southern Automobile Manufacturing Co., Memphis, Tenn.

Southern	6-60	7-Pas.	$2,995
	6-61	5-Pas.	2,995
	6-62	3-Pas.	2,995

President, W. A. King.
Treasurer, W. A. Shibley.
Secretary, W. A. Shibley.
Sales Man., M. A. Thornton.
Ad. Man., M. A. Thornton.
Pur. Agent, W. G. Schutte.
Export Man., M. A. Thornton.
Prod. Man., W. G. Schutte.
Chief Eng., W. G. Schutte.

Spacke Machine & Tool Co., Indianapolis, Ind.

Brook	S-21	Roadster	$395

President, D. S. Brooks.
Vice Pres., J. R. Short.
Treasurer, William H. MacFee.
Secretary, William H. MacFee.
Sales Man., A. B. Sutton.
Ad. Man., A. B. Sutton.
Pur. Agent, F. B. Harlam.
Prod. Man., T. G. Morrissey.
Export Man., A. B. Sutton.

Standard Steel Car Co., Pittsburgh, Pa.

Standard		7-Pas. Vestibule Sedan	$5,000
		7-Pas. Sedan	4,800
		4-Pas. Sedanette	4,500
		4-Pas. Coupe	4,500
		7-Pas. Touring	3.400

Trade Name	Model	Type	Price
		4-Pas. Roadster	3,400
		Chassis	3,150

President, J. M. Hansen.
Vice Pres., R. L. Gordon.
Treasurer, T. H. Gillespie.
Secretary, William Bierman.
Sales Man., Wm. A. Morrow.
Ad. Man., F. N. Carle.
Pur. Agent, A. N. Fay.
Prod Man., R. Hammerstrom.
Chief Eng., A. Christianson.

Stanley Motor Carriage Co., Newton, Mass.

Trade Name	Model	Type	Price
Stanley Steam		5-Pas. Touring	$3,950
		7-Pas. Touring	3,950
		4-Pas. Coupe	5,650
		7-Pas. Sedan	5,775
		Chassis	3,400

President, Frank Jay.
Vice Pres., Prescott Warren.
Vice Pres., Carlton Stanley.
Treasurer, Edward M. Hallett.
Secretary, W. F. Garcelon.
Sales Man., F. W. Bellows.
Pur. Agent, Mr. Allen.
Prod. Man., Mr. Blandy
Chief Eng., Mr. Delling.

Stanwood Motor Car Co., St. Louis, Mo.

Trade Name	Model	Type	Price
Stanwood Six	A	Touring	$2,500

President, N. D. Thompson, Jr.
Vice Pres., Leslie H. Thompson.
Treasurer, Leslie H. Thompson.
Secretary, L. W. Cranshaw.
Sales Man., N. D. Thompson, Jr.
Ad. Man., Norman Daut.
Pur. Agent., John D. Lazar.
Prod. Man., John D. Lazar.
Chief Eng., Fred H. Berger.

Star Motor Co., Frederick, Md.

F. B. Stearns Co., Cleveland, O.

Trade Name	Model	Type	Price
Stearns-Knight	S K L 4	5-Pas. Touring	$2,450
	S K L 4	7-Pas. Touring	2,875
	S K L 4	4-Pas. Sport	2,475
	S K L 4	3-Pas. Roadster	2,550
	S K L 4	Coupe	3,400
	S K L 4	Sedan	3,700

President, G. W. Booker.
Vice Pres., Philip Wick.
Treasurer, G. W. Booker.
Secretary, M. L. Henschen.
Sales Man., Paul Booker.
Ad. Man., Paul Booker.
Pur. Agent, E. J. Connors.
Prod. Man., G. J. Batzer.

Sterling Motors, Inc., Newark, N. J.

Trade Name	Model	Type	Price
Sterling		Touring	$1,185

Stevens-Duryea Co., Chicopee Falls, Mass.

Trade Name	Model	Type	Price
Stevens-Duryea	E	7-Pas. Touring	$8,000
	E	Vestibule Limousine	9,500
	E	4-Pas. Sport	8,000
	E	4-Pas. Sedan	9,500

President, Ray S. Deering.
Vice Pres., George M. Berry.
Treasurer, M. R. Leathers.
Secretary, M. R. Leathers.
Sales Man., George M. Berry.
Ad. Man., Ralph B. Jones.
Pur. Agent, H. S. Beede.
Prod. Man., Fred Vogel.
Chief Eng., Thomas Cowles.

Studebaker Corporation, South Bend, Ind.

Trade Name	Model	Type	Price
Studebaker	E G Big Six	Touring	$2,150
	E H Big Six	Touring	1,750
		2-Pas. Roadster	1,750
		4-Pas. Roadster	1,750
		Coupe	2,650
		Sedan	2,750
	E J Light 6	Touring	1,485
		Landau Roadster	1,850
		Sedan	2,450

President, A. R. Erskins.
Vice Pres., L. J. Ollier.
Vice Pres., H. A. Biggs.
Vice Pres., M. F. Wollering.
Treasurer, N. R. Feltes.
Secretary. A. G. Rumpf.
As. S. Man., E. G. McCarthy.
As. S. Man., G. W. Sweet.
Ad. Man., O. S. Barrett.
Pur. Agent, F. A. Wade
Prod Man., C. L. Bockus.
Export Man., L. J. Ollier.

Stutz Motor Car Co. of America, Inc., Indianapolis, Ind.

Trade Name	Model	Type	Price
Stutz		6-Pas. Touring	$4,000
		4-Pas. Touring	4.000
		Roadster	4,000
		Bearcat	4,000

President, Wm. N. Thompson.
Sales Man., T. L. Marshall.
Ad. Man., T. L. Marshall.
Pur. Agent, E. T. Cleet.
Prod. Man., Stanley Hitworth.
Export Man., T. L. Marshall.

Templar Motors Corporation, Cleveland, O.

Trade Name	Model	Type	Price
Templar	445	Roadster	$2,585
	445	4-Pas. Sportette	2,885
	445	5-Pas. Touring	2,885
	445	Coupe	3,785
	445	Sedan	3,785

President, M. F. Bramley.
Vice Pres., A. M. Dean.
Treasurer, D. C. Reed.
Secretary, W. O. Cooper.
Sales Man.. H. W. Anderson.
Ad. Man., M. Bleiweiss.
Pur. Agent, A. G. Johnson.
Prod. Man., D. Z. Britten.

Texas Motor Car Association, Fort Worth, Tex.

Trade Name	Model	Type	Price
Texan		5-Pas. Touring	$1,495
		2-Pas. Roadster	1,495

Tulsa Auto Manufacturing Co., Tulsa, Okla.

Trade Name	Model	Type	Price
Tulsa	E-1	5-Pas. Touring	$1,550
	E-2	3-Pas. Roadster	1,550
	E-3	3-Pas. Oil Field Special	1,550
	F-1	5-Pas. 6 Cylinder	

President, R. M. McFarlin.
Vice Pres., R. O. Holleron.
Vice Pres., H. H. Rogers.
Secretary, O. T. Hewlett.
Sales Man., Floyd Thompson.
Ad. Man., Floyd Thompson.
Pur. Agent, H. L. Bersaw.
Prod. Man., E. P. Kirchofer.
Export Man., Floyd Thompson.

Union Steel Manufacturing Co., Brazil, Ind.

Trade Name	Model	Type	Price
Vanderbilt	8-A	Touring Chassis	$4,000

President, Ad. Judae.
Treasurer, A. J. L. Dueth.
Secretary, A. J. L. Dueth.
Sales Man., A. J. L. Dueth.
Prod. Man., A. E. Miller.

Velie Motors Corporation, Moline, Ill.

Trade Name	Model	Type	Price
Velie	48	5-Pas. Touring	$1,885
	48	2-Pas. Roadster	1,885
	48	Sport	2,200
	48	Sedan	2,650
	48	Coupe	2,650
	34	5-Pas. Touring	1,385
	34	2-Pas. Roadster	1,485
	34	Sedan	2,485
	34	Coupe	2,485

President, W. L. Velie.
Vice Pres., F. E. Bradfield.
Treasurer. A. T. Huesing.
Secretary, W. L. Velie, Jr.
Sales Man., T. Gannon.
Ad. Man., H. T. Wheelock.
Pur. Agent, F. E. Soper.
Prod. Man., L. Hazard.
Export Man., W. L. Velie, Jr.
Chief Engineer, J. B. Coy.

Vernon Automobile Co., Mt. Vernon, N. Y.

Trade Name	Model	Type	Price
Vernon 8 De Luxe	820	7-Pas. Tourster	$1,695
	820	4-Pas. Clubster	1,695
	820	5-Pas. Sportster	1,695
	820	3-Pas. Roadster	1,695
	820	2-Pas. Speedster	1,695
Vernon Four	420	5-Pas. Tourabout	845
	420	4-Pas. Chumabout	845
	420	3-Pas. Runabout	845
	420	2-Pas. Raceabout	845

President, Norton L. Dods.
Vice Pres., M. E. Cheney.
Treasurer, George R. Blodgett.
Secretary, F. Irving Hull.
Sales Man., C. C. Codding.
Ad. Man., George R. Blodgett.
Pur. Agt., H. W. Badenhausen.
Prod. Man.. H. Warren Teets.
Export Man., H. Jay Haines.
Chief Eng., M. E. Cheney.

Vogue Motor Car Co., Tiffin, O.

Trade Name	Model	Type	Price
Vogue	6-66	Touring	$2,485
	6-55	Touring	2,285

President, R. W. Miller.
Vice Pres., Frank Clever.
Treasurer, John A. Manecke.
Secretary, Geo. Wiseman.
Pur. Agent, Geo. Wiseman.

Washington Motor Co., Eaton, O.

Trade Name	Model	Type	Price
		5-Pas. Touring	$1,685

President, A. H. Christman.
Vice Pres., E. C. Wysong.
Treasurer. O. M. Shipley.
Secretary, Mr. John Voge.
Gen. Man., O. M. Shipley.

Western Automobile Co., Seattle, Wash.

Trade Name	Model	Type	Price
Waco	T-37	Touring	$950

Westcott Motor Car Co., Springfield, Mass.

Trade Name	Model	Type	Price
Westcott	C-48	7-Pas. Touring	$2,990
	C-48	7-Pas. Sedan	4,590
	C-48	7-Pas. Limo-Sedan	4,690
	C-38	5-Pas. Touring	2,290
	C-38	2-Pas. Roadster	2,290
	C-38	5-Pas. Sedan	3,390
	C-38	4-Pas. Coupe	3,390

President, B. J. Westcott.
Treasurer, H. G. Root.
Secretary, H. G. Root.
Sales Man., E. H. Gilcrest.
Ad. Man., P. W. Runyan.
Export Man., J. C. Hill.
Pur. Agent, E. E. Stanford.
Prod. Man., H. H. Ellis.
Chief Engineer, H. Clark.

Wharton Motors Co., Dallas. Tex.

Trade Name	Model	Type	Price
Wharton De L. 8	O. X. 5	7-Pas. Touring	$3.450
	O. X. 5	7-Pas. Victoria	3.750
	O. X. 5	4-Pas. Sport	3,750
	O. X. 5	Two-Four Sport Roadster	4,000
	O. X. 5	Sedan	4.350
	O. X. 5	Town	4,650
	O. X. 5	Continental Landaulet	4.800
Practical Six	W-6	5-Pas. Touring	1.750
	W-6	2-Pas. Roadster	1,850
	W-6	5-Pas. Sedan	2.750
Practical Four	W-4	5-Pas. Touring	1.450
	W-4	2-Pas. Roadster	1.550
	W-4	5-Pas. Sedan	2.450

President, T. P. Wharton.
Vice Pres., W. E. Grigsly.
Treasurer, C. W. Williams.
Secretary, C. W. Williams.
Sales Man., W. E. Grigsly.
Ad. Man., C. W. Williams.
Export Man., W. E. Grigsly.
Prod. Man., Carroll M. Aument.
Chief Eng., Carroll M. Aument.

Willys-Overland Co., Toledo, O.

Trade Name	Model	Type	Price
Overland	4	Touring	$895
	4	Roadster	895
	4	Coupe	1,425

Mechanical Specifications of Passenger Cars—1921

REVISED EACH MONTH

KEY OF ABBREVIATIONS: *Against name, first time listed. **PRICE**–⊙ chassis; □ runabout; △ 4-passenger. **ENGINE**–Colon., Colonial; Cont., Continental; Duesen., Duesenberg; H-Spill., Herschell-Spillman; G. B. S., Golden, Belknap & Swartz; Lycmg., Lycoming; Masnk., Massnick; North., Northway; Ruten., Rutenber; Ster., Sterling; Tter., Teeter; Wisc., Wisconsin. **TYPE OF CYLINDER**–L., valves on one side of cylinder; T., valves on opposite sides of cylinder; I., valves in head; F., valves on side and in head; S. sleeve valve. **CAMSHAFT DRIVE**–Hel., Helical; Chn., Chain; Spr., Spur; G., Gear. **ENGINE COOLING SYSTEM**–P., Pump circulation; T-S, Thermo-Syphon circulation; Thermostatic control of circulation; A., Air Cooling. **OILING SYSTEM**–F., Force Feed; S., Splash. **IGNITION SYSTEM**–Eisen., Eisemann; West., Westinghouse; Conn., Connecticut; G & D, Gray & Davis; Al-Ch., Allis-Chalmers; At-K., Atwater Kent; Auto., Autolite; Split., Splitdorf; U. S. L., U. S. Lighting & Heating; Wd. Leon., Ward Leonard; N. E., Northeast; S., Single; D., Double; H., Manual Spark Advance; A., Automatic Spark Advance; Dup., Duplex. **CARBURETOR**–Stmb., Stromberg; Schb., Schebler; Rayf., Rayfield; Till., Tillotson; Cart., Carter; Newc., Newcomb; John., Johnson; Marv., Marvel; Holl., Holley; Zeni., Zenith; Buic., Buick; Mill., Miller; Shakes., Shakespeare; Mon., Monarch; Stew., Stewart; Dupl., Duplex. **CLUTCH**–D., Disc.; D-D., Dry Disc; P., Plate; D-P., Dry Plate; C., Cone; O-C., Oil Cone; C-U., Control Unit; F-D., Friction Drive. **GEARSET LOCATION**–U P P., Unit with Power Plant; ToT., on Forward End of Torque Arm; R-Ex, Unit with Rear Axle; Sep., Gearset Independent of Engine or Axle. **TIRES**–C., Clincher; Q., Quick Detachable; S., Straight Side. **REAR AXLE**–F., Floating; S-F., Semi-Floating; D., Dead. **GEARS**–Sp. B., Spiral Bevel; C-U., Control Unit. **DRIVES THROUGH**–S., Springs; T., Torque Tube; R., Radius Rods. **REAR SPRINGS**–Semi., Semi-Elliptic; ¾-El., Three-Quarters Elliptic; F-El., Full Elliptic; Cant., Cantilever; D. Cant., Double Cantilever; 3P. Cant., Three Point Cantilever; Plat., Platform. **BEARINGS**–B., Ball; R., Roller; P., Plain.

TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	Wheelbase in Inches	TIRES AND RIMS		ENGINE															IGNITION SYSTEM		Carburetor				REAR AXLE							BEARINGS			
				Size	Make of Rims	Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	Wth. P. Ring Groove	Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	Make and Type	Make of Starting-Lighting System	Make	Fed by	Clutch Type	Gearset Location and Forward Speeds	Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
Allen, 43	1595	2580	110	32x4	Stanweld	Own	4	3½x5	192	19.60	37	2200	L	Blk	3/16	1⅝	5/16	Hel	T-S	F & S	Conn S-H	West	Stmb	V	D D	U P 3	Columbia	¾F	Sp B	4.63	S	S	Semi	3	B-R	R	R
Alsace	1485	2600	116	32x4	.....	H-Spill	4	3½x5	192	19.60	....	....	....	....	....	....	....	....	T-S	F	Bosch	Dyneto-2	Zeni	V	D D	3	Standard	....	....	....	S	S	Semi	....	....	....	....
American Beauty	2000	2950	121	34x4¼	Firestone	Cont	6	3¼x4½	224	25.35	48	2400	L	Blk	¼	1.39	9/32	Hel	P	F & S	At-K	West	Rayf	V	D D	U P 3	Timken	S-F	Sp B	4.45	S	S	Semi	3	B-R	R	R
*American	2395	2900	127	32x4s	Opt	H S	6	3¼x5	248	25.35	45	2200	L	Blk	3/16	1 5/16	5/16	Hel	P	F & S	Conn S-H	G & D	Stmb	V	D D	U P 3	Salisbury	F-F	Sp B	4.42	S	S	Semi	3	B-P	B-R	R
Anderson 30	2145	2700	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Remy	Remy	Ray	V	D D	U P 3	Salisbury	F F	Sp B	4.50	S	S	Semi	3	B-P	B-R	R
Apperson Anniver	4250	3600	130	34x4½	Firestone	Own	8	3¼x5	332	33.80	65	2500	L	4	3/16	1⅜	11/32	Hel	T-S	F	Remy D-H	Bijur-2	John	V	D D	Sep 3	Own	F	Sp B	4.25	S	S	¾ El	3	R	R	R
Apperson, 8-20	3500	3600	130	34x4½	Firestone	Own	8	3¼x5	332	33.80	65	2500	L	4	3/16	1⅜	11/32	Hel	T-S	F	Remy D-H	Bijur-2	John	V	D D	Sep 3	Own	F	Sp B	4.25	S	S	¾ El	3	R	R	R
Argonne	4000	.....	119	32x4	.....	.....	4	3¾x5⅛	226	22.50	....	....	L	Blk	....	....	....	....	....	....	....	West	....	V	D D	4	....	....	....	....	....	....	Semi	....	....	....	....
Auburn, 6-39H	1895	2800	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	3/16	1 5/16	5/16	Hel	P	F	Remy S-H	Remy-2	Rayf	V	D D	U P 3	Salisbury	F-F	Sp B	4.75	S	A	Semi	3	B	R	B
Austin, 12	4250	.....	142	34x4½q	Firestone	Weidely	12	2⅞x5	389	39.68	....	....	I	3	3/16	....	....	Hel	P	F	Delco S-H	Delco-2	Stmb	V	D D	U P 6	Spec. Austin		2-sp	Axle	S	S	D Cant	3	B	B & R	R
*Beggs Six	....	2840	120	33x4	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	3	3/16	1.39	.28	Hel	P	F & S	Conn	Auto	Stmb	V	D D	U P 3	Timken	¾ F	.....	....	S	S	Semi	3	....	R	R
*Bell, '18	1395	.....	114	31x4s	Firestone	GB&S	4	3¾x4¼	188	22.50	32	2800	L	Blk	¼	....	....	Hel	T-S	F & S	At-K S-H	Auto	Stmb	V	D D	U P 3	Peru	F	Bev	4.25	S	S	Cant	3	R	R	B
Biddle, '18	2985	3250	121	32x4s	Firestone	Buda	4	3¾x5⅛	226	22.50	48	2200	L	Blk	3/16	1⅝	⅜	Hel	T-S	F & S	Bosch	G & D-2	Zeni	V	D D	U P 4	Standard	¾ F	Sp B	4.00	S	S	Semi	3	B	R	R
Birch Light Six, 66	1695	2680	117	33x4	Firestone	H S	6	3¼x5	249	25.35	57	2200	L	Blk	3/16	1½	5/16	Hel	P	F & S	Conn	Dyneto-2	Zeni	V	D D	U P 3	Peru	F F	Bev	4.15	S	S	Semi	3	B	R	R
Birch Super-Four 44	1495	2200	117	33x4	Firestone	H S	4	3½x5	192	19.60	36	1800	L	Blk	3/16	1 3/16	5/16	Hel	T-S	F & S	Conn	Dyneto-2	Zeni	V	D D	U P 3	Peru	F F	Sp B	4.25	S	S	Semi	2	B	R	R
Bour-Davis 21S	2585	....	126	33x4½	Firestone	Cont	6	3½x5¼	303	29.40	55	2600	L	Blk	3/16	1¾	....	Hel	P	F & S	West	West	Zeni	V	.....	U P 3	Salisbury	F	Sp B	4.50	S	S	Semi	3	B-R	R	B
Brewster	7200	.....	125	34x4½s	Firestone	Own	4	4x5½	276	25.26	...	2200	S	Blk	3/16	....	....	Ch	P	F	Bosch S-H	U S L-1	Zeni	V	C	To-T 3	Own	F	Sp B	4.25	T	T	Cant	3	B	B	R
Brook S-21	395	840	90	28x3	Wire W	Own	2	3½x3⅝	70	9.80	....	....	F	2	3/16	....	....	Hel	A	F & S	At-K H	Bat	Cart	G	D D	U P 2	Own	F	Bev	5.09	S	S	Cant	2	B	B	B
Briscoe, 4-24	985	2100	104	30x3½q	Cleveland	Own	4	3 3/16x5⅛	163	16.25	30	2000	L	Blk	3/16	1 7/16	9/32	Hel	T-S	F & S	Conn S-H	Auto-2	Buic	G	C	R Ax 3	Own	S-F	Bev	4.23	S	A	F-El	2	BRP	B & R	B
Buick, H-45	1795	.....	118	33x4s	Baker	Own	6	3⅜x4½	241	27.34	50	....	I	Blk	3/16	1⅝	9/32	Hel	P	S	Delco S-H	Delco-1	Marv	V	D P	U P 3	W. Mott	F	Sp B	4.07	T	T	Cant	4	B	B & R	R
Buick, H-49	2065	.....	124	34x4½s	Baker	Own	6	3⅜x4½	241	27.34	50	....	I	Blk	3/16	1⅝	9/32	Hel	P	S	Delco S-H	Delco-1	Marv	V	D P	U P 3	W. Mott	F	Sp B	4.61	T	T	Cant	4	B	B & R	R
Bush	1245	2450	116	32x3½	Firestone	Lycmg	4	3½x5	192	19.60	35	2500	L	Blk	3/16	1 3/16	5/16	Hel	T-S	S	At-K	Dyneto-2	Cart	V	D	U P 3	Salisbury	F-F	Bev	4.00	T	T	¾ El	2	B	R	B
Bush 6	1575	2800	120	32x4	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	3/16	1 5/16	5/16	Hel	P	F & S	Conn	Dyneto-2	Stmb	V	D	U P 3	Salisbury	F F	Bev	....	....	....	Semi	3	B	R	R
*Cadillac, 59	3940	4050	132	35x5	Kelsey	Own	8	3⅛x5⅛	314	31.25	..	2650	L	4	3/16	1 11/16	5/16	Ch	P	F	Delco S-A	Delco-1	Own	P	D D	U P 3	Own	F	Sp B	4.43	S	A	Plat	3	B-R	R	R
*Cameron, 55	1400	.....	108	32x4	....	Own	..	2 11/16x4½	....	....	....	....	....	Blk	....	....	....	....	A	F	Conn	....	Rayf	V	.....	Sep	Own	....	Sp B	....	....	....	....	....	....	....	....
*Cameron, 45	1700	.....	123	32x4	....	Own	..	3¾x4½	...	33.75	....	....	....	Blk	....	....	....	....	P	F	Conn	....	Rayf	V	.....	Sep	Own	....	Sp B	....	....	....	....	....	....	....	....
Campbell	835	2000	110	30x3½c	U. S.	Own	4	3⅞x4	189	24.00	....	....	L	Blk	....	....	....	Spur	T	F & S	At S-H	Auto	Amer	V	D	U P 3	Salisbury	F-F	Sp B	4.25	S	S	Semi	3	B	B	B-R
Carroll Six C	3985	3800	128	32x4½	Wire W	Roch	6	3½x5	295	29.40	65	2800	L	Blk	3/16	1½	⅜	G	P	F	KW	Bijur	Stmb	V	D P	U P 3	Salisbury	FF	Hel	4.50	S	S	Semi	3	B	B	B
Case	2650	3450	126	34x4½	Firestone	Cont	6	3½x5¼	303	29.40	55	2000	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Delco	West	Rayf	V	D D	U P 3	Columbia	¾ F	Sp B	4.45	S	S	Semi	3	B	R	R
Chalmers, 6-30	1795	2800	117	32x4s	....	Own	6	3¼x4½	224	25.35	45	2650	L	Blk	3/16	1½	5/16	Ch	T-S	F & S	....	....	.....	V	D D	U P 3	....	S-F	Sp B	4.75	S	S	Semi	3	R	R	R
Chalmers, 6-30	1945	2950	122	33x4½	....	Own	6	3¼x4½	...	25.35	45	....	L	Blk	3/16	1½	5/16	Ch	T-S	F & S	....	....	.....	V	D D	U P 3	....	S-F	Sp B	5.18	S	S	Semi	3	R	R	R
Champion	1150	.....	116	32x3¼	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Champion	1295	.....	116	32x3¼	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chandler	1895	2985	123	33x4s	Fire&Clev	Own	6	3½x5	289	29.40	....	....	L	3	3/16	1 5/16	9/32	Ch	P	F & S	Bosch S-H	G & D	Rayf	V	D D	U P 3	Own	F	Sp B	4.40	S	A	Semi	3	B	B	R
Chevrolet, 490	820	1890	102	30x3½q	Demount	Own	4	3 11/16x4	171	21.75	32	2100	I	Blk	3/16	1 5/16	7/32	Hel	P	F & S	Remy S-H	Auto-2	Zeni	G	C	U P 3	Own	¾ F	Bev	3.63	S	S	¼ Cant	3	B	R	B
*Chevrolet, F B	1345	3200	110	33x4s	Demount	Own	4	3 11/16x5¼	224	21.75	....	....	I	Blk	3/16	1 5/16	¼	Hel	P	F & S	Remy S-H	Auto-2	Zeni	V	C	U P 3	Own	¾ F	Sp B	4.25	S	S	Cant	3	B-P	R	B
*Cleveland	1435	.....	112	32x4	Firestone	Own	6	3x4½	191	21.60	....	....	I	Blk	....	....	....	Ch	P	F & S	....	G & D	Stmb	...	D	U P 3	Own	....	Sp B	....	....	....	Semi	3	....	R	R
*Climber S	2750	3050	125½	32x4½	Jaxon	H S	6	3¼x5	248	25.35	57	2200	L	Blk	3/16	1 9/16	5/16	G	P	F & S	Bosch	West	Stmb	V	D	U P 3	Adams	S F	Sp B	5.12	S	S	Semi	3	B	R	R
*Climber K	1550	2550	114	33x4	Jaxon	H S	4	3½x5	192	19.60	37	1800	L	Blk	3/16	1 9/16	5/16	G	T	F & S	At-K	West	Stmb	V	D	U P 3	Adams	S F	Sp B	5.12	S	S	Semi	2	B	R	R
Cole, 870	3250	3590	127	33x5q	Firestone	North	8	3½x4½	346	39.22	80	2800	L	4	3/16	1½	5/16	Spur	P & T	F & S	Delco S-H	Delco-2	John	V	C	U P 3	Columbia	F	Sp B	4.46	S	S	Semi	3	B	R	R
Colonial, 35	1095	2775	116	32x3½	Goodyear	Falls	6	3x4½	191	21.60	....	....	....	Blk	....	....	....	Hel	T-S	F & S	Remy S-H	Al-Ch-1	Stew	V	C	U P 3	Lewis	F	Beb	4.41	..	..	Cant	3	B	B	B
Columbia Six C	1795	2800	115	32x4	Firestone	Cont	6	3¼x4½	224	25.35	38	2000	L	Blk	3/16	1.39	.31	Hel	P†	F & S	A-K	Auto	Stmb	V	D D	U P 3	Timken	½ F	Sp B	4.75	S	A	Cant	4	B	R	R
Comet, 6-C-53	2350	3200	125	33x4½s	Firestone	Cont	6	3½x5¼	303	29.40	55	2600	L	Blk	3/16	1 11/16	....	Hel	P	F & S	Wagner	Wagner	Stmb	V	D D	U P 3	Columbia	F-F	Sp B	4.50	S	A	Cant	3	B	R	R
Commonwealth □	1595	2600	117	32x4	Stanweld	H S	4	3½x5	192	19.60	40	2200	L	Blk	3/16	1 5/16	5/16	Hel	T-S	F & S	Split	Dyneto-2	Cart	V	D D	U P 3	Peru	F-F	Sp B	4.25	S	S	Semi	2	B	R	R
Crawford	3000	3400	122½	32x4c	Firestone	Cont	6	3½x5¼	303	20.40	55	2000	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Bosch	West	Stmb	V	D	U P 3	Timken	¾ F	Sp B	4.50	..	S	Semi	3	R	R	R
Crow-Elkhart, L-55	1295	2270	117	32x3½s	Firestone	Lycmg	4	3½x5	192	19.60	35	1800	L	Blk	3/16	1 3/16	5/16	Hel	T-S	F & S	Conn S-H	Dyneto-2	Zeni	V	D D	U P 3	Peru	F-F	Bev	4.25	S	S	Semi	2	B	R	R
Crow-Elkhart, S-65	1545	2470	117	33x4s	Firestone	H S	6	3¼x5	230	25.35	45	2400	L	Blk	3/16	1 5/16	5/16	Hel	P	F & S	Conn S-H	Dyneto-2	Stmb	V	D D	U P 3	Peru	F-F	Bev	4.25	S	S	Semi	3	B	R	R
Cunningham, V	on ap	4350	142	35x5	Firestone	Own	8	3¾x5	445	45.00	90	2200	L	4	3/16	1¾	5/16	Hel	P	F	Delco S-H	Delco	Stmb	V	D D	U P 3	Timken	F	Sp B	4.08	S	A	¾ El	3	B-R	....	R
*Daniels, D	4850	3800	132¼	34x4½s	Firestone	Own	8	3½x5¼	404	39.20	70	2000	L	4	3/16	1 11/16	⅜	Hel	P	F	Delco S-H	Delco-2	Zeni	P	D D	U P 3	Timken	F-F	Sp B	4.42	S	A	Semi	3	B	R	R
*Davis, 51	2085	2750	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	58	2650	L	Blk	3/16	1 9/16	¼	Hel	P	F & S	Delco D-H	Delco-2	Stmb	V	D D	U P 3	Timken	S-F	Sp B	5.09	S	S	Semi	3	B	R	R
Disbrow, A □	2950	.....	116	33x4½	Wire W	Wisc	4	5 1/16x5½	446	41.60	....	....	T	.....	....	....	....	Hel	P	F	KW S-H	Leece-N	Mill	P	D	U P 3	American	F	Bev	....	..	S	Semi	3	R	R	R
Dispatch	1290	2300	120	34x4	Stand	Wisc	4	3¾x5	221	22.50	35	2000	L	Blk	¼	1¾	9/32	Hel	T-S	F	Bosch	U S L	Ray	V	C U	....	Own	.....	C U	4.12	R	S	El	3	B	P	B
*Dixie Flyer, H-S50	1595	2450	112	32x4s	Fick	H-Sp ll	4	3½x5	190	16.90	42	2200	L	Blk	3/16	....	....	Hel	T-S	F & S	Eisemann	Dyneto-2	Stmb	V	D D	U P 3	Peru	F F	Sp B	4.70	T	T	¾ El	2	B-P	B & R	B

TRADE NAME AND MODEL			TIRES AND RIMS			ENGINE															IGNITION SYSTEM		Carburetor				REAR AXLE							BEARINGS			
	Price Touring Car	Weight of Car Ready for Road	Wheelbase in Inches	Size	Make of Rims	Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	Wth. P. Ring Groove	Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	Make and Type	Make of Starting-Lighting System	Make	Fed by	Clutch Type	Gearset Location and Forward Speeds	Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
Dodge Brothers	1285	2425	114	32x3½s	Own	Own	4	3⅞x4½	212	24.03	35	2200	L	Blk	3/16	1 9/16	5/16	Hel	P	F & S	N-E A-H	N. East-1	Stew	V	D D	U P 3	Own	F-F	Sp B	4.17	S	T	¾ El	3	B	R	R
Dorris, 6-80	4785	4000	132	35x5	Firestone	Own	6	4x5	377	38.40	..	....	I	3	¼	1⅞	11/32	Hel	P	F	Bosch S-H	West-2	Stmb	V	D D	U P 3	Timken	F-F	Sp B	4.08	S	S	Semi	7	R	R	R
*Dort	1215	2300	105½	31x4	Cleveland	Lycmg	4	3½x5	192	19.60	35	2000	L	Blk	3/16	1⅝	19/64	Hel	T-S	S	Conn S-H	West-2	Cart	V	C	U P 3	Flint	¾ F	Bev	4.07	S	T	Cant	2	B	B R & P	R
Douglas	2000	2350	122	34x4	Firestone	H-Spill	8	3¼x5	332	33.80	75	2400	L	4	3/16	1 9/16	⅜	Hel	P	F	West S-H	West-1	Zeni	V	D D	U P 3	Columbia	F-F	Sp B	4.42	S	A	Cant	3	B	R	R
*Du Pont, A	3400	3200	124	32x4½s	Firestone	Own	4	3 15/16x5⅛	247	24.80	55	2000	L	Blk	3/16	1¾	⅜	Hel	T-S	F	Eism	West	Yale	V	P	U P 3	Columbia	¾ F	Sp B	4.45	S	S	Semi	3	R	R	R
Duryea Gem	□400	515	100	28x3	Standard	Spacke	2	3½x3⅝	71	9.80	13	2500	L	Sing	3/16	1¼	¼	Hel	A	F	Mag	Own	Schb	G	None	....3..	Own	D	......	5.00	S	..	Torsion	2	P	B	B
Duesenburg	.....	3100	134	33x4½	Goodyear	Own	8	2⅞x5	260	26.40	90	3200	I	Blk	3/16	1 5/16	5/16	Sp B	P	F	Delco	Delco	Miller	P	D	U P 3	Own	S-F	Sp-B	4.12	T	T	Semi	3	B	B	B
*Economy, 6-46	1795	2750	115	33x4	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	3/16	1 5/16	5/16	Hel	P	F-S	Conn	Auto	Zeni	V	D P	U P 3	Salisbury	F-F	Sp B	4.50	S	S	Semi	3	B	R	R
*Elcar, D-4	1495	2740	116	33x4s	Firestone	Lycmg	4	3½x5	192	19.60	38	2100	....	Blk	3/16	1½	5/16	Hel	T-S	F & S	Delco	Delco	Stmb	V	D P	U P 3	Salisbury	F-F	Sp B	4.50	S	S	Semi	2	B	B	R
Elcar, D-6	1795	2850	116	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	....	....	....	Blk	3/16	1 9/16	9/32	Hel	P	F & S	Delco	Delco	Stmb	V	D P	U P 3	Salisbury	F-F	Sp B	4.50	S	S	Semi	3	B	B	R
Elgin	1775	2650	118	33x4s	Firestone	Falls	6	3⅛x4¼	196	23.44	40	2000	I	Blk	3/16	1¼	9/32	Hel	T-S	F & S	Wagner	West	Stmb	V	D D	U P 3	Columbia	¾ F	Sp B	5.00	S	A	Cant	3	B	B	R
Erie	850	2300	118	33x4s	Stanweld	GB&S	4	3¾x4¼	188	22.50	....	....	L	Blk	3/16	....	....	Chn	T	F & S	Split	Dyneto	Scheb	G	D D	U P 3	Salisbury	F	Sp B	4.00	T	T	Semi	3	R	B	R
*Essex	1595	2700	108½	32x4	Kelsey	Own	4	3⅜x5	179	18.22	55	2800	F	Blk	3/16	1⅞	5/16	Hel	T	S	Delco	Delco	Own	V	O D	U P 3	Timken	S-F	Sp B	4.67	S	S	Semi	3	R	R	R
Ferris, C-21	3350	3500	130	32x4½	Disteel	Cont	6	3½x5¼	303	29.40	50	2000	L	Blk	3/16	1½	5/16	Hel	P	F & S	Aero-Split	Leece N	Zeni	V	D D	U P 3	Columbia	¾ F	Sp B	4.12	S	A	Semi	3	B	R	B
Fiat, 55	6000	4335	140	35x5c	Firestone	Own	4	5¼x6¾	557	42.03	....	....	L	Blk	....	....	....	Hel	P	F	Bosch D-H	West-2	Zeni	P	O D	Sep 4	Own	S-F	Sp B	2.75	T	T	Semi	3	B	B	R
Ford, T	440	1560	100	30x3½c	Clincher	Own	4	3¾x4	177	22.50	20	1400	L	Blk	¼	1 5/16	7/32	Hel	T-S	S & G	Own S-H	....	Holl	G	O D	U P 2	Own	S-F	Bev	3.63	T	T	Trans	3	P	R	B
Franklin, 9-B	2600	2445	115	32x4s	Goodyear	Own	6	3¼x4	199	25.35	....	....	I	Sing	3/16	1 5/16	5/16	Hel	A	F	At K S-A	Dyneto-1	Own	V	D P	Sep 3	Own	S-F	Sp B	4.33	S	S	F-El	7	B	B	B-R
Friend 4	1585	.....	112	32x3½s	Goodrich	Own	4	3¼x4½	149	16.90	40	2600	I	Blk	3/16	1⅝	⅜	Hel	T-S	F	Conn	Wag	Stmb	V	D D	U P 3	Own	F F	Sp B	4.50	..	R	Trans	2	B	B-R	B
*Gardner G	1195	2400	112	32x3½s	Jaxon	Lycmg	4	3½x5	192	19.60	35	2000	L	Blk	3/16	1½	19/64	Hel	T-S	F & S	West	West	Cart	V	D D	U P 3	Flint	¾F	Bev	4.42	S	S	Semi	2	B	R	B
Geneva	2500	.....	139	34x4½	D Wheels	H-Spill	6	4x5½	415	38.40	....	....	T	3	9/32	....	....	Hel	P	F & S	Eise'n S-H	West-2	Rayf	V	D D	U P 4	Timken	F	Sp B	3.76	S	S	Semi	3	R	R	R
Geronimo	1995	2700	122	32x4s	Firestone	Ruten	6	3⅛x5	230	23.44	45	2400	L	Blk	5/32	....	....	Hel	P	F & S	Delco	Dyneto	Stmb	V	D D	U P 3	W-Weiss	¾-F	Sp B	4.50	S	S	Semi	3	B	......	R
Globe Four	.....	2600	115	32x4	Firestone	Supreme	4	3⅜x5	179	18.20	31	1600	L	Blk	3/16	1⅝	5/16	Hel	T-S	F	Delco	Delco	Stmb	V	D D	U P 3	Eaton	S-F	Sp B	4.90	S	S	Semi	3	B	R	R
*Grant H	1550	2700	116	32x4s	Goodyear	Own	6	3 1/16x4½	198	22.60	40	2200	I	Blk	3/16	1⅜	9/32	Hel	T-S	F & S	At-K S-A	Bijur	Stmb	V	D D	U P 3	Columbia	¾-F	Bev	4.63	S	S	Semi	3	B-P	B & R	R
Hackett	.....	.....	114	32x4	....	H-Spill	4	3½x5	192	19.60	....	....	L	......	....	....	....	Hel	T	S-P	U.S.L.-S-H	West	John	V	P	U M 3	Stanpar	S F	Sp	4.75	S	S	¾ El	2	B	R	R
Halladay, 22	1985	2750	118	33x4	Firestone	Ruten	6	3⅛x5	230	23.44	46	2400	L	Blk	5/32	1 5/16	5/16	Hel	P	F & S	At-K	West	Stmb	V	D D	U P 3	Spacke	F	Sp B	4.75	S	S	¾ El	3	B-P	R	R
Hamlin-Holmes	550	1200	100	30x3½	....	......	4	3x4	113	14.40	....	....	L	Blk	....	....	....	......	T-S	F & S	At-K	Wagner	......		D D	U P 3	....	¾	......	....	..	..	¼ El	....	....	....	....
Handley-Knight A	2985	3400	125	32x4½	Firestone	Knight	4	4⅛x4½	240	27.20	54	1800	S	Blk	3/16	....	....	Chn	T-S	F & S	Auto	Auto	Till	V	D D	U P 3	Timken	S F	Sp B	4.45	S	S	Semi	3	B	R	R
Hanson	2365	.....	119	32x4	....	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	3/16	1 5/16	5/16	Hel	P	F & S	....	....	Stmb	V	D P	U P 3	Timken	¾-F	Sp B	....	..	..	Semi	3	....	....	....
Harroun AA2	1195	2240	106	30x3½	Stanweld	Own	4	3¼x5¼	174	16.90	43	2400	I	Blk	¼	1 7/16	5/16	Hel	T-S	F & S	Remy	Remy-2	Stmb	V	C	U P 3	Own	¾F	Bev	4.09	S	T	Cant	3	B	B & R	R
Harvard, 4-20	850	.....	100	28x3	Baker	Sterl	4	3x4¼	120	14.40	28	....	L	Blk	3/16	....	....	Hel	T-S	S & F	At-K S-H	Wagner-2	Zeni	G	C	U P 3	....	S-F	Bev	4.00	S	S	Cant	2	B-P	B & R	B
*Hatfield, A-42	1695	.....	115	32x4	Firestone	......	4	3¼x5	...	16.90	42	....	....	......	..	1 9/16	5/16	......	T-S	F & S	Conn	Dyneto	......	V	D D	3	....	F-F	Sp B	....	S	S	Semi	....	....	....	....
Haynes, 47	2935	3225	132	34x4½s	Firestone	Own	6	3½x5	289	29.40	50	2000	L	Blk	¼	1 9/16	.31	Hel	P	S	Kings	Leece N-2	Rayf	V	D D	U P 3	Own	¾-F	Sp B	4.70	S	S	Semi	3	B	B	B
Haynes, 48	.....	3700	132	34x4½s	....	Own	12	2¾x5	356	36.30	70	2200	I	6	¼	1.19	.31	Chn	P	F	Delco SHA	Leece N-2	Rayf	V	D D	U P 3	Own	¾-F	Sp B	4.70	S	S	Semi	3	B	B	B
Holmes	3350	3036	126	34x4½	Firestone	Own	6	3½x4¼	245	29.40	....	....	I	Sing	3/16	1⅝	5/16	Hel	A	F	Eise'n S-A	Dyneto	Stmb	V	D P	U P 3	Timken	S-F	Sp B	4.90	S	S	F-El	7	B-R	R	R
Hollier, 206	1985	2800	120	32x4s	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	3/16	1 3/16	9/32	Hel	P	F & S	Remy	West	Zeni	V	D D	U P 3	Own	F-F	Sp B	4.41	T	T	Cant	3	B	B	B
*Hudson-Super 6	2400	3500	125½	34x4½s	Kelsey	Own	6	3½x5	288	29.40	76	2450	L	Blk	3/16	1 11/16	5/16	Hel	P	S	Delco SHA	Delco-1	Own	V	O D	U P 3	Timken	S-F	Sp B	4.90	S	..	Semi	4	R-P	R	R
Hupmobile, R. O	1685	2470	112	32x4s	Kelsey	Own	4	3¼x5½	183	16.90	....	....	L	Blk	3/16	1⅝	5/16	Chn	T-S	F&S	At-K-S-H	West 2	Stmb	V	D D	U P 3	Own	¾-F	Sp B	4.87	S	S	Semi	3	B-R	B-R	B
Jackson	2150	3400	121	32x4½	Jackson	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	¼	1½	5/16	Hel	P	F	Remy	Auto	Stmb	V	D P	U P 3	Salisbury	¾F	Sp B	4.50	S	S	Semi	3	B	B & R	R
Jones, B-28	2250	3000	126	34x4s	Firestone	Cont	6	3½x5¼	303	29.40	60	2600	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Remy D-H	Auto	Rayf	V	D D	U P 3	Stan-Par	S-F	Sp B	4.50	S	S	Semi	3	R	R	R
*Jordan, M	2550	2900	120	32x4s	Goodyear	Cont	6	3¼x4½	224	25.35	55	2750	L	Blk	3/16	1½	5/16	Hel	P	F & S	Delco	Delco	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.66	S	S	Semi	4	B	R	R
*Jordan	2975	3200	127	32x4½s	Goodyear	Cont	6	3½x5¼	303	29.40	60	2275	L	Blk	3/16	1 17/32	5/16	Hel	P	F & S	Delco SHA	Delco	Stmb	V	DD	U P 3	Timken	S-F	Sp B	4.08	S	S	Semi	3	B	R	R
*King, G	2585	3150	120	32x4½s	Stanweld	Own	8	3x5	283	28.80	60	2400	L	4	3/16	1½	5/16	Chn	T-S	F	At-K S-H	West	Ball	V	D D	U P 3	Columbia	F	Sp B	4.87	S	T	Cant	3	R-B	R	R
*Kissel, C. B., 6	3475	3400	124	32x4½	Goodyear	Own	6	3 5/16x5½	284	25.75	61	2300	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Remy S-H	Remy	Stmb	V	DD	U P 3	Own	F-F	Sp B	4.25	S	S	Semi	3	B	R	R
*Kline, 6-55 K	1965	2800	121	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	55	2500	L	Blk	¼	1 3/16	9/32	Hel	P	F	Conn	Wagner-2	Rayf	V	D D	U P 3	Hess	F	Sp B	4.58	S	S	¾-El	4	B	R	R
Lafayette 134	5625	4180	132	33x5	Firestone	Own	8	3¼x5¼	348	33.80	90	2700	L	Blk	3/16	1¾	⅜	Chn	P	F	Delco	Delco	Own	P	D D	U P 3	Own	F-F	Sp B	4.50	T	T	Semi	5	B-R	R	R
La Marne	1485	2900	128	33x4s	Stanweld	Own	8	3¼x5½	365	33.80	85	2200	I	Blk	¼	1⅝	5/16	Hel	.....	F & S	West	West	Own	V	D D	U P 3	....	F-F	Sp B	4.00	..	..	Semi	5	B	B	.....
Laurel, 35	895	.....	112	32x3½s	Goodyear	G-B- & S	4	3¾x4¼	188	22.50	....	....	L	Blk	3/16	....	....	Chn	T-S	F & S	Split S-H	Disco-2	Schb	G	O D	U P 3	Peru	F	Bev	4.25	S	T	Cant	..	B	R	R
Leach Six, 5 (3&7-5700)	5200	3850	128	32x4½	Wire–Disc	Cont	6	3½x5½	303	29.40	66	2600	L	Blk	3/16	1¾	7/16	Hel	P	F & S	Delco	Delco	Ray	V	D	U P 3	Columbia	S-F	Sp B	4.60	S	S	Semi	3	R	R	R
Lenox, O	2850	.....	130	34x4½	Firestone	Buda	6	3¾x5½	364	33.50	....	....	....	Blk	¼	....	....	Spur	P	S	Eise'n S-H	Bijur-2	Cart	V	D D	U P 3	Timken	F	Sp B	4.10	..	..	Semi	3	....	....	....
Lexington, S	2285	2875	122	34x4s	Kelsey	Cont	6	3¼x4½	224	25.30	47	2200	L	Blk	3/16	1½	316	Hel	P	F	Conn	G & D	Rayf	V	D P	U P 3	Own	¾ F	Sp B	4.60	S	S	Semi	3	B–R	B	B
Lexington T	2985	3250	128	32x4½	Firestone	Own	6	3¼x4½	224	25.30	60	3000	L	Blk	3/16	1⅝	7/16	Hel	P	F	Conn	G & D	Rayf	V	D D	U P 3	Own	¾ F	Sp B	4.60	S	S	Semi	3	B–R	B	B
Liberty, 10-C	1795	2800	117	32x4s	Firestone	Own	6	3⅛x5	230	23.40	53	2300	L	Blk	3/16	1½	5/16	Hel	T-S	F	Wagner	Wagner	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.66	S	S	Semi	3	B	R	R
Locomobile, 48-4	8100	.....	142	35x5q	Firestone	Own	6	4½x5½	525	48.60	....	....	T	2	¼	2⅛	⅝	Hel	P	F & S	Berling D	West-2	Ball	P	D D	Sep 4	Own	F-F	Sp B	3.85	R	A	¾-El	7	B	B	R
*Lorraine	1575	2400	114	32x4s	Firestone	H. Spill	4	3½x5	192	19.60	37	2200	L	Blk	3/16	1 9/16	5/16	Hel	T-S	F & S	West	West	John	V	D P	U P 3	Stanpar	S-F	Sp B	4.75	S	S	¾-El	3	B-P	R	R
Lone Star BT4-30	1595	2650	116	33x4	Firestone	Lycmg	4	3½x5	192	19.60	35	1800	L	Blk	¼	1¾	5/16	Sp	T-S	S	Delco	Dyneto	Zeni	V	D	U P 3	Peru	F-F	Sp B	4.50	S	S	½-El	3	R	R	R
Lozier, 84 Made to order	1695	.....	120	36x4½s	Stanweld	Own	4	4¼x6½	369	28.90	....	....	L	Blk	¼	....	....	Chn	P	F & S	Bosch D-H	G & D-2	Stew	P	O D	U P 3	Timken	F	Bev	3.91	..	..	Plat	3	....	....	....
Lozier, 82 only	2775	.....	132	36x4½s	Stanweld	Own	6	3⅞x6	424	36.04	....	....	L	3	¼	....	....	Chn	P	F & S	Eise'n S-H	G & D-2	Rayf	P	O D	U P 3	American	F	Sp B	3.27	..	..	Plat	3	....	....	....
Madison	1550	2950	115	33x4s	Goodyear	Ruten	6	3⅛x5	230	23.44	45	2400	L	Blk	5/32	1 3/16	5/16	Hel	P	F	At-K	West	Rayf	V	D D	U P 3	Salisbury	¾-F	Sp B	4.58	S	S	¾-El	3	B	B	B
Maibohm, B	1395	2350	116	32x3½s	Stanweld	Falls	6	3⅛x4¼	196	23.44	46	2290	I	Blk	3/16	1⅛	9/32	Hel	T-S	F & S	At-K S-H	Wagner 2	Stmb	V	D D	U P 3	Peru	F-F	Bev	4.50	S	S	Semi	3	B	R	R
*Marmon, 34	5000	3900	136	32x4½s	D Wheels	Own	6	3¾x5⅛	340	33.75	80	2450	I	Blk	3/16	1¾	.37	Hel	P	F	Delco	Delco	Stmb	G	D D	To-T 3	Own	¾-F	Sp B	3.74	T	T	C Trans	3	B-R	B R	R
Marshall	1275	.....	118	32x3½	....	......	4	3½x5	192	19.60	....	....	....	......	..	....	....	......	T	......	Delco	Dyneto 2	Cart	..	D	....	....	¾-F	......	....	..	..	Semi	....	....	....	....
*Maxwell, 25	985	2100	109	30x3½c	Jackson	Own	4	3⅝x4½	186	21.03	25	1700	L	Blk	3/16	1 11/32	19/64	Hel	T-S	F & S	At-K S-H	Simms-1	John	V	O C	U P 3	Own	¾-F	Bev	3.58	S	S	Semi	2	R-P	R	B
*McFarlan, 147	6300	4650	140	35x5	....	Own	6	4½x6	573	48.60	120	1850	T	3	¼	2	.34	Hel	P	F	Berl	West	Ray	V	D D	Sep 3	Timken	F	Sp B	3.50	S	S	Semi	4	R	R	R
Mercer, Series 5	3950	3900	132	32x4½s	Howard	Own	4	3¾x6¾	298	22.50	72	2800	L	Blk	3/16	2⅛	⅜	Chn	P	F	Eism	West	Ball	V	D D	Sep 4	Own	F	Sp B	3.87	S	S	Semi	3	R	B-R	R
Mercury, 19-50	2750	2500	114	31x4	Firestone	Weidely	4	3½x5½	212	19.60	50	2400	I	Blk	3/16	1⅞	5/16	Hel	P	F	Delco	Delco-2	Stmb	V	D D	U P 3	....	¾-F	Sp B	4.83	S	S	Semi	3	B	-R	B
Meteor	.....	.....	129	32x4½	....	Dues	4	4x6	301	25.60	....	....	F	......	..	....	....	Ch	P	S P	Simms S-H	Bijur	Zeni	V	P	Amid-4	Stanpar	.....	Sp B	4.41	S	S	Semi	..	B	R	R
*Mets	1995	2750	120	32x4s	Cleveland	Ruten	6	3⅛x5	230	.....	45	2344	....	Blk	..	....	....	......	P	......	Conn S-H	G & D	Stmb	V	D D	U P 3	Timken	Semi	......	....	S	S	Semi	..	....	R	R
*Mitchell, E-40	1750	3000	120	33x4s	Stanweld	Own	6	3¼x5	249	25.35	40	2200	L	Blk	3/16	1 7/16	5/16	Hel	P	F & S	Remy	Remy	Ray	V	D D	To-T 3	Own	F F	Sp B	4.41	S	T	Cant	3	B-R	R	R
Monitor, 3	2475	2825	117	33x4	Stanweld	Cont	6	3¼x4½	224	25.35	....	....	L	Blk	¼	....	....	Hel	P	S	Conn	Dyneto	Stmb	V	D D	U P 3	Stanpar	F	Sp B	4.25	S	S	¾-El	3	B-R	R	B

TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	TIRES AND RIMS			ENGINE															IG-NITION SYSTEM		Car-buretor				REAR AXLE							BEARINGS			
			Wheelbase in Inches	Size	Make of Rims	Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	Wth. P. Ring Groove	Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	Make and Type	Make of Starting-Lighting System	Make	Fed by	Clutch Type	Gearset Location and Forward Speeds	Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
Monroe	1440	2375	115	32x3½	Firestone	Own	4	3¼x4½	149	16.90	44	2600	I	Blk	3/16	1⅝	⅜	Hel	T-S	F	Conn S-H	Auto-2	Zeni	V	D D	U P 3	Own	S-F	Sp B	4.75	S	A	Cant	2	B	R	R
Moon	1685	2680	118	32x4s	Firestone	Cont	6	3¼x4½	224	25.35	45	2200	L	Blk	3/16	1⅜	9/32	Hel	P	F & S	Delco	Wagner	Tell	G	D D	U P 3	Timken	S-F	Sp B	4.60	S	S	Semi	3	B	R	R
Moore, 30-SF	1095	2000	106	30x3½q	Firestone	G-B & S	4	3¾x4¼	188	22.50	36	2800	....	Blk	3/16	1⅜	7/32	Gr	T-S	F & S	Conn S-H	Auto	Marv	G	D	U P 3	Peru	F-F	Sp B	4.25	S	S	Semi	3	R-R	B & R	B
Murray, 30-F	2800	3750	128	34x4½s	Firestone	H-Splm	8	3¼x5	332	33.80	80	2700	L	4	3/16	....	....	Hel	P	F	Split D-H	West	Zeni	V	D D	U P 3	Timken	F	Sp B	4.46	S	S	¾-El	3	R	R	R
*Nash, 681	1695	2850	121	33x4	Firestone	Own	6	3¼x5	249	25.35	58	2600	I	Blk	3/16	1⅜	.35	Hel	P	S	WagnerSHA	Wagner 2	Marv	V	D D	U P 3	Own	S-F	Sp B	4.50	S	S	Semi	3	R	R	R
*National Sextett	3750	3700	130	32x4½	Firestone	Own	6	3½x5¼	303	29.40	71	2600	I	Blk	3/16	1 23/32	⅜	Chn	P	F	Delco SHA	West-2	Rayf	V	D D	U P 3	Columbia	F	Sp B	4 08	S	A	Semi	3	B R	R	R
Nelson, Four-29	1500	2084	104	32x4s	Kelsey....	Own	4	3⅛x4¾	146	15.60	29	2200	I	Blk	3/16	1⅛	5/16	Bev	T-S	F-F	Bosch -SH	U-S-L-1	Zeni	V	D D	R Ax 3	Own	F-F	Sp B	4.25	..	..	Semi	2	B-R	B & R	B
*Noma	3200	3000	128	32x4½s	Goodyear	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	3/16	1⅜	9/32	Hel	P	F&S	Delco	Delco	Claud	V	D D	U P 3	Timken	¾ F	Sp B	4.50	S	S	Semi	4	B	R	R
Norwalk	1285	2410	116	32x3½c	Firestone	Lycmg	4	3½x5	192	19.60	35	2500	L	Blk	3/16	1⅝	5/16	Hel	T-S	F&S	Delco	Dyneto	Zeni	V	D	U P 3	Peru	F F	Sp B	4.20	S	S	Semi	2	B	R	R
*Oakland, 34-B	1395	2421	115	32x4s	Jaxon	Own	6	2 13/16x4¾	177	18.97	44	2600	I	Blk	3/16	1⅛	5/16	Hel	P	F	Remy	Remy	Marv	V	C	U P 3	Mott	F	Bev	4.50	S	S	Semi	3	B	R & B	B
*Oldsmobile, 46	2150	3150	122	33x4½s	Jaxon	Own	8	2 13/16x4¾	248	26.55	58	2600	L	4	3/16	1 9/32	5/16	Hel	P	F	Delco S-A	Delco-2	B & B	V	C	U P 3	W. Mott	F	Sp B	4.91	S	S	Semi	2	B-R	B & R	R
*Overland, 4T	895	1940	100	30x3½	Stanweld	Own	4	3⅜x4	143	18.23	27	....	L	Blk	3/16	....	....	Hel	T-S	S	Conn S	Auto 2	Tilt	G	P	U P 3	Own	¾-F	Sp B	4.50	S	T	3 P Cant	3	B	B	R
*Owen Magnetic, W42	6500	5200	142	35x5q	Firestone	Own	6	4x5½	414	38.40	78	....	I	3	¼	1⅞	⅜	Hel	P	F	Bosch	Owen Sys	Zeni	V	Ow. M	ag. T R	American	F	Sp B	4.00	S	S	Semi	3	....	R	R
Packard, Twin Six	6000	4490	136	35x5c	Firestone	Own	12	3x5	424	43.20	95	2600	L	6	3/16	1½	344	Chn	P	F	Delco S-HA	Bijur-2	Own	P	D D	U P 3	Own	S-F	Sp B	4.36	S	A	Semi	3	B-R	B	R
Paige-Linwood, 6-42	1770	3140	119	32x4	Kelsey	Own	6	3¼x5	248	25.80	....	....	L	Blk	3/16	1 7/16	5/16	Hel	P	F & S	At K	G & D	Stmb	V	D P	U P 3	Salisbury	¾-F	Sp B	4.75	S	S	Semi	3	B-R	B & R	R
Paige, Essex, 6-66	3750	3751	131	33x4½	Kelsey	Cont	6	3¾x5	331	33.75	70	2350	L	Blk	3/16	1 13/16	..	Hel	P	F & S	At K	G & D	Rayf	V	D P	U P 3	Salisbury	¾-F	Sp B	4.55	S	S	Semi	3	B-R	B & R	R
Pann, A	....	2300	108	33x4q	Firestone	Own	..	3¼x5	166	16.00	50	3000	L	Blk	3/16	1¾	5/16	Chn	T-S	F & S	Auto	Auto	Stmb	G	D P	U P 3	Own	Semi	Sp B	4.90	S	S	Semi	2	B	R	R
Paterson, 6-50	1895	2900	120	33x4	Detroit	Cont	6	3¼x4½	224	25.35	38	1600	L	Blk	¼	1¼	9/16	Hel	P	F & S	Delco D-H	Delco-2	Stmb	V	D P	U P 3	Salisbury	S-F	Sp B	4.50	S	S	Semi	3	B	R	R
Peerless, 56	3230	3830	125	34x4½s	Firestone	Own	8	3¼x5	332	33.80	80	2800	L	4	3/16	1 9/16	⅜	Hel	P	F	At-K S-H	Auto 2	Ball	V	D D	U P 3	Own	S-F	Sp B	4.90	S	S	Platt	3	B-R	R	R
Pennsy, 18	1085	2600	115	32x4s	Goodyear	G-B & S	4	3¾x4¼	188	22.50	37	2800	....	Blk	3/16	1⅝	9/32	Hel	T-S	F & S	Conn S-H	Dyneto-2	Cart	V	D D	U P 3	Weiss	S-F	Bev	4.00	S	S	Semi	3	R	R	B
Pennsy, 6-18	1585	....	120	33x4s	....	Cont	6	3¼x4½	224	25.35	....	....	L	Blk	3/16	....	....	Hel	P	F & S	S-H	Heinze	Rayf	V	P	U P 3	Columbia	F	Sp B	4.58	..	S	¾ El	3	B	R	B
Phianna	6000	....	128	32x4½	Firestone	Own	4	3 21/32x6	287	24.90	....	....	L	Blk	5/16	1 13/16	⅜	Chn	P	F	Bosch S-H	Ward L	Stmb	P	D D	Sep-4	American	F	Sp B	4.00	R	R	Cant	3	B	R	B-R
*Piedmont, 4-30	1485	2450	116	32x3½	Firestone	Lycmg	4	3½x5	192	19.60	35	2000	I	Blk	3/16	1⅝	5/16	Hel	T-S	S	Delco	Dyneto	Cart	V	D P	U P 3	Peru	F	Sp B	4.45	S	S	Semi	3	B	R	R
*Piedmont, 6-40	1945	2875	122	32x4	Firestone	Cont	6	3¼x4½	224	25.35	44	2200	I	Blk	3/16	1 9/16	5/16	Hel	P	F	Remy	Remy	Stmb	V	D P	U P 3	Spacke	S-F	Sp B	4.45	S	S	Semi	3	B	R	R
Pierce-Arrow, 38	7500	4370	138	35x5	Firetone	Own	6	4x5½	417	38.40	...	3000	T	Blk	¼	1½	5/16	Hel	P	F	Delco	Delco	Own	P	D	Sep 3	Own	S-F	Sp B	4 28	S	A	Semi	7	B	R	R
Pierce-Arrow, 48	....	5103	142	35x5q	Goodrich	Own	6	4½x5½	525	48.60	....	....	T	2	¼	1½	5/16	Hel	P	F	Delco	West-2	Own	P	C	Sep 4	Own	S-F	Sp B	Opt	S	A	¾ El	7	B	B & R	R
Pilgrim	895	2350	114	32x3½s	Perlman	G-B & S	4	3¾x4¼	188	22.50	37	2800	L	Blk	3/16	1⅝	½	Chn	T-S	F & S	Elsman	West-2	Zeni	V	O D	U P 3	Hess	¾ F	Sp B	4.08	S	S	Semi	3	B	R	B
*Pilot, 6-45	1895	2890	120	32x4s	Perlman	Teetor	6	3⅛x5	230	23.44	45	2100	L	Blk	3/16	137	.31	Hel	P	F & S	Delco S-H	Delco-2	Tilt	V	D D	U P 3	Spacke	F	Sp B	4.90	S	T	Cant	3	B	B & R	R
Porter 45 (16 valve)	7000	3500	140	36x5	D Wheels	Own	4	4⅜x6¾	448	34.28	....	....	I	Blk	¼	....	....	Wm	P	F & S	Bosch 2-Pt	Bosch 2	Long	P	C	Sep 4	Own	F	Bev	3 00	S	T	Semi	3	B	B	B
Premier, 6-D	4600	4120	126¾	32x4½s	Firestone	Own	6	3⅜x5½	295	27.30	60	2600	I	Blk	3/16	1 21/32	5/16	Hel	P	F & S	Delco S-A	Delco-2	John	V	D D	U P 3	Stanpar	S-F	Sp B	4.50	S	S	Semi	3	B-P	R	R
Premocar, 4-80	3865	....	117	32x4½	Firestone	Duesen	4	4x6	452	25.60	76	2500	I	Blk	¼	1 11/32	⅜	Chn	P	F & S	Bosch	West	Zeni	V	D D	U P 3	Timken	F F	Sp B	4.90	S	A	Semi	2	R	R	R
*Reo, T-6	1850	3050	120	33x4s	Firestone	Own	6	3 3/16x5	239	24.30	50	2000	F	Blk	3/16	2⅛	.375	Hel	P	F-S	N. E	N. E	Ray	V	D D	Sep 3	Own	S-F	Sp B	4.60	S	S	Semi	4	R	R	R
Ri-Chard	8000	4500	137	34x6	Firestone	Own	8	3¾x6¾	600	45.00	120	1800	I	4	¼	2¾	5/16	Hel	P	F-S	2 Bosch M	West	Own	V	D D	Sep 3	Own	F-F	Bev	2.00	T	T	Semi	5	B	B	B
Revere, B	4650	3850	131	32x4½q	Goodyear	Duesen	4	4⅜x6	361	30.63	105	2600	I	Blk	3/16	2¼	⅜	Chn	P	F-S	Bosch	West	Stmb	V	D D	U P 4	Stanpar	F-F	Bev	3.60	S	A	Semi	2	B	B	B
*Roamer, 6-54-E	....	3550	128	32x4½s	Wire W	Cont	6	3½x5¼	303	29.40	54	2450	L	Blk	3/16	1.54	.30	Hel	P	F & S	Bosch D-H	Bijur-2	Stmb	V	D P	U P 3	Stanpar	¾ F	Sp B	3.87	S	S	Cant	3	B-R	R	R
*Roamer, 4-75-E	....	3690	128	32x4½s	Wire W	Duesen	4	4x6	301	25.60	75	1800	I	Blk	¼	2	⅜	Chn	P	F & S	Bosch	West	Stmb	V	D P	U P 4	Stanpar	¾ F	Sp B	3.87	S	S	Cant	2	B	R	R
Rock Falls, 10	....	2800	136	35x5	Firestone	Cont	6	3¾x5	331	33.75	....	....	L	Blk	3/16	....	....	....	P	F & S	Bosch	West	Rayf	V	D P	U P 3	Columbia	F-F	Sp B	4.87	..	..	¾ El	....	....	....	....
*R. & V. Knight, J	3350	3617	127	32x4½	Firestone	Own	6	3½x4½	260	29.40	....	....	K	Blk	3/16	....	....	Chn	T-S	F	Wagner	Wagner	Stmb	V	D P	U P 3	Timken	S-F	Sp B	4.90	S	S	Semi	3	R	R	R
*R. & V. Knight, R	....	2900	115	32x4	Firestone	Own	4	3¾x5	221	22.50	....	....	K	Blk	3/16	....	....	Chn	T-S	F	Wagner	Wagner	Stmb	V	D P	U P 3	Salisbury	F-F	Sp B	4.75	S	S	Semi	3	B	R & B	R
Saxon Duplex	1895	2770	112	32x4	Firestone	Own	4	3⅜x5	179	18.23	45	2400	I	Blk	3/16	1½	⅜	Hel	T	F	Wagner	Wagner	Stmb	V	D D	U P 3	Adams	¾F	Sp B	4.75	T	T	Cross	2	R	R	R
*Sayers	2295	2800	118	33x4s	Cleveland	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	3/16	1⅝	⅜	Hel	P	F	Delco	Delco-2	Stmb	V	D D	U P 3	Stanpar	S F	Sp B	4.75	S	S	Semi	4	B	R	R
Scripps-Booth, B-39	1545	2500	115	32x4	Kelsey	North	6	2 13/16x4¾	177	18.99	44	2600	I	Blk	3/16	....	....	Hel	P	F	Remy	Remy-2	Marv	V	C	U P 3	W-Mott	¾ F	Bev	4.50	S	S	Semi	3	B-P	B-R	B
Seneca, L	1185	2100	108	30x3½	Jackson	LeRoi	4	3⅛x4½	138	15.63	27	2200	I	Blk	3/16	....	¼	Hel	T-S	F & S	Conn	Al-Ch	Scheb	V	D D	U P 3	Peru	F F	Sp B	4.50	..	T	Cant	2	B	R	R
Severin Six, H	2550	2985	122½	32x4½	Firestone	Cont	6	3½x5¼	303	29.40	55	2100	L	Blk	3/16	1.54	.30	Hel	P	F & S	Wagner	Wagner	Stmb	...	D D	U P 3	Salis	¾ F	Sp B	4.50	S	S	Semi	3	B-R	B-R	R
Sheridan, B-40	....	2850	116	33x4	Jaxon	GMC	4	3 11/16x5¼	224	21.75	33	1500	I	Blk	3/16	1 5/16	¼	Hel	P	F & S	Remy	Auto-2	Zeni	V	D P	U P 3	GMC	¾F	Sp B	4.66	S	T	Semi	3	B	R	B
Simplex-Crane	°7000	....	143½	35x5q	....	Own	6	4⅜x6¼	564	45.94	....	....	L	3	3/16	....	....	Chn	P	F	Eisen	Bosch-2	Newe	P	D	U P 4	Own	F	Sp B	Opt	S	S	Semi	3	B	B	R
Singer, 19	5000	4400	139	35x5	D Wheels	H-Splm	6	4x5½	415	38.40	100	1950	T	3	3/16	1⅞	5/16	Hel	P	F	Bosch S-H	West-1	Rayf	V	D D	U P 4	Timken	F	Sp B	3.70	S	A	Cant	3	B	R	R
Skelton 35	1295	2450	112	32x3½	Firestone	Lycmg	4	3½x5	192	19.60	35	2100	L	Blk	3/16	1 5/16	5/16	Hel	T-S	F & S	Conn	West	Zeni	V	D	U P 3	Peru	F-F	Sp B	4.25	S	S	Semi	2	B	R	R
Southern Six	2995	3300	127	32x4½	Firestone	H S	6	3¼x5½	273	25.35	57	2000	L	Blk	3/16	1 9/16	5/16	G	P	F & S	Berl	Bijur	Zeni	V	D D	U P 3	Salis	¾F	Sp B	4.75	S	S	Semi	3	B	B R	R
Spencer E	1200	1500	104	30x3½	Goodyear	Spencer	4	3¼x4½	206	16.90	40	2750	I	4	¼	1¾	⅜	G	A	F & S	Auto	Auto	Schb	V	C	U P 3	Special	F-F	Bev	4 25	..	.	Cant	3	R	R	B
Standard, 1	3400	3500	127	34x4½s	Firestone	Own	8	3¼x5	332	33.80	70	2200	L	4	3/16	1 7/16	⅜	Hel	P	F	Split	West	Cart	V	D D	U P 3	Timken	S-F	Sp B	4.46	S	S	Semi	3	B-R	B R & P	R
Stanwood Six A	2050	2900	118	33x4	Stanweld	Cont	6	3¼x4½	225	25.30	55	2600	L	Blk	3/16	1½	5/16	Hel	P	F	At-K	West-2	Stmb	V	D	U P 3	Stanpar	S-F	Sp B	4.50	S	S	Semi	3	B	R	R
Stearns-Knight, 4	2450	3400	125	34x4½s	Firestone	Own	4	3¾x5⅝	248	22.50	50	2200	S	Blk	3/16	....	....	Chn	P	F & S	At-K S-H	West-2	Schb	V	D D	U P 3	Own	S-F	Sp B	4.50	S	A	Cant	3	B-R	B & R	R
Stephens, 84	2100	3100	122	33x4½s	Stanweld	Own	6	3¼x4½	225	25.35	57	2600	I	Blk	3/16	1⅝	⅜	Hel	T-S	F	Auto	Auto	Till	V	D D	U P 3	Timken	S-F	Sp B	4.90	S	S	Semi	3	B	R	R
Sterling	1185	2000	110	30x3½	Std	LeRoi	4	3⅛x4½	138	15.60	27	2200	L	Blk	3/16	1½	3/16	Hel	T-S	S	Berl	A C	Zeni	V	D D	3	Wisc	F F	Bev	4.00	S	S	Semi	2	R	R	R
Stevens-Duryea, E	8000	4200	138	35x5	Firestone	Own	6	4 7/16x5½	510	47.20	80	1800	L	2	¼	2⅛	7/16	G	P	F & S	Berl 2	West	Stmb	V	D	U P 3	Own	F F	Sp P	3.93	S	T	¾ El	4	B	B	B
S-S-E, A-F	7000	1800	122	33x4½	D Wheels	Own	6	....	300	30.24	77	2700	....	Blk	3/16	2	⅜	Chn	P	F & S	Delco D	Delco-2	Zeni	P	D D	R Ax 3	Own	S-F	Sp B	3.40	T	T	Cant	7	....	....	....
Studebaker, E-H	1685	2950	119	32x4q	Kelsey	Own	6	3½x5	289	29.40	51	2000	L	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Wagner	Wagner	Stmb	V	C	Sep-3	Own	S-F	Sp B	4.00	S	S	Semi	4	R	R	R
Studebaker, E-G	2135	3125	126	33x4½q	Kelsey	Own	6	3⅞x5	354	36.04	62	2000	L	Blk	¼	1 11/16	5/16	Hel	P	F & S	Wagner	Wagner-2	Ball	V	C	Sep-3	Own	S-F	Sp B	3.70	S	S	Semi	4	R	R	R
Studebaker, E. J	....	....	112	32x4	....	Own	6	3⅛x4½	207	23.40	....	....	L	....	3/16	....	....	Ch	P	S P	Wag. S	Wag	Stmb	V	P	Amid-3	Own	S-F	Sp-B	4.55	S	S	Semi	4	R	R	R
*Stutz 16-valve	4000	....	130	32x4½s	D Wheels	Own	4	4⅜x6	361	30.63	....	....	T	Blk	¼	....	....	Hel	P	F & S	Delco D-H	Remy-2	Stmb	P	C	R Ax 3	Own	¾ F	Sp B	3.75	T	T	Semi	3	B	B-R	R
*Templar, 4-45	2685	2885	118	32x4	Firestone	Own	4	3⅜x5½	197	18.23	45	2100	I	Blk	3/16	1⅝	⅜	Chn	P	F	Magneto	Bijur-2	Stmb	V	D D	U P 3	U. S.	S-F	Sp B	4.41	S	S	Semi	3	B	B & R	R
*Texan	....	2550	113	33x4s	Firestone	Lycmg	4	3½x5	192	19.60	35	2000	L	Blk	3/16	1⅝	5/16	Hel	T	F & S	Conn	Bijur	Cart	V	P	U P 3	Peru	F F	Sp B	4.25	S	A	Cant	2	B	R	R
*Tulsa, D-1	1550	2400	117½	33x4s	Stanweld	H S	4	3½x5	192	19.60	35	1800	L	Blk	3/16	....	....	Hel	T	F & S	Conn	Dyneto	Zeni	V	D D	U P 3	Salisbury	S F	Sp B	4 50	S	S	Semi	2	B	R	B
Velie, 34	1385	2600	112	32x3½	Firestone	Falls	6	3⅛x4¼	196	23.50	40	2000	L	Blk	3/16	....	....	Hel	T-S	F & S	At-K S-A	West	Stmb	V	D D	U P 3	Col	S-F	Sp B	4.60	S	S	½ El	3	B-P	R	R
Velie, 48	1895	3100	115	32x4s	Firestone	Cont	6	3¼x4½	225	25.35	55	2600	L	Blk	3/16	....	....	Hel	P	F & S	At-K S-A	Bijur	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.60	S	S	¾ El	3	B-R	R	R
Vernon, 419	845	1600	103	30x3½c	Baker.	Own	4	3⅛x4	123	15.62	45	2800	T	Blk	3/16	1¾	7/32	Hel	T	F & S	At-K S-A	Wd. Leon	B&B	G	D	U P 3	Own	F-F	Sp B	4.25	S	S	Cant	2	B	R	R
Vernon, 819	1695	2250	115	31x4c	Harvey	Own	8	2⅝x4	173	22.05	62	2800	T	2	3/16	1⅜	7/32	Hel	T	F & S	At-K S-A	Wd. Leon	B&B	G	D	U P 3	Own	F-F	Sp B	4.63	S	S	Cant	2	R	R	R
Vogue 6-66	2485	....	124	33x4½	Firestone	Cont	6	3½x5¼	303	29.40	54	2450	L	Blk	3/16	1.54	.30	Hel	P	F & S	Conn	Auto	Schb	V	D	U P 3	Salisbury	¾-F	Sp B	4.50	S	S	....	3	B	R	R
Washington	1685	2490	114	32x4	....	Falls	6	3⅛x4¼	196	23.50	37	2000	I	Blk	3/16	1¼	9/32	Hel	T-S	F & S	At K	Bijur-2	Zeni	V	D D	U P 3	Columbia	¾-F	Sp B	5.11	T	S	Cant	3	B	R	R
Wharton, DeLuxe 8	3450	3800	125	34x4½	Disteel	Curtis	8	4x5	498	51.20	100	1800	I	8	3/16	1.62	.375	Hel	P	F	Berling	Dyneto	Zeni	V	D D	U P 4	Eaton	F-F	Sp B	3.60	S	S	Semi	5	B	R	R

TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	TIRES AND RIMS			ENGINE															IG-NITION SYSTEM		Car-buretor				REAR AXLE							BEARINGS			
			Wheelbase in Inches	Size	Make of Rims	Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	Wth. P. Ring Groove	Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	Make and Type	Make of Starting-Lighting System	Make	Fed by	Clutch Type	Gearset Location and Forward Speeds	Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
*Waco, T-37	950	2350	112	32x3½q	....	....	4	3¾x4¼	188	22.50	37	....	I	Blk	..	....	....	......	T	F & S	Split	....	Schb	V	D	U P 3	....	F-F	......	....	..	..	¾ El	..	....	B	....
Wasp, 211	6500	3700	132	33x5	Fires one	Wisc	4	4¾x5½	389	36.10	72	1900	L	2	¼	2	¼	Hel	P	F & S	West	West	Stmb	V	D D	Sep 3	Timken	S-F	Sp B	3.77	S	A	Semi	5	R	R	R
*Westcott, C-38	2290	3100	118	33x4	Firestone	Cont	6	3¼x4½	223	25.35	46	2690	L	Blk	3/16	1 43/64	5/16	Hel	P	F & S	Delco	Delco-3	Rayf	V	D D	U P 3	Timken	S-F	Sp B	5.09	S	S	Semi	4	R	R	R
Westcott, C-48	2990	3600	125	32x4½s	Firestone	Cont	6	3½x5¼	303	29.40	51	1900	L	Blk	3/16	1.54	.30	Hel	P	F & S	Delco	Delco-3	Rayf	V	D D	U P 3	Timken	S-F	Sp B	4.45	S	A	Semi	3	B-R	R	R
Willys-Knight, 20T	2195	3695	121	34x4½s	Stanweld	Own	4	4⅛x4½	240	27.23	55	2200	S	Blk	⅜	....	....	Hel	T-S	F & S	Conn S	Auto-2	Tilt	V	C	R Ax 3	Own	F	Sp B	4.30	T	T	Cant	3	B R	PR	R
Winton, 33	4600	4300	132	35x5	Firestone	Own	6	3¾x5¼	348	33.75	70	2200	L	2	¼	1¾	⅜	Chn	P	F	Bosch S-H	Bijur-2	Stmb	V	D D	U P 4	Own	F	Sp B	4.90	S	T	Semi	4	B-R	R	R
Wolverine	3500	2340	117	32x4½	....	Duesen	4	3 63/64x6	299	25.00	90	2600	....	Blk	..	2¼	⅝	Gear	P	F & S	Bosch	Bijur	Mill	V	D D	U P 4	American	F-F	Sp B	2.94	..	S	Semi	3	B	R	R

SPECIFICATIONS OF STEAM PASSENGER CARS

Name and Model	Price	Wheel-Base	Type of Boiler	Boiler Location	Fuel Used	Burner Type	Condensing or Non-Conden.	Type of Engine	Type of Valve Gear	Type of Valves	No. Cyl.	Bore and Stroke	Engine Location	Final Drive	Gear Ratio	Tire Size	Type of Rear Spring	Car Drives Through	Torque Taken by
Doble Detroit	5000	135	Semi Flash	Hood	Kero	Atomising	Condensing	Simp D Act	Own	Slide	2	5x4	Rear Axle	Spur Gr	1.28	35x5	Semi	Springs	Eng. Frame
Stanley, 735	3950	130	Fire Tube	Hood	Kero	Vaporising	Condensing	Simp D Act	Steve Link	Slide	2	4x5	Rear Axle	Spur Gr	1.50	34x4½	Elliptic	Springs	Eng. Frame
Super-Steamer	3000	125	Fire Tube	Hood	Kero	Bunson	Condensing	Simp D Act	Steve Link	Slide	4	3¼x5	Rear Axle	No Gr	....	33x4	Semi	Springs	Eng. Frame

Official Figures of Motor Vehicle Registration and Receipts

	Passenger	Commercial	Total	Motorcycles	Gross Receipts
Alabama	61,941	12,696	74,637	1,035	$832,980
Arizona	30,559*	4,000*	34,559	750	191,577
Arkansas	55,582	3,500	59,082		590,820
California	††534,814	34,078	568,892	20,047	5,554,265
Colorado	121,212	7,728	128,940	3,364	818,775
Connecticut	95,150*	23,950*	119,100	4,375	1,852,591
Delaware	16,500*	1,800*	18,300	674	329,980
District of Columbia	†44,855	6,826	51,681	2,648	223,588
Florida	64,185	10,439	74,624	1,275	554,695
Georgia	132,000*	14,000*	146,000	1,382	1,918,512
Idaho	48,850*	2,000*	50,850	763	882,271
Illinois	504,240	64,674	568,914	10,368	5,780,612
Indiana	300,226	32,481	332,707	8,823	2,029,103
Iowa	407,030*	30,000*	437,030	4,000	7,487,830
Kansas	268,159*	26,000*	294,159	2,972	1,399,272
Kentucky	99,417	13,258	112,675	1,546	815,941
Louisiana	65,000*	5,000*	70,000	500	400,000
Maine	55,600	7,600	63,200	1,590	820,000
Maryland	100,313*	12,000*	112,313	5,194	2,124,925
Massachusetts	‡253,245	51,386	304,631	15,143	3,860,232
Michigan	336,946	45,771	412,717	8,011	5,494,486
Minnesota	¶204,300*	19,400*	223,700	7,550	1,067,787
Mississippi	60,000*	4,000*	64,000		*425,000
Missouri	273,308*	23,720*	297,008	3,954	2,111,697
Montana	59,450*	1,200*	60,650	675	416,245
Nebraska	200,000	19,000	219,000	2,100	2,039,330
Nevada	9,963*	500*	10,463	140	103,318
New Hampshire	30,240	4,440	34,680	2,542	542,457
New Jersey	204,125	23,612	227,737	11,041	3,503,936
New Mexico	16,100	6,000	22,100	219	200,000
New York	††559,521**	124,398	683,919	69,349	8,817,709
North Carolina	127,405	13,415	140,860	1,418	1,785,000
North Dakota	88,385	1,455	89,840	898	681,059
Ohio	538,000	82,600	620,600	19,400	*6,400,000
Oklahoma	204,000	9,000	213,000	1,600	230,000
Oregon	93,790*	10,000*	103,790	3,517	2,085,000
Pennsylvania	521,835	48,329	570,164	23,981	8,090,873
Rhode Island	40,768	9,563	50,331	2,223	451,062
South Carolina	83,618*	9,200	92,818	908	527,868
South Dakota	113,000	9,000	122,000	560	768,000
Tennessee	90,214	11,638	101,852	1,151	1,214,000
Texas	397,693	30,000*	427,693	4,293	*3,500,000
Utah	37,012	5,692	42,704	1,115	366,371
Vermont	28,706	2,916	31,622	946	555,384
Virginia	103,000	13,670	116,670	2,233	1,850,000
Washington	‡‡154,350	25,864	180,214	4,969	2,828,896
West Virginia	***69,862	10,802	80,664	1,659	1,223,448
Wisconsin	277,095	16,205	293,300	8,002	3,127,073
Wyoming	22,926	1,000	23,926	327	267,179
Total	8,234,490	945,826	9,180,316	271,230	99,141,097

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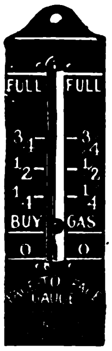
*Aproximate. †For fiscal year ending June 30, 1920. ‡For registration year ending Nov. 30, 1920. ¶For the three-year period ending Dec. 21, 1920. **Includes 3560 dealers' licenses. ††For first 11 months of registration year ending Jan. 31, 1921. ‡‡For March 1 to Dec. 31, 1920. ***For 18 months ending Dec. 31, 1920.

FACE-TO-FACE GAUGE FOR FORD CARS.

Leitch-Nelson & Co., Detroit, Mich., is marketing a gauge that is designed for attachment to the dash board of Ford cars and will show accurately and plainly the amount of gasoline in the fuel tank. This gauge is run on the gravity principle, very much on the order of an indicator on a steam boiler. When the water in the boiler attains a certain height the little glass indicator, which is at a corresponding level, clearly shows the amount of water in the boiler. This gauge works on a very similar principle. Whatever the level of the gasoline in the tank, this same level is maintained in the gauge and, by means of a simple steel float an accurate indication is shown on the face of the gauge.



The Face-to-Face gauge can be attached in a very few minutes and with no possibility of injury to the mechanism or working principle of the car itself. Once put on this gauge will outlast the car.

ALL-WELD RADIATOR GUARDS FOR TRUCKS.

Michaels & Mourre, Inc., 344 Amsterdam avenue, New York city, is offering as "radiator insurance" for trucks, All-Weld Steel Radiator Guards. The accompanying illustration shows one of these installed on a 6½-ton Saurer truck, one of a fleet operated by the Department of Public Works of the city of New York.

The "All-Weld" steel guard is made up of three units, the guard proper, which conforms to the size and shape of the radiator, and two side braces, bolted to the guard and the side members of the frame. The guard is made up of a welded frame of two-inch channel, enclosing a series of vertical flat steel bars, one-quarter to three-eighths inch thickness, and 1¾ inches wide. These vertical bars are spaced close enough to insure protection to the radiator and still to leave ample opening for the proper circulation of the air, giving about a 92 per cent. opening. These vertical bars are welded to the top and bottom of the frame at the back and front. A flat steel bar is welded horizontally across the guard, midway between the top and bottom, both at the front and back of the guard, the welds being made at both ends of the horizontal bars to the side of the frame, and a weld being made to every vertical bar.

All-Weld Radiator Guard Installed on Saurer Truck.

This construction is stated to result in a guard which will not only resist a straight blow, but also an oblique one. The vertical bars being set inside of the channel, insures that the stress will be taken up largely by the lip of the channel of the frame, with the added strength of a welded joint at this point. The horizontally welded bar will resist an oblique one.

The guards are attached in the conventional manner by either angle, round or flat steel side braces, as found advisable to use.

MONARCH AUTO VISOR.

The Monarch Auto Visor offers the following special features: Green under side, which is restful on the eyes; round corners, which improve the appearance; and no side braces to obstruct the view. It affords protection from sun, rain and snow and fits any car. It is attached to the front bow on open cars or the front panel of closed cars. A screwdriver is the only tool needed when putting it on the car. It is adjustable to any angle by screwing two wing nuts. It is made of quarter-inch panel lumber with round corners covered with leather grain rubber material with a steel moulding clamped on all around the edge and three steel braces which make it very rigid.

The Monarch Auto Visor is made by the Monarch Carriage Goods Co., Cincinnati, O., and the retail price is $4.50.

EASY BENDING OF FRONT AXLE.

A pressure of 53 tons was required to bend the Ford axle, shown in the illustration. a job far beyond the capacity of an ordinary arbor press. The pressure required to straighten it again was nearly as great.

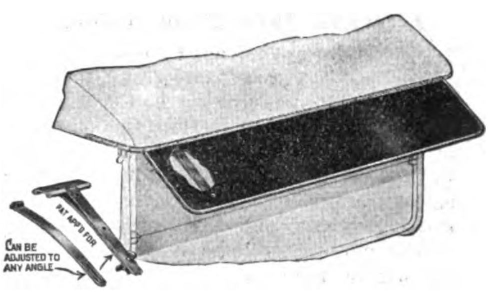
The Detroit Combination Press is stated to be probably the strongest hand power press on the market. The frame is of heavy channel steel; the cross brace is welded—not riveted—to the frame. A gong warns the operator when the travel of screws approaches its limit.

The press is guaranteed to handle any press work in any service station—no matter how heavy. Truing up centers and discs, for crank shafts, cam shafts, etc., can be done in addition to the arbor and straightening features.

It is manufactured by the Detroit Garage Equipment Co., Detroit, Mich.

MOTOR EYE—SEES ALL, TELLS ALL.

The motor is the "life" of every automobile. It is the most expensive unit and is affected by many varying conditions—any one of which may cause trouble and expense. A warning signal is essential to inform the driver of these troubles. The Motor Eye is such a signal, with its mercury charged, metallic thermo, conductor rod in direct contact with the water as it leaves the motor, keeping before the driver an accurate knowledge of the motor temperature at all times.


CAN BE ADJUSTED TO ANY ANGLE
PAT APP'D FOR

Monarch Auto Visor.

A warning is given to the driver whenever the motor becomes too heated, through lack of oil or water, a broken fan belt, or a number of other causes. An occasional glance at the Motor Eye tells the whole story. If the mercury shows a temperature of 150 to 170 degrees the motor is at maximum efficiency. When all is not well under the hood you can see the mercury gradually climb towards 212 degrees. Then it's time to investigate.

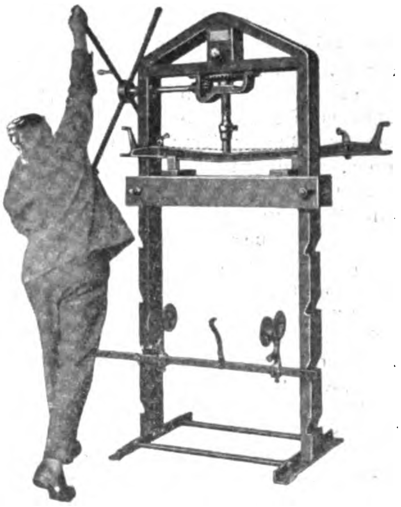
When you can hear the knock the damage is done. Don't depend on your ears—get a Motor Eye, drill a 7/16 inch hole in the radiator cap, insert the instrument, tighten up the nuts and ever after see how the motor feels.

The Motor Eye is installed by drilling a 7/16-inch hole in the radiator cap, inserting the instrument and tightening up the nuts.

The Motor Eye is manufactured by the Metalware Corporation, Chicago, Ill., and its price is $7.50.

BLACK BRONZE FOR BRASS.

Brush the brass with a diluted solution of nitrate of mercury and then several times with a solution of liver of sulphur.



Bending Ford Front Axle in Detroit Combination Press.

Boost Boston Show

(Continued from Page 30.)

There is, however, one thing that the buying public has not yet had thoroughly hammered into them—that the shortage of cars this year is beyond belief. Stocks in the dealers' hands in Boston are a very small fraction of what they have had in previous years, and stocks in the hands of the factory are at a minimum. Once the buying public awakes to the fact we will see a mad scramble for new cars and a very much improved demand for second hand cars. In fact the improvement in second hand cars has already developed. In our own case we are completely sold out of used cars and have orders waiting for anything we may be able to get.

We look for normal business in another two weeks and a steady demand from now on.—ARTHUR P. YOUNG, Treasurer, MOTORS CORPORATION OF NEW ENGLAND, New England Distributor for Case Cars.

Obtained Many Real Prospects

We are very much pleased with the results obtained at the Boston show. While we did not actually close a great number of sales, we obtained many real prospects and requests by agents for the sale of our cars.

We believe that there will be a very good business through New England this year, but it will only come to those concerns who go after it.—C. W. KELSEY, Vice President and General Manager, KELSEY MOTOR CO.

Live Prospects and Orders.

While we have been exhibiting in the Boston Motor Truck Show annually since 1910 (I believe the auto show just closed will make our 12th yearly exhibit), it was the unanimous expression of our several sales managers that they had received more live prospects, more orders and more honest-to-goodness indications of real buying during the show just closed than they had witnessed in years.

As our Mr. White stated during the show, we started in Monday morning taking orders, our dealers did a nice business, and all in all our salesmen received unusual encouragement pointing to a good spring business. Unless all signs fail we shall experience a gradually increased buying from now on. Taking into consideration the strict buyers' market which now exists, the like of which we have not experienced since 1910, we are extremely glad to state that the 1921 Boston Truck Show was a great success and gratifying beyond our expectations.—J. S. HATHAWAY, New England Manager, THE WHITE CO.

Closed Sales at Show.

This year we actually closed definitely some sales at the show which we did not do during the 1920 exhibition.

We believe that the Boston Automobile Show will do a lot toward stimulating the automobile business this spring. —EDWARD G. ACKER, President and Treasurer, EDWARD G. ACKER, INC.

Was a Distinct Success.

The automobile show this year, as far as this company was concerned, was a distinct success. In fact, we made as many sales as we did a year ago when the automobile business was at its crest. Our salesmen secured a number of excellent prospects at the show, which bid fair to be buyers.—F. P. ALLEN, C. E. FAY-ALLEN CO.

The Best Business Getter.

We believe that the recent automobile show held here in Boston was the best business getter that we have ever seen. A tremendous amount of retail business was obtained during the week of the show by the dealers. On our own particular line we sold 33 per cent. more cars than we did at the same show in 1920.

The after results of the show have been very gratifying and a large amount of business has been transacted this week. It looks to us to be simply a question of how many cars we can get from our factory as to the number of cars which we can sell this year.—JOSEPH S. DONOVAN, Treasurer, DONOVAN MOTO CAR CO.

Business Coming Back.

The show opened very favorably and the weather continued favorable throughout the week—it being better than any week since we have been running the Boston shows.

The attendance was a very good average, in fact, the cash receipts were fully larger than they were last year and showed a falling off of the trade tickets. This showed that the automobile dealers were economizing. The crowd seemed to be of a buying nature, and I believe there were more good prospects for the salesmen to work on received at this show than at any one in the past, as the sales department seem to be getting on their toes and going out for business, which seems to be the only way to get it at the present time.

The sales record would rather show that ther was a less falling off on the high priced and medium priced cars than in the more moderate priced ones. This might show that the wage earner was economizing and preparing for what he sees in the future.

The writer believes that the real moneyed values of cars sold in 1921 will far exceed that of 1920. The 1920 sales were very much increased by the feeling that the shortage of cars was going to make it harder to get them later. For 1920 our own sales showed 24 orders; of these the records show only 12 were delivered, showing that the salesmen had taken orders for cars which were impossible for us to deliver. I think this probably is a fair sample of what is being done by others during the show. This year the orders taken were 15 and two of these were rejected for the allowance offered by the salesmen, and not accepted by the used car department, leaving 13 orders, which we have cars to fill, and which will make it about as good as last year.

The only difference between this year and last year is: Last year we were short of cars and felt as though we were doing a rushing business and could do a lot more if we had the cars, and this year we are practically overstocked and, consequently, feel as though there is nothing moving.

There seems to be a feeling among the dealers that there has to be a greater effort made as the time has passed when we do not have to go out and ask for the business.

The writer believes there is a rift in the clouds and that business through New England is slowly coming back.—J. H. MACALMAN, President, BOSTON AUTOMOBILE DEALERS' ASSOCIATION.

Sales Are Above Normal.

Our sales during the recent automobile show were within 10 per cent. of our biggest year and the few days following the show indicate even bigger business. This means that our sales are above normal.

Business in Dodge Brothers cars in our territory is not so markedly seasonal as may be the case with other cars in other places. We aim to do a large volume every month, although at the close of our fiscal year we had over 400 unfilled retail orders for spring delivery on our books and this number has increased considerably since.

But we are dealing in a staple and we look for continually increasing business, which the number of orders for immediate delivery taken at the automobile show seems to forecast with emphasis.—ROBERT S. RICHEY, Sales Promotion Director, HENSHAW MOTOR CO.

Shows Acts as a Stimulus.

During the show we took a great many orders and our local salesmen got a great many new prospects that they were not working on. Furthermore, our dealers throughout New England who attended the show with us were also able to close up some sales and to sum it all up we feel that the show acts as a stimulus and does do a lot of good not only from the standpoint of retail sales, but for the dealers through New England as well, as our prospect list shows that people call on us from all points of New England.

In regard to the future business outlook we feel, and it is already showing, that business is picking up and will continue so for about two months. We look for a very quiet summer, but around the middle of October I believe that things in general will be fairly well settled and that from then on the truck business will be the biggest in its history and will continue so for several years.—H. ROSS MADDOCKS, President, STEWART AUTOMOBILE CORPORATION.

Medium Priced Cars Sold Well.

We consider that the Boston Automobile Show, which has just passed, was practically normal in attendance, maybe slightly under if anything. The sales in some lines were fairly good; in others, poor. It is our opinion that the medium priced car sold fairly well.

So far as the sale of our own car is concerned we might add that the first half of the show week business was very dull. The latter half of the week, however, was fully normal and since the show closed we have had a good increase in retail business. The wholesale end has been slow for several months and is slow now. We hope, however, to see an improvement in the near future and recent indications are to that end—F. H. LUCAS, General Manager, MITCHELL-LUCAS MOTOR CO.

Calendar of Coming Events

March 28-April 2—Annual Automobile Show, Columbia Automobile Trade Association, State Fair Building; J. M. Green, Manager.

March 28-April 2—Greenville, Mass., Automobile Show.

March 30-April 2—Greensburg, Pa., Seventh Annual Show, Passenger Cars and Accessories, Coliseum, Westmoreland Auto Dealers' Association; W. M. Berlin, Manager.

April 2-9—Bridgeton, N. J., Annual Automobile Show, Bridgeton Automotive Association.

April 3-9—Denver, Col., Annual Automobile Show, Auditorium.

April 3-9—Gloversville, N. Y., Annual Gloversville-Johnstown Automobile Show, State Armory. J. J. Callahan, Manager.

April 4-9—Chattanooga, Tenn., Automobile Show.

April 4-9—Seattle, Wash., Annual Automobile Show, Seattle Auto Dealers' Association, Arena-Hippodrome. W. J. Coyle, Manager.

April 6-9—El Paso, Tex., Southwest Auto Show, Liberty Hall, Automobile Trades Department, El Paso Chamber of Commerce.

April 11-16—Fifth Annual Automobile Show, Oklahoma City, Okla., Motor Car Dealers' Association, New Coliseum; Edgar T. Bell, Secretary, 403 Oklahoma Building.

April 11-16—Charlotte, N. C., Passenger Car, Truck and Accessories Show, Charlotte Automotive Trade Association; W. M. Jones, Secretary.

April 11-16—Buffalo, N. Y., First Annual Motors and Sportsmen's Show.

April 16-23—Red Bank, N. J., Automobile Show, Monmouth County Automobile Dealers' Association, Armory.

April 20-May 5—Mexico City, Mex., Automobile Show.

April 20-23—Goldsboro, N. C., Second Annual Show, Passenger Cars, Trucks, Tractors and Accessories, Wayne Warehouse, W. C. Denmark, Secretary, Chamber of Commerce.

April 21-23—Lincoln, Ill., Automobile Show.

April 25—New York City, Eastern Automotive Equipment Association Meeting; R. A. Picard, Secretary, A. J. Picard & Co., New York City.

April 27-29—Atlantic City, N. J., Ninth Annual Meeting, Chamber of Commerce of the United States.

May 4-7—Cleveland, O., Eighth Annual Convention, National Foreign Trade Council, Hotel Hollenden; J. G. Hammond, Secretary of Committee, 207 Chamber of Commerce, Cleveland.

May 9-10—Amarillo, Tex., Convention, Panhandle Hardware & Implement Association. Troy Thompson, Secretary-Treasurer, Delhart, Tex.

May 12-17—Prague, Bohemia, Agricultural Fair, Bohemian Agrcultural Societies.

May 17-19—Buffalo, N. Y., Spring Meeting, Service Managers of the National Automobile Chamber of Commerce, Iroquois Hotel; H. R. Cobleigh, Secretary.

May 24-28—West Baden, Ind., Semi-Annual Meeting, Society of Automotive Engineers, West Baden Springs Hotel.

May 28-June 8—Basle, Switzerland, International Automobile Exhibition.

May 30—Indianapolis, Ind., 500-Mile Race, Speedway.

June—London, England, International Rubber Exhibition.

June 13-16—Detroit, Mich., Annual Convention, National Team & Motor Truck Owners, Inc., to Be Held Aboard Ship During Cruise on the Steamship Naronic; F. L. Henk, Secretary, 92 Fort Street, West Detroit.

June 18—Uniontown Speedway Races.

July-October—Lima, Peru, Peruvian Centennial.

July 4—Tacoma, Wash., Speedway Race.

July 4-9—Mackinac Island, Mich., Summer Meeting, Automotive Equipment Association.

July 4-15—London, England, London Fair and Market, Royal Agricultural Hall. International Trade Exhibitions, Ltd., Broad Street House, New Broad Street, London, E. C., England.

July 23—Strasbourg, France, French Grand Prix.

Aug. 13—Belgium Grand Prix.

September—Bandoeng, Java, Dutch East India, Second Industrial Fair, Automobiles and Trucks, Netherlands-India Industrial Fair Association.

Sept. 4—Italian Grand Prix.

Sept. 5—Pike's Peak Hill Climb.

Sept. 5—Uniontown Speedway, Annual Autumn Classic.

Sept. 6-16—Utrecht, Holland, International Industrial Fair; American Representative, New York Chamber of Commerce for The Netherlands and Netherlands East and West Indies, Inc., 44 Beaver Street, New York City.

Oct. 5-16—Paris, France, Automobile Show, Grand Palais.

Oct. 12-14—Chicago, Ill., Annual Convention National Implement and Vehicle Association. H. J. Sameit, Secretary, 72 West Adams Street.

Nov. 14-19—Chicago, Ill., Annual Convention and Business Exhibit, Automotive Equipment Association, Coliseum.

Nov. 24—Los Angeles, Cal., Speedway Race.

Capital Increases

Indiana.

Indianapolis—Consolidated Garage & Sales Co.; $6000 to $13,465.

Wabash—Service Motor Truck Co.; $8,000,000 to $10,500,000.

Kentucky.

Louisville:

- Dixie Auto Supply Co.; $25,000 to $50,000.
- Detroit Machine Tool Co., maker of automotive parts; $150,000 to $300,000.
- Detroit Steel Products Co.; to $5,250,000.
- Nichol Ford & Co.; $125,000 to $250,000.
- W. Detroit Auto Sales Co.; $25,000 to $100,000.

Hudson—Excel Battery Co.; $5000 to $10,000.

Missouri.

St. Louis—Bolstrom Motors, Inc.; $300,000 to $2,000,000.

New York.

Brooklyn:

- G. & A. Garage Corp.; $7000 to $10,500.
- West End Garage & Auto Co.; $500 to $50,000.

Buffalo—Parent Motors Corp.; $2,500,000 to $10,000,000.

Flushing—Studebaker Sales of Long Island; $10,000 to $25,000.

Jamestown—Jamestown Garage Co.; $10,000 to $50,000.

New York City:

- Automotive Electric Service Corp., Manhattan; $10,000 to $50,000.
- Fowler Spark Plug Mfg. Corp., Manhattan; $8000 to $25,000.
- Keystone Auto Equipment Co.; $25,000 to $250,000.
- Naugatuck Tire & Rubber Co., Manhatton; $10,000 to $50,000.
- N. Y. Central Securities Corp. of N. Y.; $1,500,000 to $2,000,000.
- Tonneau Shield Co., Manhattan; $25,000 to $75,000.

Olean—Olean Motors Corp.; $10,000 to $25,000.

Ohio.

Cleveland—Stearns Motor Sales Co.; $10,000 to $150,000.

N. Baltimore—N. Baltimore Trader & Machine Co.; $50,000 to $100,000.

Rhode Island.

Providence—Pilgrim Auto Stores, Inc.; $15,000 to $100,000.

Texas.

Aco—Central Motor Co., agt. for Dodge Bros. autos; $75,000 to $125,000; pres., J. N. Mitchell.

Brownsville—Dennett Motor Sales Co.; $30,000 to $35,000.

Dallas:

- John H. Dunn Tire Co.; $10,000 to $30,000.
- Packard Dallas Motor Co.; $200,000 to $500,000.
- Texas Battery Co.; $20,000 to $25,000; name changed to Tennant Bros.

El Paso—El Paso Battery & Ignition Co.; $15,000 to $30,000.

Wisconsin.

Menasha—U. S. Tractor & Machinery Co.; $500,000 to $800,000; pres., J. G. Sailer; 1st vice pres., Christian Walters; 2nd vice pres., eo. J. Mayer; treas., Dr. A. B. Jensen; sec. and asst. treas., G. D. Harris; asst. sec., G. E. Lewis; sales mgr., W. O. Otis.

Milwaukee:

- Auto Life Tire Chain Co; $25,000 to $125,000; pre., E. A. Hoya; vice pres., A. L. Wolff; sec., Wm. F. Schad; treas., F. W. Andree.
- Clum Mfg. Co.; $100,000 to $250,000; pres. and gen. mgr., Valentine Fina.
- Overland-Wisconsin, distributor of Overland and Willys-Knight cars in Wisconsin; $50,000 to $250,000.
- Titan Truck Co., 125th St.; $100,000 to $150,000.

NAME CHANGES.

Denver, Col.—American Auto Accessories Co. to Sewell Mfg. Co.

New Haven, Conn.—Kelly Tire & Rubber Corp. to Martin Tire & Rubber Co.

Wilmington, Del.—Springfield Automotive Financing Corp. to Central Ohio Finance Co.; capital increased from $550,000 to $2,750,000.

Macon, Ill.—C. O. Lebo Garage to Macon Garage; owners, W. C. and Ray Chynoweth.

Moline, Ill.—Wright Carriage Body Co. to Moline Body Co., maker of bodies for motor vehicles.

Gary, Ind.—Edwards & Anderson Auto Sales Service Co. to Edwards Garage & Service Co.

Muncie, Ind.—Hoosier Auto Parts Co. to Hoosier Clutch Co., maker of single-plate clutches.

Marion, Ia.—8th Ave. Garage to Anderson & Bailey; owners. Elmer L. Anderson and Fay W. Bailey.

Waterloo, Ia.—Peverill Motor Sales Co. to Harter B. Hull, distributor of Dodge Bros. cars in northeastern Iowa.

Dodge City, Kan.—Godfrey & Yuncker to Godfrey Garage & Machine Shop; owner, Duncan Godfrey, Jr.

Eskridge, Kan.—Willard's Battery Station to United Electric Service Station; mgrs., W. C. Rea, Burt E. Muns.

Grand Rapids, Mich.—Dewey & Conley to Chas. Conley, garage and auto accessories.

Highland Park, Mich.—Highland Auto Sales & Repair Co. to Thos. Brooks, Inc.

Underwood, Minn.—Lund Bros.' Garage to Lund Bros. & Ronning, general garage business and to handle Samson trucks, tractors and machinery; W. O. Ronning, part owner.

St. Louis, Mo.—Skelton Motors Corp. to Traves Motors Co., successor to the Skeltn Motors Corp., northeast cor. 23rd and Locust Sts.; owner, W. F. Traves, Kansas City.

Omaha, Neb.—Blackstone Garage No. 2 to Douglas St. Garage, 1918 Douglas St.

Albany, N. Y.—Norwalk Tire Sales Co. to Surgenor Auto Supply Co.

New York; N. Y.:

- Bennett Auto Sales Co., Manhattan, to Rogers Auto Sales Corp.
- Colt-Stratton Co. to Stratton Bliss Co., Dodge distributor.
- Ford Pulley & Hardware Co., Manhattan, to Ford Hardware Co.
- Nedoma-Najder Motor Syndicate to Nedoma-Najder Patent Syndicate, 299 Broadway.
- Parrett Tractor Co. to Hick Parrett Tractor Co.
- Times Sq. Auto Supply Co., Manhattan, to Consolidated Distributors.
- Wittemann Aircraft & N. Y. Air Terminal Corp. to Wittemann Aircraft Corp.

Oklahoma City—Reed Supply Co. to Southern Motor Supply Co.

Scranton, Pa.—Lansing Hardware Co. to Lansing Bros., Inc.

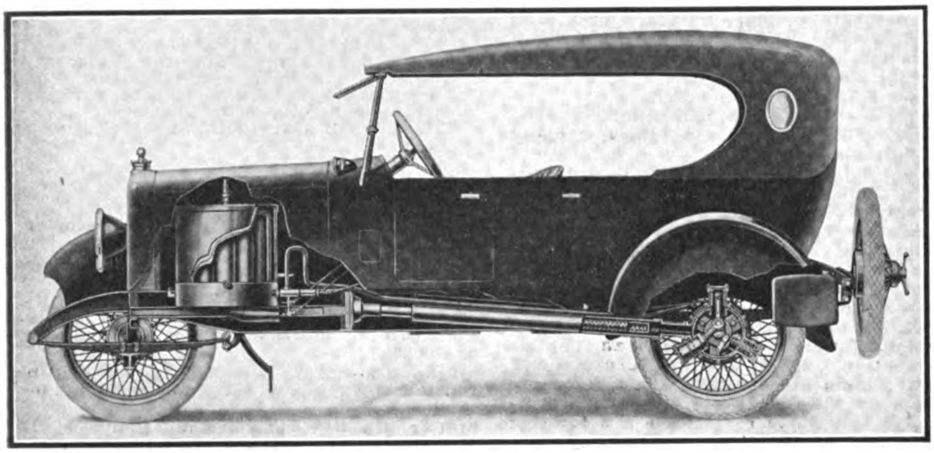
El Paso, Tex.—Universal Tire Co., 402 Myrtle Ave. to LeGros Tire & Vulcanizing plant; moved to 405 Texas St.; owner, S. LeGros.

Orange—Lester Auto Co. to Nash. E. Tex. Co.

Eau Claire—F. J. Marsh Co., 223 S. Barstow St., to Automotive Electric Corp.; to handle electric equipment for autos.

Milwaukee, Wis.—Lochen-Moore Co. to Lochen Motor Co., dealer in Hupmobile, Apperson and Moon cars; owner, Walter Lochen.

The Coats, New Steam Car, Embodies Unique Features



Cut-Away View of Coats Steam Car Showing Boiler, Steam Line and Three-Cylinders of the Six-Cylinder Engine on Rear Axles. There Are Three Fixed Cylinders for the Drive Shaft of Each Wheel—Connecting Rods Are Pivoted to Crank Pin Integral with Each Shaft—This Gives the Coats Direct Power Application, and Also Includes the Differential Function.

ONE of the sensational announcements of the present season is the prospective advent in the market, at an early date, of a new five-passenger, six-cylinder steam touring car, with 110-inch wheelbase and equipped with electric lighting and starting, to retail at about $1000. Rumors that an important enterprise in the steam car field was soon to be launched have been definitely confirmed by George A. Coats, a well known capitalist and representative of large steam interests at 1213 Merchants' Bank building, Indianapolis, Ind., who states that he is engaged in the perfecting of plans for the manufacture and marketing of a steam car along the lines just mentioned and, furthermore, that on the same chassis he will also build a commercial speed wagon for light delivery purposes.

The construction of the Coates car is reported to embody several distinct advances which have interested leading steam engineers, and for many months the experimental shop has been the Mecca of pilgrimages by steam specialists from all parts of the country.

A Glance at the Car.

The boiler is of the combination fire-and-water-tube type, so arranged that it will go under a hood of any shape. The top and bottom welding of the tubes, equalizing expansion, reveals advances especially remarked upon by the experts. The insulated steam line leads directly to the rear axle with divided flow to each half of the axle.

It is in this axle that engineers and laymen alike find one of the most fascinating advances in the Coats car, the direct application of the steam to the wheels, absolutely eliminating the geared differential. The rear axle is the engine, or the engine is the rear axle, whichever way you choose to consider it. It is engine, axle and differential functioning all in one, the engine in its housing being just about the size of the ordinary rear axle gear case.

It is without doubt the most compact engine in automotive practise. The housing of each half of the axle carries three fixed cylinders, set at 120 degrees apart, or one-third the circle. These cylinders are exactly like those of the automobile engine, with poppet valves, pistons and connecting rods. The bore is 2¾ inches, stroke three inches. The three connecting rods in each half are pivoted to a crank pin integral with the drive shaft of each wheel. At a speed of 40 miles an hour the engine is running at the very low speed of 500 revolutions a minute.

It will be observed that an overlapping stroke is obtained. Before one cylinder is entirely off pressure another has begun to take hold, and the third is completing its exhaust. In actual tests the Coats cars are stated to be doing 20 to 40 miles on one gallon of kerosene. With the Coats steam and water cycle, one filling of the water tank runs the car from 300 to 500 miles. The exhaust steam is taken by return pipe to the condenser, which is located in front of the boiler in the position of the ordinary radiator. The initial heating for starting is electrical, controlled by switch on the cowl board.

From Drifting to a Mile a Minute.

The characteristics of steam are too well known to require analysis in terms of ordinary rating when applied to a motor car. As one well known expert said while watching the gauge of the Coats car register 600 pounds boiler pressure—"It has power enough to pull a switch engine."

Yet it is smooth, velvety and flexible to a degree not possible to any other power. Its range in this car is not "three speeds" or "four speeds," but any speed from drifting to 60 miles an hour; and its whole range is controlled by one small lever on the steering wheel. There is not one gear in the power line of the Coats car. The power is never separated from the load to go from one speed to another. Simply move the lever forward and apply more steam—or move the lever back and shut down on the steam. The acceleration, or slowing down, is immediate. The quick getaway of the Coats car is astonishing. From a standstill under power it goes right over a curb.

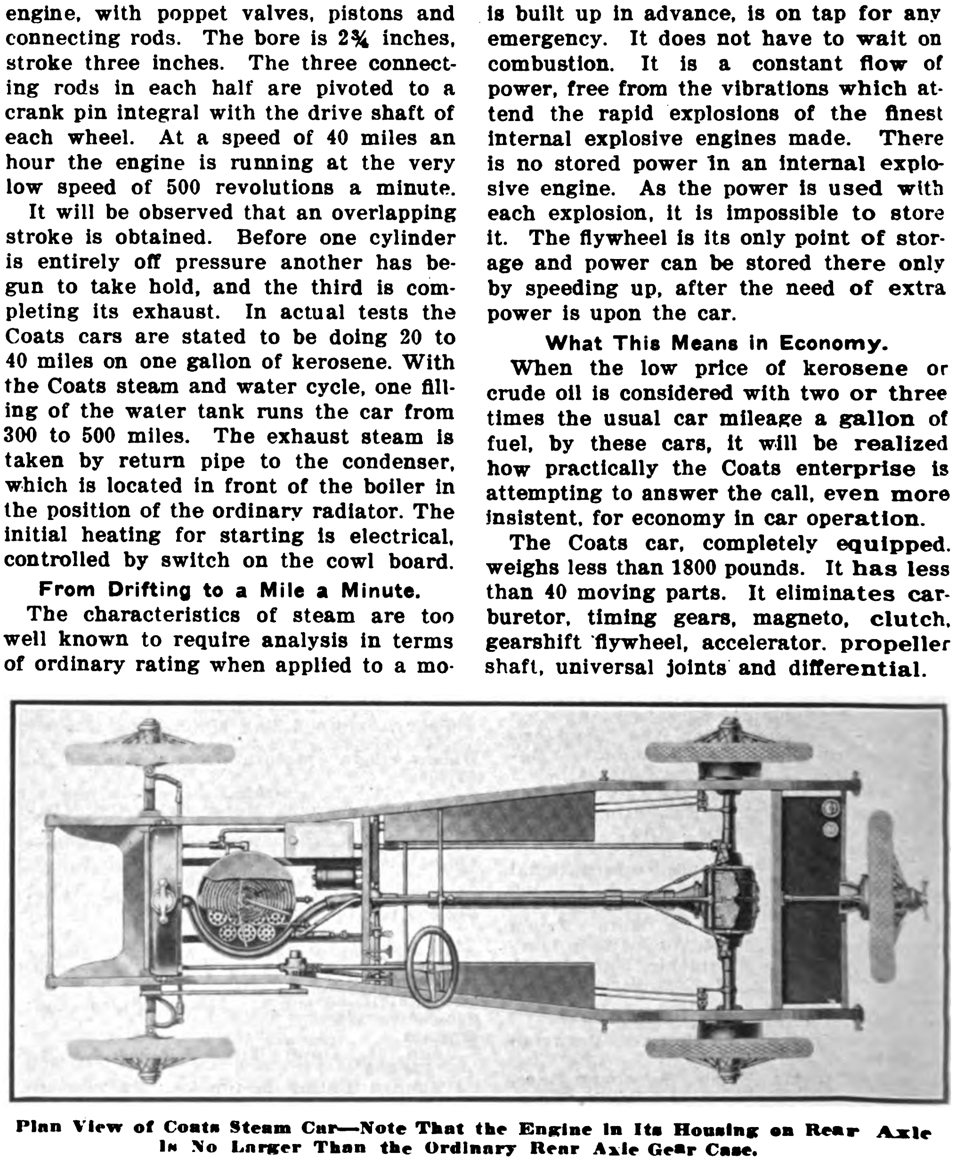
Store of Reserve Power.

The vital point of difference between the steam car and others is stated to be its store of reserve energy. In the Coats car the great energy stored in the boiler is always instantaneously available. It is built up in advance, is on tap for any emergency. It does not have to wait on combustion. It is a constant flow of power, free from the vibrations which attend the rapid explosions of the finest internal explosive engines made. There is no stored power in an internal explosive engine. As the power is used with each explosion, it is impossible to store it. The flywheel is its only point of storage and power can be stored there only by speeding up, after the need of extra power is upon the car.

What This Means in Economy.

When the low price of kerosene or crude oil is considered with two or three times the usual car mileage a gallon of fuel, by these cars, it will be realized how practically the Coats enterprise is attempting to answer the call, even more insistent, for economy in car operation.

The Coats car, completely equipped, weighs less than 1800 pounds. It has less than 40 moving parts. It eliminates carburetor, timing gears, magneto, clutch, gearshift flywheel, accelerator, propeller shaft, universal joints and differential.



Plan View of Coats Steam Car—Note That the Engine in Its Housing on Rear Axle Is No Larger Than the Ordinary Rear Axle Gear Case.

Of the saving of tires due to the equalization of weight, the reduction of vibration and the smoothness of interrupted torque, much might be speculated, but that is a point for demonstration in actual use.

In appearance the Coats car is attractive, but not at all radical in design. It has distinctive lines, for Mr. Coats has not underestimated the advantage of dress; and it provides more than usual five-passenger room for its size.

Although a comparatively young man, Mr. Coats has been identified with the automobile industry from the beginning as a field man and distributor of leading cars. Some years ago he acquired coal mines in Indiana, which in large part have furnished the capital for his steam car experiments.

No stock is offered for sale in the Coats concern, as abundant resources have been furnished for making and marketing the passenger car and speed wagon and plans have been made for an expansion of the application of steam on a scale which is not now ready for the announcement of details. It is realized by Mr. Coats and his associates that steam power and steam economy will be equally vital in truck and tractor use.

Origin of the Enterprise.

The origin of the present enterprise is interesting. At the beginning of the war the Norwegian government sent an engineer to America to study the development of internal combustion engines. He had completed his reports and was preparing to return home when Mr. Coats met him. The modest inventor laid before Mr. Coats plans for steam on which he had been working for years. These plans so interested the Indianapolis man that he promptly employed the engineer and established him in an experimental shop with a free hand.

The American automobile man's 20 years of experience and the Norwegian engineer's science were combined, with the counsel of the most experienced American steam and automotive engineers, and the Coats cars are the result.

The Demand for Steam.

What they presage is an interesting subject. It is certain that in the automotive market something in the way of an epochal advance has been looked for by the motoring public for the last five years, an advance that means more than engineering refinements along present lines, an advance that means more reserve power, more flexible power and especially far greater simplicity of construction and far lower upkeep cost. The Coats car may be the answer Mr. Coats is confident that it will be.

A. L. Jacobs, Lloyd George and Norman E. Stoneburg are recent additions to the sales organization of the Paterson line of cars at Toledo, O. Mr. Jacobs, who has been with Paterson for the past three years, becomes manager of territory sales. Mr. George, who was formerly of the Standard Garage, and Mr. Stoneburg, formerly of the Marmon agency, will attend to city sales.

A Glance at the Gasoline Situation for 1921

The daily average output of petroleum in the United States during the week ending March 19 showed a sharp increase, according to the American Petroleum Institute. Production for the week was 1,259,211 barrels, as compared with 1,241,125 the week before, an increase of 14,090 barrels.

The estimated daily average gross production of the Mid-Continent (light oil) field, including Oklahoma, Kansas, North Texas, Central Texas and North Louisiana, for the week ended March 19, was 649,005 barrels, as compared with 633,815 barrels for the week before, an increase of 15,190 barrels.

The estimated daily average gross production of the gulf coast (heavy oil) field was 109,130 barrels, an increase of 1870 barrels, as compared with the week before.

The combined daily average gross production of the southwest field was 758,135 barrels, an increase of 17,060 barrels.

Oklahoma-Kansas shows a daily average gross production of 372,280 barrels, an increase of 14,315 barrels. North Texas shows an increase of 1850 barrels; Central Texas, an increase of 1430 barrels; North Louisiana shows a decrease of 2405 barrels.

The estimated daily average gross production of Wyoming and Montana was 54,080 barrels, as compared with 56,550 barrels for the week before, a decrease of 2470 barrels.

The Gasoline Situation at a Glance.

The estimated demand for gasoline for 1921 by months is shown in the following table developed by Dr. Joseph E. Pogue, oil analyst and consulting engineer of the editorial staff of National Petroleum News:

	Per Cent. of Year's Total Required Each Month	Number of Gallons Required Each Month
January	5.4	259,000,000
February	5.8	278,000,000
March	6.4	307,000,000
April	7.2	345,000,000
May	8.5	408,000,000
June	9.9	475,000,000
July	11.2	538,000,000
August	11.8	567,000,000
September	10.4	501,000,000
October	8.8	422,000,000
November	7	379,000,000
December	6	321,000,000
Total...........	100	4,800,000,000

The total gasoline made in this country in the past three years is: For 1918, 3,570,000,000 gallons: 1919, 3,957,000,000 gallons; 1920, 4,882,000,000 gallons.

The production of gasoline is steadily increasing. The average per month for 1921 was 406,000,000 gallons, while for December it was 464,000,000.

Stocks of gasoline at refineries indicated this increasing production. For Dec. 31 these stocks totaled 462,000,000 gallons—16,000,000 more than the same time the year before. Yet our stocks at the end of September were 288,000,000 gallons, or 83,000,000 less than the year before, and the low point in several years. Stocks did not exceed that of previous year until the end of December.

Automobile production has been:

		Per Cent. of Increase Over 1916 in Cars.	Per Cent. of Increase Over 1916 in Gasoline Production
1916......	3,584,000		
1917......	4,992,000	39	32
1918......	6,100,000	70	73
1919......	7,096,000	112	92
1920......	8,878,000	146	137

The estimated consumption by trucks and cars for 1921 of 4,800,000,000 gallons, is based on a total of 8,500,000 cars and 1,000,000 trucks with their use discounted 10 per cent. over the previous year.

STUDEBAKER LIGHT-SIX BREAKS FOUR RECORDS.

In two sensational dashes a Studebaker Light Six recently broke all records for speed between San Francisco and Los Angeles, setting a new mark for the round trip, lowering the coast route record by 2 hours, 35 minutes, 20 seconds, beating the best time ever before made over the valley route, and leaving "The Lark," most famous of the fast coast express trains, 3 hours, 47 minutes and 30 seconds in the rear.

On the first trip the drivers, Hart L. Weaver and James C. Gurley, carried U. S. mail both ways between San Francisco and Los Angeles, being sworn in as Federal officials upon authority from Washington. In fact the journey was made for the purpose of showing the possibilities of the motor car in transporting mail quickly.

The round trip, a distance of 864.8 miles, was covered by the Studebaker in 21 hours 23 minutes. The trip down, over the coast route, a distance of 413.7 miles, was made in 10 hours, 12 minutes, 30 seconds, as compared with the previous best record of 12 hours, 47 minutes, 50 seconds, established in 1916.

The car and "The Lark" started their dash to Los Angeles at the same time, and it was on this occasion that the Light Six beat the train's schedule by over 3½ hours.

After hanging up these records the Studebaker drivers went after the fourth and only remaining speed mark—that of lowering the previous best time over the valley route. They succeeded in making the trip from Los Angeles to San Francisco over this route, a distance of 411.1 miles, in 9 hours, 15 minutes, 50 seconds, of which time 35 minutes was spent in crossing the ferry to San Francisco. This record-breaking time was made under difficult weather conditions the pilots being forced to drive through a dense fog 120 miles of the way.

These record breaking trips also prove how an automobile can stand a long continued run without mechanical trouble. In this case the car was ready to start at once on a second trip.

Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK MARKET.

Week Ending March 26, 1921.

Advance Rumely	17½	17¼	17½	+1½
Advance Rumely, 6% pfd	50½	50½	50½	+ ½
Ajax Rubber	34½	33	33¾	+1
Allis-Chalmers	38¼	36¼	38	+1¾
Allis Chalmers, 7% pfd	83	82⅝	•83	+2¾
American Bosch Magneto	61⅞	55¾	61¾	+5¼
Bethlehem Motors	3⅜	3	3¼	— ⅛
Chandler Motor	82¾	75¼	•81½	+3¾
Fisher Body	87½	83½	87½	+2½
Fisk Rubber	16⅜	14⅝	16⅛	+1¼
General Motors	14½	13¼	14⅛	+ ⅞
General Motors 6% pfd	70	69½	70	+1
General Motors deb., 7%	76	75½	76	+ ¾
General Motors deb. 7%	66⅝	65½	65⅞	+1⅞
Goodrich, B. F. Rubber	39½	37	38	+ ⅞
Gray & Davis	16¾	15¾	15¾	— ¼
Hupp Motor Car	15½	14½	15⅛	+ ¼
International Harv. New	99	96¼	•96¼	— ⅛
International Harv. New pfd	108	108	108	.....
Inter. Motor Truck	36¾	33½	35	+2¾
Inter. Motor Truck, 1st pfd., 7%	74¼	74¼	74¼	+ ¼
Inter. Motor Truck, 2nd pfd 7%	63½	63	63	+ ½
Kelly-Springfield Tire	44¼	39⅛	39½	—1⅛
Kelsey Wheel	54	47¾	54	+14
Kelsey Wheel 7% pfd	76	76	76	+1
Keystone Tire & Rubber	17⅜	15⅛	16	+1
Lee Rubber & Tire	29½	24	28¼	+3¼
Maxwell Motors	6½	5½	5¾	+ ¾
Maxwell Motors, 1st pfd	9	8	9	+1½
Mullins Body	27½	26½	27¼	+ ¾
Pierce-Arrow	35¾	31½	34¾	+3⅜
Pierce-Arrow 8% pfd	84	80	84	+4
Republic Motor Truck	20½	18½	18½	—1
Saxon Motor	5⅝	5¼	5⅜	+ ¼
Stewart Warner Speedometer	34	31⅜	31⅜	— ⅝
Stromberg Carburetor	40¼	33½	39⅛	+3⅞
Studebaker	79¼	68⅝	77⅞	+8⅝
Studebaker 7% pfd	96	95	96	+4
Times Sq. Auto Supply	10⅜	8¾	10	+1⅛
United States Rubber	74⅝	70½	73⅛	+1⅝
United States Rub. 1st pfd. 8%	102	102	102	.....
White Motors	42¾	40½	41½	+ ⅝
Willys-Overland	8⅞	7½	8½	+ ¾
Willys-Overland, pfd	35	34	34	— ⅞

•Extra dividend.

AKRON STOCK PRICES.

	Feb. 1		March 1	
	Bid	Asked	Bid	Asked
Amer. R. & T. com	40	65	43	65
Amer. R. & T. pfd	..	45	..	90
Amazon Rubber	..	..	..	30
Firestone T. & R. com	84	85	70	75
Firestone T. & R. 6% pfd	84	85	78	80
Firestone T. & R. 7% pfd	78	80	76	79
General T. & R. com	..	150	180	250
General T. & R. 7% pfd	80	90	80	90
B. F. Goodrich com	40	41	35½	37
B. F. Goodrich, 7% pfd	82	84	78	79
B. F. Goodrich 5 yr. 7% notes	90½	91½	90	90½
Goodyear T. & R. com	21½	22	13½	14
Goodyear T. & R. 7% pfd	46	47	31½	32
India Rubber com	100	130	100	130
India Rubber 8% pfd	..	80	..	80
Mason T. & R. com	19½	20	18	20
Mason T. & R. 7% pfd	66	67	66	67
Marathon T. & R. com	2	4	3½	4
Miller Rubber com	88	92	..	67
Miller Rubber 8% pfd	88	90	..	65
Mohawk Rubber	140	200	145	155
Portage Rubber com	21½	22	22	24
Portage Rubber 7% pfd	43	44	..	39
Republic Rubber com	1⅛	1⅜	1	1⅛
Republic Rubber 7% pfd	40	45	..	20
Republic Rubber 8% pfd	14	15	9	10
Rubber Products	..	100	..	100
Star Rubber com	..	100	..	100
Star Rubber 8% pfd	..	100	..	100
Swinehart T. & R. com	..	100	..	40
Swinehart T. & R. 7% pfd	..	70	..	70
Phoenix Rubber com	..	20	..	20
Phoenix Rubber pfd	..	90	..	90
Standard Tire com	..	125	..	125
Standard Tire pfd	..	90	..	90

CRUDE RUBBER, NEW YORK PRICES.

	Feb. 5 Cts. Per Lb.			March 6 Cts. Per Lb.		
Ceylons						
Smoked sheets, ribbed, spot	.16½	@	..	.17	@	..
Smoked sheets, rib., Feb-Mar	.17½	@	..	.18½	@	.19
Smoked sheets, rib., Apr.-June	.19	@	..	.21	@	21¼
Smoked sheets, rib. July-Sept	..	@	..	.23	@	..
Smoked sheets, plain, spot	.16	@	..	.15	@	..
First latex, pale crepe	.18½	@	..	.18½	@	..
Amber crepe, No. 1	.16	@	..	.16	@	..
Amber crepe, No. 2	.15	@	..	.14	@	..
Amber crepe, No. 3	.14	@	..	.12	@	..
Clean brown crepe	.14½	@	..	..	@	..
Light clean brown crepe	.16	@	..	.15	@	.15½
Roll brown crepe	.12½	@	..	.12	@	.13
Grand Central crepe	.13	@	..	.13	@	.13½
Africans						
Loando Niggers	.08	@	..	.08	@	..
*No. 1, Benguella	.08	@	..	.08	@	..
*No. 2 Benguella	.07	@	..	.07	@	..
Lapori Ball	.13	@	..	.13	@	..
Paras						
Up-river fine	.18	@	..	.17½	@	..
Up-river medium	.14	@	..	.14	@	.14½
Up-river coarse	.13	@	..	.13½	@	.14
Islands fine	.17	@	..	.17½	@	..
*Maderia fine	.21	@	..	.21	@	..
Cameta	.11	@	.11½	.11	@	..
Islands coarse	.11	@	..	.10½	@	.11
Centrals						
Corinto prime	.14	@	..	.12	@	..
Esmerelda prime	.14	@	..	.12	@	..
Miscellaneous						
Guayule wet	..	@	..	..	@	..
*Balata block Panama	.28	@	..	.28	@	..
Balata sheets	.69	@	..	.69	@	..
Palembang	.06½	@	..	.06¾	@	..
Bangermassin	.06	@	..	.06¼	@	..
Columbian block Balata	.46	@	..	.46	@	..
Prime Pontianac	.06	@	..	.06¼	@	..

*Nominal.

DIVIDENDS DECLARED.

	Rate	Period	Payable	Stock of Record
Advance-Rumely, pfd	1½%	Quart.	Apr. 1	....
Auto Car	1½%	......	Mar. 10	Feb. 28
Avery & Co., pfd	1¾%	Quart.	Apr. 1	Mar. 21
Barrett Co	$2.00	Quart.	Mar. 10	Feb. 25
do pfd	1¾%	Quart.	Mar. 10	Feb. 25
Canada Consol. Rub., pfd	1¾%	Quart.	Mar. 31	Mar. 24
Case, J. I., T. M. Co., pfd	$1.75	Quart.	Apr. 1	Mar. 14
Chandler Motor Car	$2.50	Quart.	Apr. 1	Mar. 21
Du Pont de Nemours, E. I.	2%	Quart.	Mar. 15	Feb. 28
do deb. stock	1¾%	......	Apr. 25	Apr. 9
Electric Stor. Bat. com. & pfd	$3.00	Quart.	Apr. 1	Mar. 14
Firestone T. & R. 6% pfd	1½%	Quart.	Apr. 15	Apr. 1
do 7% pfd	1¾%	Quart.	May 15	May 1
Hendee Mfg	1¾%	Quart.	Apr. 1	....
Hupp Motor Car, pfd	1¾%	Quart.	Apr. 1	Mar. 19
International Harvester	$1.75	Quart.	Apr. 15	Mar. 25
International Motor 1st pfd.	1¾%	Quart.	Apr. 1	Mar. 22
do 2nd pfd	1¾%	Quart.	Apr. 1	Mar. 22
Kelly-Springfield T. 6% pfd.	$1 50	Quart.	Apr. 1	Mar. 15
Lee Rubber & Tire	50c	Quart.	Mar. 1	Feb. 15
Martin-Parry	50c	Quart.	Mar. 1	Feb. 15
Packard Motor Car, pfd	1¾%	Quart.	Mar. 15	Feb. 28
Peerless Truck & Motor	$2.00	Annual	Quart.	....
Pierce-Arrow Motor pfd	$2.00	Quart.	Apr. 1	Mar. 15
Chicago Pneum. Tool	2%	Quart.	....	....
Rainier Motor, pfd	2%	Quart.	Mar. 1	Feb. 21
Studebaker, com. & pfd	1¾%	Quart.	Mar. 1	....
Timken-Detroit Axle, pfd	¾%	Quart.	Mar. 1	Feb. 22
Walworth Mfg	17½c	Quart.	....	....
Westinghouse E. & M.	2%	Quart.	Apr. 30	Mar. 31
do pfd	2%	Quart.	Apr. 15	Mar. 31

The following annual report of the Ford Motor Co., Detroit. Mich., as of Dec. 31, 1920, has been filed with the secretary of state at Lansing, Mich. Authorized capital, $100,000,000; capital stock subscribed, common, $17,264,500; estimated value of real estate, $50,861,000.92; goods, chattels, mortgages, merchandise, etc., $124,350,295.39; cash on hand, $13,557,244.51; patent rights, good will, etc., $21,262,833.40; credits, $54,438,633.50; all other property, $20,084,033.86. Total assets, $384,554,941.68. Liabilities, $143,025,300.61.

The ACCESSORY and GARAGE JOURNAL

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A BIG BUSINESS FOR BIG MEN

AUTOMOTIVE INDUSTRY OFFERS GREAT OPPORTUNITIES AND PROMISES SUBSTANTIAL RETURNS FOR PROGRESSIVE AND PERSISTENT ENDEAVOR

(By S. G. SWIFT.)

THE prize pessimist of the world is he who worries about the future of the automotive industry. Such a person could easily bring himself to the point of worrying about the possibilities of a permanent slump in the use of food. People will always eat and they will always buy automotive products. The "luxury" market can never become absolutely stabilized, but there will always be a demand for necessities. Precedent and common sense assure the truth of the foregoing and by so doing guarantee the future of the automotive industry.

The automobile and the truck with their various accessories are actual necessities and there is no question about their future. The term "pleasure car" has long been obsolete and rightly so when one realizes that only two cars out of every 100 sold are used for pleasure. All classes of purchasers buy the automobile and truck in exactly the same manner that they would purchase so much transportation and know beyond a shadow of doubt that such machines pay substantial dividends on the money invested.

The retailing of automobiles, trucks and accessories is a big business for big men and one in which any big man may well feel proud to be engaged. Such men realize that the larger the field the greater is the opportunity, and there surely is no one industry in this country today that offers better promise of substantial return.

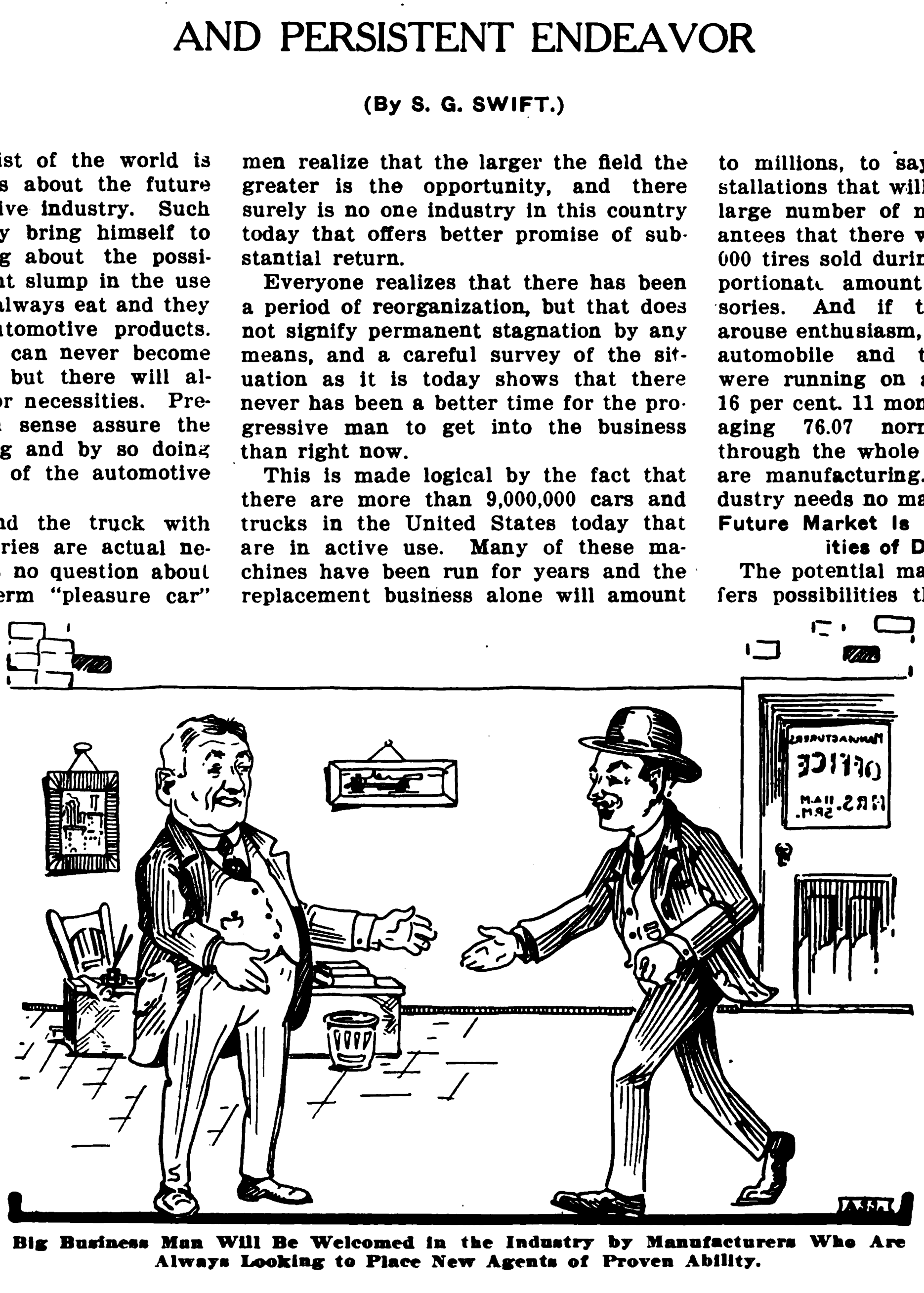
Everyone realizes that there has been a period of reorganization, but that does not signify permanent stagnation by any means, and a careful survey of the situation as it is today shows that there never has been a better time for the progressive man to get into the business than right now.

This is made logical by the fact that there are more than 9,000,000 cars and trucks in the United States today that are in active use. Many of these machines have been run for years and the replacement business alone will amount to millions, to say nothing of new installations that will also bulk large. This large number of machines in use guarantees that there will be at least 36,000,000 tires sold during the year and a proportionate amount of parts and accessories. And if these figures fail to arouse enthusiasm, consider the fact that automobile and truck factories which were running on a production basis of 16 per cent. 11 months ago are now averaging 76.07 normal, right straight through the whole list of the many who are manufacturing. The automotive industry needs no man's sympathy.

Future Market Is Unlimited in Possibilities of Development.

The potential market of the future offers possibilities that are well-nigh unlimited. It shows that almost every grown person in the United States is a prospect for the sale of an automobile or truck, and the greatest factor is the child of today who will be the buyer of tomorrow. He is already sold on the proposition and will not, like his parents, have to be weaned from the horse drawn vehicle.

The present user of the automobile and truck had to be sold away from other forms of transportation. This in itself constituted strong sales resistance, but added to this was the fact that



Big Business Man Will Be Welcomed in the Industry by Manufacturers Who Are Always Looking to Place New Agents of Proven Ability.

The Dealer Should Insist That the Members of His Organization Be Courteous to the Visitor Regardless of Whether He Is a Prospective Buyer or Not.

for many years at start of the industry the mechanical principle of the machine was far from right. Now all this is changed. The present day automobile and truck are as near perfect as the most critical could desire. All of which makes the future sales possibilities of the automotive business greater than almost any other that might be mentioned. The future motor vehicle and accessory salesman will have his prospects already developed.

Automobile Business Is Not a "Game."

The automobile business is a modern merchandising proposition. It is not a "game." The use of the word is odious and suggests the hazardous chance. This might have applied at one time, but that time has passed. Just as the term "pleasure car" has passed into disuse so should the phrase "automobile game" be relegated to the yesterday of time. The automobile business is a dignified industry and a mighty fine one too. Let's think of it that way and forget about the time when it was perhaps rightly characterized as a "game." That's water over the dam, thanks to the development of recent years.

Some substantial business men who would be a credit to the industry have hesitated to go into the retail end of it because of their lack of mechanical knowledge. This idea is rank fallacy. It is analagous to saying that a man could never sell bricks with any success because he had never worked in a brick yard.

To be sure it is desirable for the proprietor of a sales and service station to know the business in all its phases, but it is far from necessary that he know the actual mechanics of the car he sells, and this fact is proven by the many successful retailers who have never learned anything specific about the mechanical end of the car except such as has been gained through intimate association with the work from day to day.

The best truck salesman that the writer knows was for many years the foreman of the small tool department in a large factory. He made nearly $12,000 in 1920. The most successful dealer that can be called to mind at the moment is a man who conducted an undertaking establishment from the time he was 23 until he entered the automobile business at the age of 46. This man shared $48,000 with a partner last year, which wasn't bad on an investment not much larger than the profits of the one year. And there are thousands of dealers who better that figure.

Fundamentals for Success.

Progressive merchandising policies coupled with genuine business ability and salesmanship are the only essentials aside from a proper amount of capital that the retail automobile, truck and accessory business man needs, and the merchandiser who starts with these fundamentals will be bound to succeed. He can't help it. The automotive business is responsive to proper treatment, and many will succeed in it who might find it hard sledding in other lines of endeavor. This last is being proven every day.

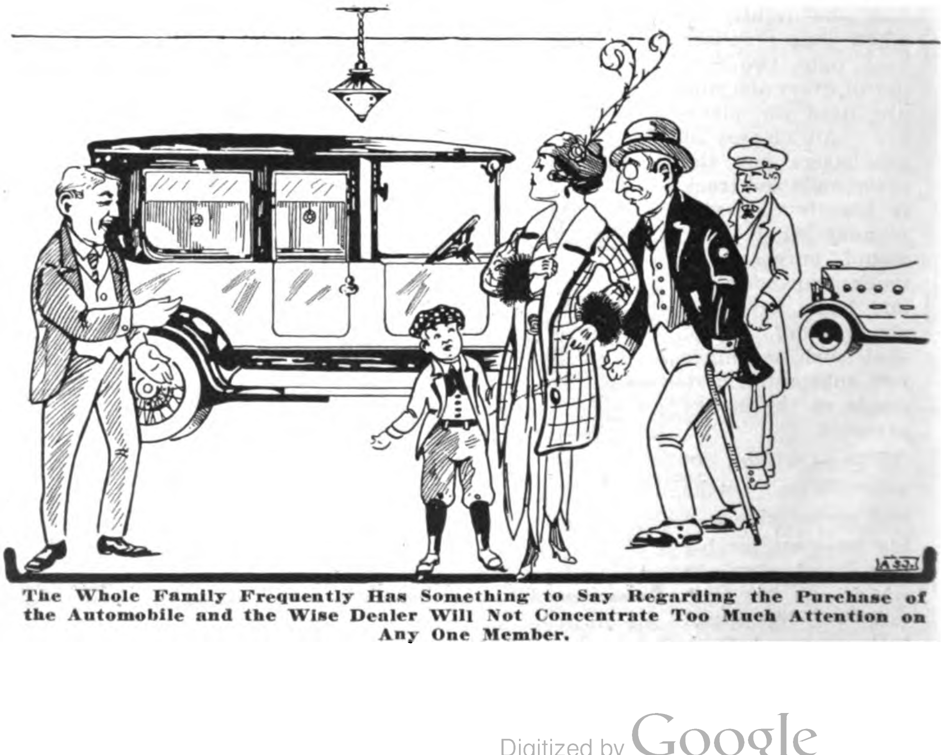
Everyone is a prospect, everyone wants to buy and the automobile dealer who conducts his business in accordance with proper standards has more than an even chance of becoming prosperous. All he has to do is to take advantage of the opportunities offered, and it would seem as though any person of average ability could be counted on to do at least that.

The automotive business is always expanding. Up to within a few years the dealer had only automobiles and a few accessories to offer. Today he has trucks, automobiles, parts and many different kinds of accessories to sell. There is a good profit in all of these, and the market for the motor truck is literally growing by leaps and bounds, more than keeping pace with the demand for the passenger car.

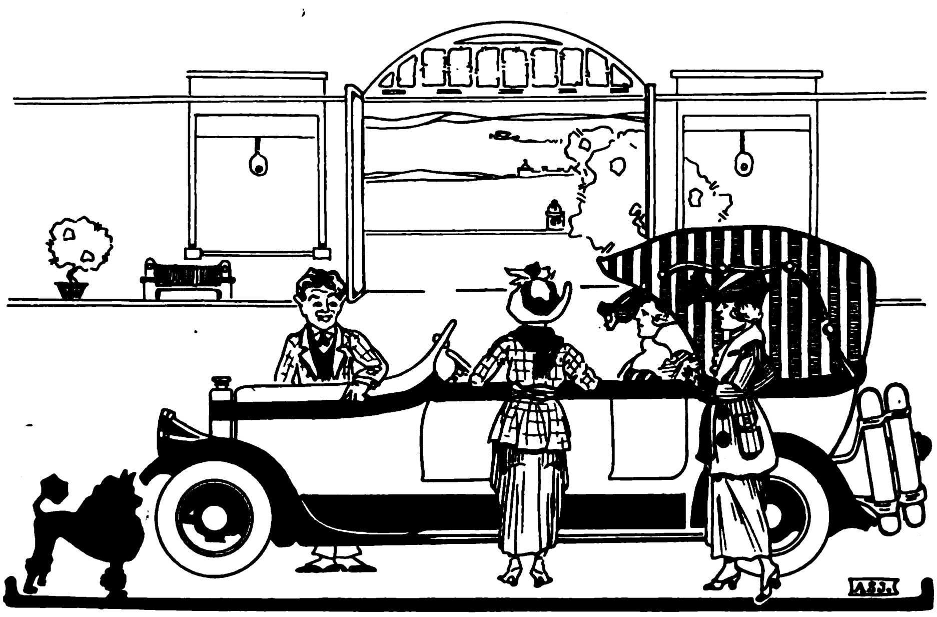
The truly big business man with a fair amount of capital, or ways in which to raise that capital, will have almost no trouble in connecting as an agent with a desirable manufacturer. There is always an opening for a new agency, and the manufacturer is ever willing to cooperate with reliable men who desire to sell his product. In former years it would have been a wise man who thoroughly looked up the manufacturer offering the agency as to his reliability before planning to tie up with him. At the present time there is practically no danger of making a bad connection, as nearly all cars manufactured today are right mechanically in every way. To be sure, the well known car that is properly advertised has great advantages from a sales viewpoint, but there are few manufacturers doing business that have not the financial strength necessary to back up their product, and very few products that are not satisfactory.

Former Unfortunate Features.

One of the unfortunate features of the agency business that in former years has hurt it to an extent is the fact that the sales management of certain automobile manufacturers all too frequently encouraged a man to invest his capital in a ter-



The Whole Family Frequently Has Something to Say Regarding the Purchase of the Automobile and the Wise Dealer Will Not Concentrate Too Much Attention on Any One Member.



Women Are Apt to Judge an Automobile Almost Wholly by Its Appearance and the Dealer Should Bear This in Mind When Selecting the Car to Be Sold.

ritory where reasonable returns on sales were not to be expected, and many a man sunk all of his available cash in what proved to be an unprofitable adventure. Today this is changed, and the sales organizations of practically all manufacturers can tell almost to a car the saturation point for sales in almost any territory.

Methods of buying cars from the manufacturers differ greatly from the usual way of buying merchandise. One marked example of this is the method of determining the number of cars to be purchased during the year.

This is arrived at by the number which the factory sales organization has decided the territory can handle, which the dealer contracts to sell during a 12-month period, the cars to be delivered at certain intervals. There is little credit business done between the two and frequently the plan adopted is to have the factory attach a sight draft to the bill of lading, which the dealer has to meet when the cars reach him.

There is a regular list price for each car and this price is the one which the dealer is expected to get. The price which the dealer pays is the list price minus his gross commission. Automobiles and trucks are usually sold f. o. b. the place of manufacture, which means that the dealer has to pay the freight, which he in turn charges to the customer.

Amount of Commission Varies.

The amount of commission to the dealer varies somewhat. Frequently this is 20 per cent. and there are many manufacturers who have adopted this as a flat rate. It naturally follows that the better a vehicle is known the smaller will be the commission, as sales will be more easily made than would be the case with one that was not well advertised. If an automobile or truck is little known the dealer must spend a certain amount of his commission in missionary work, and as a result must get a larger commission than as though he were handling a better known product.

The local dealer of course is expected to finance and maintain his own establishment, which may consist of merely a salesroom, but which, to be right, should include a service station, as the service station that functions properly is the greatest single asset of the successful automobile and truck dealer. The real service station, using the word in its fullest sense, does more for the good health of the retailer than any other one thing. It is truly a "silent salesman" and the best one that the dealer can have on his staff.

The writer has in mind a small town where there are two service stations. One of these has an ornate brownstone front, a large expanse of plate glass and all the modern improvements. It is everything that a service station should be from an architectural standpoint, but unfortunately it doesn't merit its name, as it gives almost no service.

The other service station is located in what used to be an old foundry. The smoke of ages has stained the interior, the windows have never been washed within the memory of the oldest inhabitant and the wooden building has a dirt floor. But it is a service station in everything that the word means and the man who owns it sold, during a period of 18 months, just seven times as many cars as did the other dealer or, to speak literally, the service this man gave sold the cars.

Actual Service Should Be Given.

It doesn't make so much difference what sort of a looking service station the dealer has, although this is important. The point is that he should give actual service. Too many dealers have treated customers as though they were never to see them again after the first sale and thus, by their short-sightedness, have actually destroyed the foundation of their future market.

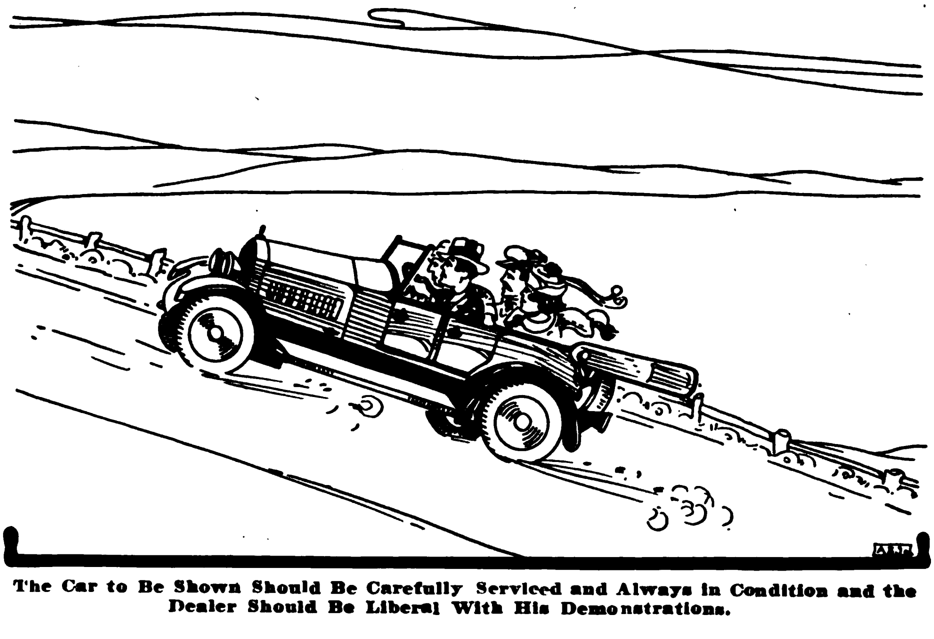
Without seeming to criticise unduly, it almost seems as though anyone could go into certain territories and by the simple expedient of giving service and telling the truth build up a business in almost no time and with little capital. The unscrupulous retail dealer has hurt the business far more than has the unscrupulous manufacturer.

There are many persons who believe that the time is soon coming when automobiles and trucks will be serviced in much the same manner as are typewriters, adding machines and cash registers, and this is perhaps a true forecast, although the question is divided about equally, as others think that all service will eventually be done away with. This phase of the business will adjust itself. At the presest time service is absolutely necessary if one is to do a fair quota of business.

Intensive Advertising a Factor in Success.

All national advertising is of course done by the manufacturer and frequently the local advertising as well, although this last is usually paid for as the result of some agreement between the agent and the factory. In practically every case the advertising copy or layout is furnished by the manufacturer and this means a lot, as the skilled advertising writer can usually set forth the superior points of the car or truck in a manner that is productive of results.

The dealer may be able to make a deal



The Car to Be Shown Should Be Carefully Serviced and Always in Condition and the Dealer Should Be Liberal With His Demonstrations.

A Cheap Mechanic Is the Most Expensive Kind—The Good Mechanic Commands a Fair Wage Because He Is an Economical Asset to the Properly Conducted Station.

with the manufacturer whereby he agrees to allow a certain amount of money for local advertising proportionate to the number of cars sold, and in any event, even though the dealer should be called on to pay for his own advertisements and to write them as well, he should not neglect to keep the people of his territory informed at all times regarding the product he sells. This can only be accomplished in a satisfactory manner through advertising.

All things being equal, a man should locate his agency in his own home town. He knows the people there and probably has their confidence, which is a big factor in the successful retailing of the car or truck. If the agency contemplated is to be situated in another city the prospective dealer should visit that territory and carefully survey conditions there. "Anything worth doing at all is worth doing right," and this expression, trite though it may be, applies aptly to locating the automobile or truck agency.

Many a man has paid too little attention to this important part of the business and has gone ahead and contracted for territory without properly ascertaining the extent of his probable market, with the result that having gone into the thing too heavily and too hastily, he has lost his investment.

Dealer May Sell Several Makes of Cars and Trucks.

A dealer may handle a number of makes of cars or trucks, or he may feel that he can do better work if he confines his attention to a single make. This matter may perhaps be best determined by the dealer before he enters the business, or he can start with some one popular make, provided he can get it and then add others if he feels that conditions warrant. Many of the more successful agencies handle one low priced car or truck and one high priced one, though there seems to be no set rule to go by and one must be governed wholly by conditions in his territory.

For instance, a mill town or city would have two distinct classes of buyers, the one demanding a low priced machine and the other offering a market for an expensive make; whereas a strictly residential suburban territory would probably have a steady demand for a good, serviceable, conservative, middle-price machine. It all depends on the territory and unless one plans to start in business in his home town he should carefully survey his proposed field of operations before signing any contracts.

It is advisable to select the highest quality car or truck having the price to fit the greatest number of prospective purchasers in the territory in which it is to be sold, and it may be that conditions will warrant the successful representation of two or three different makes.

Women Influence Sale of Cars.

Women have much to do in the selection of the car and demand appearance above all else, and the successful dealer will study the looks of the car as well as its mechanical features. Inasmuch as nearly all modern automobiles are very satisfactory from a mechanical standpoint, it will perhaps be well to lay particular stress on the appearance of the machine to be handled, although the riding qualities, comfort, accessibility and equipment should also be considered. Then again one should bear in mind that certain companies are recognized as giving greater value for the money. They lead in improvements and have better service guarantees as a rule. These facts are important and should be carefully considered.

The greatest market from the standpoint of volume is for cars selling between $500 and $1500. This applies to urban as well as agricultural territory, although there is a proportionate demand in the cities for the high priced automobile as well.

Truck sales depend largely on the demand and perhaps the most popular size truck sold is the 1½-ton, although facts carefully compiled by the statistical department of MOTOR TRUCK, the authoritative magazine on motor haulage, show that different conditions prevail in different territories and this feature will have to be determined almost wholly by local dictates.

Dealer Must Not Contract for Too Much Territory.

The old way of grabbing all the territory that could be obtained by a single dealer is rapidly giving way to the idea that the small territory exhaustively worked is better. It is much more satisfactory for the dealer to take on a small territory and carefully comb it, than to contract for a large territory and a correspondingly large quota of cars and have more on his hands than he can get rid of. It has been demonstrated time and again that few large territories are carefully worked, by the fact that good salesmen have come in from other territories, knowing nobody who was a prospect and have been able to make sales to persons whom the dealer had never thought of as buyers.

Location of Sales Room Is Important.

The location of the sales room and service station is nearly as important a factor in the ultimate success of the business as is the choice of the car to be handled. This point should be determined as far as possible by the make and quality of the car that is to be sold, the location being in keeping with the class of trade that will be the logical buyer of the car, although this does not apply so much to the truck end of the business.

If the dealer is handling a high priced car he should have a location that will be such that persons buying the car will be willing to visit it, and it is highly desirable to have an up-to-date building with proper surroundings.

In handling a low priced car one does not have to be too particular as to location and many successful dealers in low priced machines are located in rather undesirable quarters, but it stands to reason that the better the location is the better will be the sales possibilities. In this respect and especially with regard to the interior arrangement of the service station, it will be worth the while of the dealer to visit other agencies to get advantage of ideas that have been worked out in practise.

The sales room should be bright and sunny, with large, full length windows, which will permit the observer to see the car from the sidewalk. A corner location is ideal for efficient service, as it permits of a side entrance to the service station without going through the front entrance to the building, although any location can be attractively arranged if a little thought is given to laying it out.

Organization Should Be Carefully Chosen.

The first step in building up an organization should be to select the man who is to assist the owner. This man should be honest and loyal and should know the automobile and truck business in all its phases. His knowledge of the business should be valuable in guarding against the selection of undesirable salesmen and mechanics.

Enthusiasm is an absolute necessity in automobile and truck distribution, and the most successful assistant manager will be he who is enthusiastic over his proposition. He must not only "be sold" on the automobile business as a whole, but must also have a genuine liking for the machines that he is selling. He must like to meet people and should have certain innate qualities that will enable him to get along with all classes of trade.

And this applies as well to the salesmen who will work under his direction.

The expert mechanic costs more money to hire than the one who has only a limited knowledge of the business. In the end, however, he costs less, and experience has amply proven that there is no such thing as a "cheap mechanic," except as one might use the term in referring to the class of work that such a man does. The best is none too good in this case and the successful dealer will bear witness to the truth of the assertion.

All employees should be trained to follow modern business methods, and the one feature that must be insisted on is courtesy. The person entering the salesroom should be met by a pleasant, courteous salesman, even though the salesman knows that he is not a prospect. One of the most important assets of any business is the telephone operator. This is a fact on which too much stress cannot be laid.

The unpleasant, raucous voiced operator has done more to drive away trade than the average person realizes. The telephone has been called the "front door" of the selling establishment. Stop and think what that means and insist that your telephone be promptly and courteously answered by one who has been thoroughly impressed with the importance of courteous telephone service as a distinct attribute to successful business.

The employees of the sales and service station should reflect the policies, and to an extent the characteristics of the owner, and this means that the grouchy individual will have only himself to blame if his leadership is followed to the extent that his helpers are discourteous and unenthusiastic. Enthusiasm and courtesy play an important part in the running of the sales and service station, as also does the owner's appreciation of those who, having always the best interests of the business at heart, do the very best work they possibly can.

The Pay of the Salesman.

The tendency at the present time seems to be somewhat directed toward paying a salesman by some means other than straight commission. Stipulated salaries have been tried out by some dealers, but the plan most approved of seems to be a combination of salary and commission and this phase of the business will have to be worked out by the dealer himself.

Commission salesmen when business is especially good will perhaps turn in a large amount of good business. The tendency, however, of workers of this class is to slight the really hard buyer and to concentrate on the "cream" of the trade. These men perhaps cannot be blamed for passing up the "tough prospects" as they feel that they are spending their own time and money to little effect. This hurts the dealer's business and is an argument for paying salaries to salesmen. The salaried man will go where he is sent and the eventual result will be more customers. The commission man all too frequently sells machines through rank misrepresentation, and this is especially true in the distribution of trucks. This type of salesman, feeling that he is in the business to get all he can out of it, may excuse his methods, but they have done much to harm the legitimate business such as is done by the salaried man.

One dealer of the writer's acquaintance who has been unusually successful says that he is done with commission salesmen. He figures that he will be ahead of the usual record of profit by hiring good salesmen and paying them a fair salary. In a conversation recently he told of one salesman in his employ who made nearly $9000 last year. Others working in the same territory made anywhere from $4000 to $7500, and a vast majority of the 24 men who "worked" for him who hardly made a living. This man plans to hire three or four good men, pay them around $50 weekly with expenses, and feels that he will be the gainer in the end. He has rather pronounced views on the subject and intimated that "the good commission salesman makes too much, while the inferior one does nothing much except spoil prospects for some one else," and in the experience of the writer his statement is logical.

Regardless of the manner by which the new dealer pays his men, there is one thing he must insist on if he is to build on a firm foundation, and that is that the prospective buyer be told the exact truth. The New York dealer who inserted an advertisement in a daily paper not long ago may have had this in mind, for his copy read:

> "Wanted—Three Motor Truck Salesmen Who Can Tell the Truth for Nine Hours Daily," etc."

The dealer must realize that every clean sale he makes is a substantial asset to the future good health of his business. It means a customer sold for all time, and one who, when he is again in the market, will buy from the same dealer without solicitation. The eventual result of a clientele of satisfied customers must be obvious to the thinking dealer, who must also realize what a dissatisfied "clientele" will mean, especially if he keeps on adding to this latter class. The one spells success, the other failure. There's no secret about that.

Good Cost System Essential.

A good cost system is one of the essentials that the dealer who is about to start in business must have in order to properly determine costs, to use them for a basis of determining charges and to analyze and compare them so that he will know almost exactly on what basis he is operating. The efficient cost system will also aid in making more intelligent statements to the bank and in obtaining a larger line of credit, and this latter fact is especially true.

A cost system will not run itself; neither will it save a man from failure, but it will show him where he stands from day to day, which cannot but aid in the success of the venture.

Of somewhat similar import is the keeping run of overhead charges, which include expense of operating building, insurance, power, light and heat, and general depreciation. The latter item is one of the most important expenses, as it is usually large, and the dealer who slights it is fooling himself, just as is the man who figures the total costs of operating his car and accepts them as final without taking the depreciation into consideration.

Good common sense advertising is one of the greatest sales helps that a dealer can have. The writer has always realized and appreciated this and has recently had it called to his attention in a striking manner by the case of an automobile dealer of his acquaintance. This man had a fine service station and a good reputation. All through the recent period of depression his business was fair, but not as good as he thought should be and in an endeavor to stimulate buying he used a three-inch, double column display advertisement three times a week in his local paper. This advertisement was simply a plain statement of conservative facts in which the dealer's telephone number was set forth in rather large type. Two days after starting to advertise he began to receive telephone calls from people he had never thought of as prospects, and his sales immediately showed a marked increase, thus demonstrating beyond a shadow of doubt the feasibility of advertising to stimulate a dull market.

No Time for "Knocking."

The thoroughbred automobile and truck dealer will put his whole energy into selling his own car, and will have no time to knock the one that is handled by a rival salesman. It is unfortunate that the once abandoned idea of knocking the other fellow's product seems to have come back within the last year or two. One sees a tendency among advertisers to claim that they have the "best" regardless of whether they have any actual right for so characterizing their product. It is needless to say that this doubtful sort of salesman is "boys' play," and puts the prospective buyer in a frame of mind that oftentimes keeps him from buying at all and, in any event, delays the sale. It invites argument, and many times makes the prospect mad. He claims to know as much about cars as the average salesman and, whether he does or not, it is poor policy to insult whatever intelligence he has. Salesmanship should be constructive rather than destructive, and the thoroughbred salesman knows this. He tells what he knows that is good about his car or truck, not what he knows that is bad about the other fellow's and by so doing shows that he has learned the secret of successful constructive salesmanship—and it certainly is a secret to many.

Much might be written about this subject of relative estimates, but aside from the ethical fact the salesman should keep away from comparisons simply because such methods actually lose and delay sales—and sales are what he is concerned with. He can find arguments in his spare time.

California has 500,000 automobiles, or approximately one for every seven people in the state according to announcement by State Purchasing Agent W. G. McMillan.

ACTUAL DEMAND THE MASTER SALESMAN

THE actual census of users of tools and accessories shows that there are today, in this country, nearly 200,000 repair shops, garage, service stations and others in the trade, and nearly 9,500,000 owners of cars, trucks and tractors. This concise statement of fact would seem to indicate that without a doubt there is big business just ahead for the automotive industry—good substantial business that will give it and its auxiliaries a normal tone. But that isn't TODAY, and we can't stand still until that time comes. The immediate market concerns us now, however we may plan for the future. As merchandisers we must get a share of quick business, if there is any. And there is: A careful survey of the situation shows that the market is based on the greatest merchandising principle of the age, the old one of Supply and Demand.

In this connection the manager of the Statistical and Promotive Publicity department of the ACCESSORY AND GARAGE JOURNAL wishes to call attention to a few potent facts about ACTUAL DEMAND, the MASTER SALESMAN of the world. Knowing no theory and disregarding all the conventional and precedented tenets of tact, he FORCES sales and furnishes the money to pay for them.

This Is the Way He Works.

Car and truck owners who have put off replacing equipment and having repairs made must have their machines repaired and must buy accessories if they are to run their machines at all. They are forced to. Repairers to do this work must replace their worn-out tool equipment and must bring their repair shops up to the fullest measure of efficiency by the purchase of other tools, equipment and accessories.

The writer, in a special canvass of garages, service stations and repair shops, has found that the average repair equipment is worn to the extreme and is in poor condition to do satisfactory work. This has mattered little in the last few months, as repair work has been scarce. But these repairers are now busy. More work is coming in every hour, and in six or eight weeks, "Business as usual." A trite remark two years ago. Now—pregnant with possibilities. It means that ACTUAL DEMAND is back on the job.

It means that work must be done regardless of whether owners wish it or not. It also means that repairers must buy equipment, tools, parts and fittings, whether they wish to or not. As a matter of fact, the repairer was always a good spender when he had the money. For the last half year he hasn't had the ready cash. And now that ACTUAL DEMAND has decreed that he must spend money, this MASTER SALESMAN is going to see that a way is provided for the repairer to get this money to spend by sending in the vehicle owners to have their machines overhauled and replacements made.

In every city, town, village, hamlet and cross roads—wherever the wheels of automobiles and trucks turn—is found a potential distributing point for automotive products. This applies to jobbers' and dealers' stocks and includes all lines and all items.

All Should Come in for a Share.

According to the law of averages a share of this business should go to every accessory and equipment manufacturer, jobber and dealer in the country. That must be admitted. How are they going to get it?

In years past the ACCESSORY AND GARAGE JOURNAL has accomplished signal results for advertisers by regular annual merchandising issues early in the season. These numbers were wonderfully effective and built big and dependable business for those who used them. But this year the publication of these special numbers was deferred. The publisher realized that the public was not buying. You cannot get blood out of a stone. Neither service nor quality would move a tired dollar out of the one-way pockets of those who were holding out for lower prices.

Now, however, this condition is changing and it is evident that the time is ripe for special and immediate attention and it has been decided to devote the May and June issues of the ACCESSORY AND GARAGE JOURNAL to this merchandising feature. This decision is based on the following conditions:

The buying public realizes that prices have reached a permanent level, and they must spend money if they are to keep their machines in service.

Stocks are low. Jobbers and dealers have been buying from hand to mouth, cleaning up odds and ends.

Garagemen, service station men and repairers have been buying only as demand forced them to. They have carried no stock, or sold what they had, and money has been tight with them. Their tools and general shop equipment is worn out, and most of it will either have to be repaired, or replacements made. They are just now seeing some real money for the first time in months, but are holding off buying until they are confident that business will continue to be good.

In May and June they will have new life, more business than they can handle and money to spend. In May and June, when the demand is at the peak, they will not, and can not afford to use make-shift and worn out tools and equipment.

They will become tired of buying six plugs, one tire, a barrel of oil, a spring, a bumper, a single gasket and a thousand other things needed, sold and used by them every hour in the day.

They will have the money to spend and the inclination to spend it. Such business cannot be forced. It can be met, however, and the ACCESSORY AND GARAGE JOURNAL is going to help meet it by issuing in May and June business-building numbers that will carry the message to 25,000 trade buyers in all lines of business when actual, not to be denied demand will prompt and must force buying

It is conceded that the ACCESSORY AND GARAGE JOURNAL is one of the few trade mediums actually read by most trade interests. It has a live subscription file of readers of this class. They offer a potential market that is well nigh limitless. In addition to this we have a recently compiled list of 3200 owners of new garages, service stations and repair shops. To all of these prospective buyers the Special Merchandising Numbers of ACCESSORY AND GARAGE JOURNAL will carry a message that they will want to read. It is just as practical and productive for the car and truck manufacturers as it is for those who sell to jobbers and dealers—It offers the same value to makers of parts, fittings, car and shop equipment, as it does to others.

To makers of products for Ford cars, it gives an unequalled service, for it reaches most Ford dealers and 18,000 or more other interests who cater for Ford car business and who repair, care for and house Ford cars.

As previously stated, realizing that it is well nigh impossible to force a dull market, the ACCESSORY AND GARAGE JOURNAL has been waiting to hit the buyers when there is an actual demand and when buying will add to their profits and permit them to do business on a business basis, to give service, to do good work quickly and right and make more money by spending money.

This unprecedented opportunity will be afforded in the big May and June Merchandising issues of the ACCESSORY AND GARAGE JOURNAL.

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EXPORT DEPARTMENT
W.

Prominence of American Trade

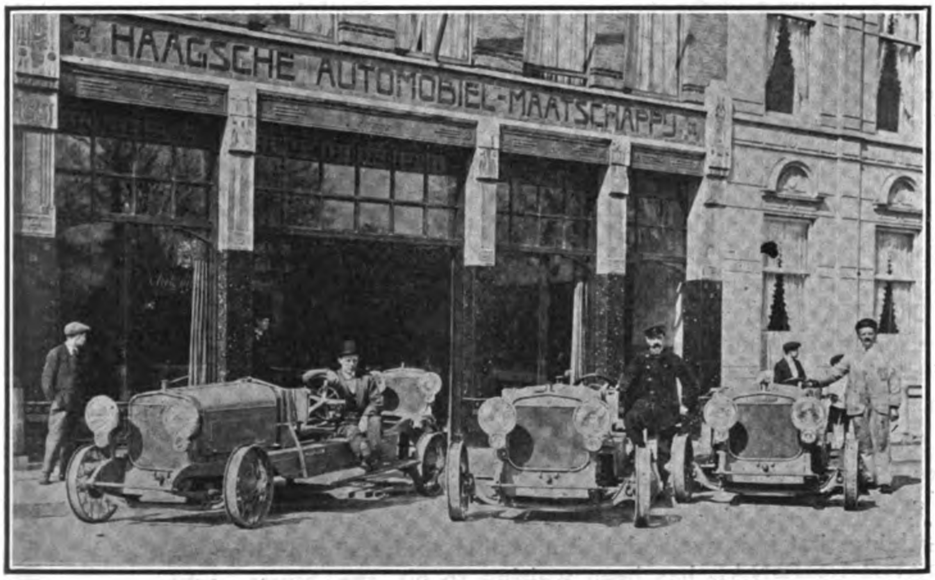
The world-wide prominence of American trade is strikingly illustrated by reports recently received from the two Scandinavian countries, Norway and Sweden. "American automobiles and trucks are so predominant in Norway that they give a distinct American touch to the street traffic," states Trade Commissioner Nels A. Bengtson of the Bureau of Foreign and Domestic Commerce of the Department of Commerce. American agricultural machinery is prominent in Norway. In general the high quality of American tools and mechanisms is conceded, and the expression is frequently heard that American goods rank first in quality but are somewhat higher in price than the same type of goods from the United Kingdom, Sweden or Germany. The United States now ranks first in the trade in metal manufactures as a whole. Before the war Germany ranked first, the United Kingdom second and the United States third.

A good roads' association was recently formed by Argentine, American and British business men of Buenos Aires.

ITALY REMOVES RESTRICTIONS ON GASOLINE SALE.

According to a communication recently received from the Italian Touring club, all restrictions on the sale of gasoline in Italy have been removed. Service stations are being re-established in all the important centers on the Riviera, which will make motoring in Italy very easy.

Roads are in good condition, especially north of Rome, and there is said to be no reason why American owners now should not resume motoring in Italy exactly as they did before the war.



Headquarters of the Haagsche Automobiel Maatschappij at The Hague, Holland. This Firm Has Taken Over the Representation of the Liberty Six Car Made by the Liberty Motor Car Co., Detroit, Mich.

AUTOMOBILES IN FRANCE AND SOUTH AMERICA.

France, with a fine system of roads, has automobiles equal to the combined registration of cars in Mexico, Cuba, Brazil, Uruguay, Australia and New Zealand. The latter countries are, however, stated to be better markets for United States automotive products than France, as is indicated by the fact that even so small a country as Uruguay imported during the last six months from the United States about three times as many cars as the larger European republic. The imports into the other countries have been larger still.

Foreign Trade Opportunities

Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce and its district and co-operative offices upon written request by opportunity number.

34,556—An importing firm in Spain desires to purchase and secure an agency for the sale of industrial machinery of all classes, machine tools, food products, oils, greases, etc., paper pulp, nitrates, chemicals, automobiles and trucks. Quotations should be given c. i. f. Spanish ports. Correspondence should be in French or Spanish. Reference.

34,575—A mercantile company in Spain desires to secure the exclusive local agency for the sale of a low priced automobile. It will open credit in New York for all shipments. References.

34,605—A commercial agent in Belgium desires to secure an agency and consignment of goods for the sale of shoes, machinery for the manufacture of shoes, leather, hides, automobiles, artificial leather, and materials for the manufacture of furniture. Payment to be made against documents. Correspondence should be in French.

34,664—An established importer with offices, show rooms and stock rooms in Australia desires to secure agencies from manufacturers and exporters for the sale of automobiles, motor trucks, motorcycles, as well as automobile accessories and parts. Catalogues and prices are requested. Payments to be arranged in New York. No reference offered.

34.734—A mercantile firm in the Netherlands desires to secure the sole agency for the sale in Holland and Dutch East Indies of agricultural implements especially suited for use in the Dutch East Indies. Quotations should be given c. i. f. Dutch East Indian ports, Amsterdam or Rotterdam. Reference.

34,737—A mercantile firm in India desires to secure the sole agencies for the sale of mill and cotton gin stores, machinery, cimema accessories, motor cars, chemicals, cutlery, leather goods, belting, etc. References.

34,752—An agency is desired by a mercantile company in India for the sale of motor cars and accessories, candles, oils, bicycles and other goods which will find a market in that country. Quotations should be given c. i. f. Indian port. References.

MOTOR VEHICLES IN SOUTH AFRICA.

According to Trade Commissioner Stevensen of Johannesburg, South Africa, official figures for the first 11 months of 1920 show imports of passenger motor cars into South Africa numbering 9150, valued at $18,378,765 at the normal rate of exchange; 239 trucks were imported during this period, valued at $601,205.

Personal News of Industry and Trade

Doty Treasurer of Globe Motors

W. S. Doty, formerly of the Cleveland Tractor Co., has joined the Globe Motors Co. organization, Cleveland, O., according to an announcement just made by President Charles H. Davies. He has acquired a substantial financial interest, will act as treasurer and have charge of operations. Mr. Doty has had a long connection with the automotive industry and an unusually broad executive experience, which fits him well for his new duties. His connection with the Cleveland Tractor Co., covering a period of three years, was in the capacity of auditor, assistant secretary and assistant treasurer in the order named. During that time he was also a member of the informal executive committee of the company. Mr. Doty's automotive experience also includes two years with the Torbensen Axle Co., two years in charge of the general offices of the Denneen Motor Truck Co. of Cleveland and several years as a retailer and distributor. The Globe Motors Co. has acquired a tract of land in the center of Euclid village and is making arrangements to erect a factory building this spring. Railroad sidings are being put in at the present time. Details of its new speed truck will shortly be announced.

W. L. Shaffer, who for the past nine years has been connected with the B. F. Goodrich Rubber Co. in various capacities throughout the country, for the past five years of which he was in the manufacturers' division of the Detroit district, has resigned to become associated with the Acme Motor Truck Co., Cadillac, Mich. He will have charge of the national account division under the direction of C. J. Helm, sales manager.

C. J. Helm, sales manager of the Acme Motor Truck Co., Cadillac, Mich., has returned from a trip through the East, where he presided at conferences of Acme distributors and dealers held in connection with the Boston, Philadelphia and Washington, D. C., automobile shows.

L. E. DeGroat, formerly of the sales staff of the Timken-Detroit Axle Co., is now with the Acme Motor Truck Co., Cadillac, Mich., in charge of dealer promotion work.

George C. McMullen, who has represented both the Timken Roller Bearing Co. and the Timken-Detroit Axle Co. on the Pacific coast for the last three years, will in the future devote his time exclusively to the Roller Bearing Co., with headquarters in the Monadnock building, San Francisco.

C. H. Brooks, who has been Mr. McMullen's assistant, will be in charge of the business of the Timken-Detroit Co. in that territory.

C. A. Woodruff has joined Briscoe Motors, Inc., Detroit, Mich., as director of purchases. He was formerly purchasing agent for the Chalmers, Saxon and Liberty motor car companies.

W. S. Doty, New Treasurer of Globe Motors Co., Cleveland, O.

R. C. Rawley has rejoined the sales staff of the Remy Electric Co., Anderson, Ind., and will work under the supervision of G. B. Stone, general sales manager. About a year ago Mr. Rawley resigned from the Remy sales department to engage in engineering sales work on his own account. Prior to that he had been a member of the Remy organization since 1918, going to that concern from the Mitchell Motor Car Co., where he was engineer in charge of electrical installation.

W. H. Schmelzel, president of the Schmelzel Co., St. Paul, Minn., has sold his interests in that concern to his associates and is in the South for his health.

S. Gordon Hyde resigned his position as advertising manager of the Buda Co., Harvey, Ill., effective April 1. His future plans are not announced.

L. J. Kramer, Veteran Salesman, Now With U. S. Motor Truck Co., Cincinnati, O.

Kramer Joins Sales Force of U.S. Truck

L. J. Kramer has joined the sales force of the United States Motor Truck Co., Cincinnati, O. Mr. Kramer has had extensive truck experience, having been connected with the Master Truck Co. since its organization. He was with Eugene Goldman, general manager and vice president of the United States Motor Truck Co. when Mr. Goldman was Republic distributor in Chicago.

C. M. Bunnell, who for the past 10 years has been in charge of sales of automobile lamps for the Edison Lamp Works of the General Electric Co., has accepted the position of director of branches with the Splitdorf Electrical Co., with headquarters at the general offices of that company, 98 Warren street, Newark, N. J. Mr. Bunnell will, for the present, devote considerable of his time and attention to promoting the sales of Splitdorf spark plugs and other Splitdorf products through automotive equipment jobbers.

E. Hunn, Jr., was recently made general manager of the Enterprise Motor Corporation, New York city, which handles the Kelley-Springfield truck, one of the products of Hare's Motors. Mr. Hunn has been assistant to Emlen H. Hare, president of Hare's Motors. **George H. Hauck** is general sales manager of the Enterprise Co. and **E. H. Dorman** retains his position as service manager.

Frederic N. Dodge, who was recently appointed sales manager of the Cleveland branch of the Baker-Fisk-Hugill Co., Dort distributor in Detroit, was formerly assistant advertising manager of the Dort Motor Car Co. of Flint, Mich. He also previously held the position of sales promotion manager of the automobile and service station equipment division of the Fairbanks Co. of New York.

Charles O'Harrow, who has been connected with the automotive industry in Waterloo, Ia., for a number of years, has become associated with the A. L. Alexander Co. as director of sales. The Alexander Co. distributes Liberty and Chevrolet cars.

Karl W. Volk of Cleveland, O., has been made manager of the service station at Toledo, O., of the Stewart Products Corporation. He was formerly at the Peerless car factory for seven years before he joined the Stewart company at Cleveland two years ago.

J. D. Thompson has sold his interest in the Buick automobile agency at Cedar Falls, Ia., and has taken charge of the agency for the Equitable Life Insurance Co. in northeastern Iowa.

E. P. Grismer is in charge of the Cleveland sales office of the Stewart Manufacturing Corporation, 942 Prospect avenue.

H. I. Bunting has purchased an interest in the Cedar Rapids, Ia., Velie Co.

Utility of Truck Increased by Proper Tire Equipment

(By **C. K. WHIDDEN**, Manager, Truck Tire Sales, United States Tire Co.)

THE truck owner need not go far wrong today in selecting the correct type of tire for the vehicles in his fleet.

East type of motor truck tire is designed and built for service under clearly prescribed conditions and by careful study of a few simple principles it will be possible to decide which type is the one suited to a particular purpose.

The limitations of service which each type gives are bounded generally by the capacity and speed of the truck and the character of the work the truck is called upon to perform.

Solid tires are for general use on trucks hauling loads of non-fragile materials under conditions that do not demand unusual speed, such as short trips in congested traffic where frequent stops are necessary, or on roads that are little affected by weather conditions. Such use is confined generally to large centers of population or between such centers connected by improved roads.

The industries that most use solid truck tires and the classes of work in which such trucks can be most economically used may be listed in general somewhat as follows: General manufacturing; general contracting and excavating: road building; coal and ice retail delivery; lumber retail delivery; packing and flour milling industries; city delivery for wholesale grocers; terminal freight hauling; transfer work in cities and oil and gasoline deliveries in cities.

Solid tires as to type and use are of three kinds—regular, high size and large single. Each is designed according to a certain principle and is built with a view to a certain class of service.

The regular tire is the conventional solid truck tire. It is built to meet conditions that are not exceptional and for that reason follows standard conventional lines. Solid truck tires of this type are most economical and satisfactory for all ordinary trucking purposes where medium sized trucks are used and where prescribed loads and speeds are fairly closely adhered to. The field for the regular tire in the industries listed above is, with certain exceptions, on the front and rear wheels of trucks of 1½ ton capacity and on front wheels of trucks above the 1½-ton class, except as noted hereafter. Circumstances and requirements may arise under which trucks of the classes mentioned may be operated more economically on other types of tires, such circumstances as regularly hauling heavy loads over very rough pavements or making long distance trips and trips over country roads. Under these circumstances it may be preferable to use either the high size solid tire or pneumatic truck tires. Such conditions are exceptions to the general rule and must be so dealt with.

High Size Type of Solids.

There are certain circumstances and conditions of truck hauling which warrant the use of the high size type of solid tire. This differs from the regular tire in that it furnishes greater tire height and cross sectional area, therefore greater cushioning; allows somewhat greater load carrying capacity; gives greater mileage; retains vitality longer and allows less vibration in the truck.

The high size tire costs more and therefore should be recommended only for such uses as will bring a return in proportion to the extra money invested.

The high size truck tire can be used most economically on the front wheels of all trucks above the 1½-gallon capacity operating under the general conditions heretofore enumerated, but where in addition the following requirements are important: (1) A demand for cushioning effect not as great as that furnished by pneumatics, but greater than supplied by regular tires, for example, where a solid truck tire is compelled to run regularly over rough city pavements; (2) whenever it is expedient to carry occasional heavy loads, such as large pieces of machinery; (3) where the user wishes to obtain greater mileage from his solid tires with longer time between periods of replacement; (4) where trucks are operated at long distances from tire application facilities, such as in isolated rural districts; (5) to improve the steering qualities on heavy duty trucks.

When to Use Single Type.

The big single type of solid truck tire has for its best example the mono-twin, which is designed and built to take the place on rear wheels of dual solids, whether high size or regular. The field for this tire is at present on the rear wheels of trucks of capacity above 1½ tons, requiring a tire of seven inches to 14 inches in width. It takes the place of cushion tires and cushion wheels, carries a heavier load than dual tires of the same cross sectional width and maintains this carrying capacity as well as all other features, undiminished throughout its tire life.

C. K. Whidden, Manager, Truck Tire Sales, U. S. Tire Co.

The development and perfection of the pneumatic truck tire—the type of pneumatic that is built especially for trucks and is not merely an enlarged passenger car type—stands out as one of the greatest steps in truck evolution. There is now no question but that its place is established for use on all trucks up to and including two-ton capacity where the elements of traction, speed and cushioning are especially needed in truck operation. This company believes that sizes above eight inch have not yet been developed beyond the experimental stage.

Pneumatics Economical.

Pneumatic truck tires may be used economically on the front and rear wheels of trucks of capacities up to and including two tons, and on the front wheels of trucks above the two-ton capacity, operating in the following classes of haulage work: General farming; dairy, egg and chicken industries; bottling industry; furniture manufacturers and dealers; wholesale produce dealers; department stores; fire trucks of light and medium types; rural transfer companies; rural distribution of gasoline and oil and inter-city single desk passenger busses.

Help Solve Transportation Problem.

Pneumatic truck tires have come into use in helping to solve transportation problems more extensively in the Middle West than in the Middle Atlantic or New England states. The reason is one of road conditions coupled with the fact that smaller capacity pneumatic tire trucks are most useful and economical in farm territory. As an industrial class the farmer is probably the largest user of the pneumatic tire truck. As in farming, so in the other lines of work mentioned, pneumatic truck tires have come into use on lighter trucks because their use is economically sound.

Furniture dealers use pneumatics to save breakage, produce dealers to save their fruit and vegetables, bus operators to give speed and comfort, other industries to save time and secure traction.

Pneumatics Not Cure-Alls.

Pneumatic truck tires are not cure-alls for general transportation evils and should be recommended for use only under circumstances and operating conditions where the higher initial cost will be offset by economies resulting from cushion, speed and superior traction.

Under present conditions of roads, truck design, traffic and load limitations, hard and fast tire requirements cannot be laid down without the knowledge of conditions under which the vehicle will operate.

Pneumatic tired trucks can be linked up with solid tired trucks in the same business, and by the intelligent use of both classes of equipment the transportation work as a whole speeded up.

NOTES OF INDUSTRY AND TRADE

Steel Corporation Cuts Prices

An announcement which is of importance to the automotive industry of the country was the substantial reduction in the base selling prices of the products of the United States Steel Corporation and its subsidiaries which was made public in New York, April 12, by Elbert H. Gary, head of that organization, after consultation with the presidents of the various subsidiary companies.

The new prices became effective April 13 and the reductions are as follows, f. o. b. Pittsburgh, Pa.:

Four by four and heavier billets, from $38.50 to $37 a gross ton; slabs, $42 to $38 a gross ton; sheet bars and small billets, $47 to $39 a gross ton; bars, $2.35 to $2.10 per 100 pounds; plates, $2.65 to $2.25 per 100 pounds; structural, $2.45 to $2.20 per 100 pounds; wire rods, $57 to $48 a gross ton; plain wire, base, $3.35 to $3.00 per 100 pounds; tin plate, $7 to $6.25 per base box.

Mr. Gary would make no comment on the reductions nor reply to questions asking whether cuts in wages paid employees of the corporation were contemplated. The price list from which the changes were made went into effect on March 21, 1919. To give an idea of the size of the reductions it was explained that the cuts on tin plates pare its quotations from $140 to $125 a ton.

NEW YORK ELECTRICAL SHOW, SEPT. 28 TO OCT. 8.

It is announced that the New York Electrical Exposition will be held in the 71st Regiment Armory, Park avenue and 34th street, New York City, during the 10 days beginning Sept. 28, 1921.

With the Grand Central Palace no longer available for exposition purposes, the show management was confronted with the problem of finding a place that combined suitable floor arrangements, facilities for handling the exhibits and accommodations for spectators. The success of other shows that have been held in armories indicates that the requirements of the electrical show will be well met at the 71st armory.

As in former years the 1921 show will feature electric vehicles, electrical equipment for the home, motor driven machinery for industrial purposes and electrically operated material handling machinery.

NEW PAWTUCKET GARAGE OPENED.

The Lafayette Garage has been opened at 435 West avenue, Pawtucket, R. I., under new management and is equipped to do expert electric and other repair work, washing, polishing, etc., affording a day and night service.

The manager is Arthur H. Theroux and the superintendent is Fred Hiscox.

CHAIRMAN ELLIS WILL WELCOME SUGGESTIONS.

George W. Ellis of the Supplee-Biddle Hardware Co., Philadelphia, Pa., who was recently appointed chairman of the Automobile Accessories branch of the National Hardware Association of United States, to succeed A. H. Nichols, resigned, has issued a statement to the active and associate members of the association to the effect that he is exceedingly desirous of having the accessories branch serve the automobile industry in every possible way and asks the hearty cooperation of each and every member. He solicits and states that he will welcome suggestions that will contribute to the success of the association's efforts to place the automobile accessories, supplies and equipment industry on the soundest and most profitable basis.

AFFECTS SALE OF USED CARS.

An act to amend the New York state highway law in relation to the transfer of used motor vehicles will go into effect July 1, 1921. Subdivision 8 of section 282 is amended to provide that upon the sale or transfer of a registered motor vehicle the seller must transfer to the buyer the certificate of registration indorsed to show the name and address of the buyer and the date of delivery, together with a statement of the transfer of ownership, which statement must be executed by the buyer and filed with the secretary of state within 10 days. A motor vehicle so transferred may be operated and driven under the original registration for a period of 10 days from the date on the certificate of registration.

DURANT MOTOR COMPANY OF NEW YORK

Plant of the Durant Motor Co. of New York, $3,000,000 Corporation—First of Chain of Independently Organized Assembly Plants Located at Strategic Distributing Points—These Companies Are to Be Operated Under Contract with Durant Motors, Inc., Which Will Supervise Production.

It is announced that the Paige-Detroit Motor Car Co., Detroit, Mich., is to equip its Big and Little Six Paige models with the Remy starting and lighting system manufactured by the Remy Electric Co., Anderson, Ind.

Ford Production Back to Normal

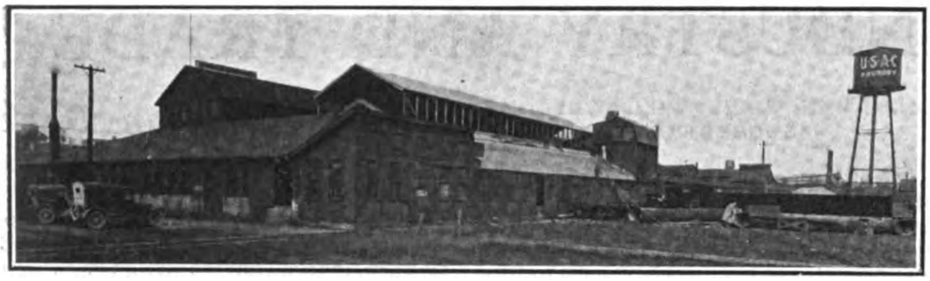
The steady gains both in sales and production which are reported at the Ford plant in Detroit may be accepted as to a degree indicative of the business status in that section. Henry Ford of the Ford Motor Co. stated in this connection that that concern was never in a better position than right now.

The company's actual sales in the domestic market for January were 57,208 automobiles and 1138 tractors, for February 63,603 cars and 1932 tractors, and for March 87,221 cars and 4708 tractors. At present the company has 102,000 unfilled orders for automobiles and production of the present working force is at the rate of 1,000,000 cars a year.

The company's normal production before the plant was closed for inventory on Dec. 23 was about 100,000 cars a month. This required, at that time, a working force of about 52,000 men. At the present time a little more than 32,000 men are employed. It is reported that the difference between this figure and the full working force is largely represented by the increases in help taken on due to expansion of activities during the war.

In the present situation, in building the present forces up to meet full production, an effort is being made to take on only employees who display an intention of remaining with the Ford company. By this means the company sees a way to reduce its "turnover" of help to a minimum, greatly stabilizing production and thus reducing productive costs.

In regard to the financial condition of the Ford company, it is stated that approximately $10,000,000 of the $24,000,000 in bank loans that mature on April 18 will be paid off at that time, and that the concern has been successful in raising funds to make payments on taxes.



Addition to Connersville Foundry Corporation's Plant, Which Will House the Casting, Cleaning and Heat Treating Departments.

Expansion of United States Automotive Corp.

EXPANSION at the present time proves unshakable confidence in the future. Evidently the Connersville Foundry Corporation, a subsidiary of the United States Automotive Corporation of Connersville, Ind., possesses such confidence, for it is now completing an extensive addition to its already large plant.

This new building will measure 60 by 140 feet and will be used for cleaning the castings after they are removed from the moulds.

The Connersville Foundry Corporation has also installed heat treating equipment, which is the latest development in modern foundry work. This heat treating was demanded by the exacting requirements of the Ansted Engineering Co., which produces the recently announced Ansted engine for the exclusive use of the Lexington Motor Co.

All of these plants are subsidiaries of the United States Automotive Corporation and together with the Teetor-Harley Motor Corporation at Hagerstown, Ind., make it possible for the builders of the Lexington Minute Man Six to largely control the principal sources of material supply.

With the completion of the casting cleaning and heat treating departments the Connersville Foundry Corporation will be able to produce 40 tons of castings a day with ease.

"We shall be able, with these increased facilities, to take care of a limited amount of business outside our own large requirements," said Frank B. Ansted, president of the United States Automotive Corporation, in commenting on the expansion of the Connersville Foundry Corporation's plant.

Standard Parts Plant Also Taken Over.

Announcement of the organization of the Ansted Spring & Axle Co., with an authorized capital of $500,000 of common stock, under the laws of the State of Indiana, has been made by President Ansted of the United States Automotive Corporation and the Lexington Motor Co., its chief subsidiary. This is another link in the great chain of plants with which the United States Automotive Corporaton is acquiring, and supplies the Lexington Motor Co. with another parts making source.

The Ansted Spring & Axle Co. has taken over the property in Connersville formerly owned by the Standard Parts Co. of Cleveland, O. The buildings are of thoroughly modern brick and steel construction and are equipped with the very latest appliances and machinery for economical production on a large scale.

Originally the plant, which has just been taken over by the newly organized Ansted Spring & Axle Co., was owned by a company of identically the same name and headed by the late Edward W. Ansted, one of Indiana's pioneer manufacturers. Frank B., Arthur A. and George W. Ansted were engaged with their father in this and other large enterprises. The new spring plant when running to capacity, employs between 300 and 400 skilled workmen.

All springs for the Lexington car will be made in this plant, in addition to a considerable volume of business for other large motor car producers.

BOOKS RECENTLY RECEIVED.

Gasoline Automobiles, Moyer—This is a clear, brief and interesting presentation of the essential principles of automobile construction and operation by James E. Moyer, director of university extension, Massachusetts Department of Education. It is especially designed to furnish help in a practical form to motor vehicle drivers who, when faced by ordinary operating troubles, want to know how to locate the cause and apply the remedy. It is divided into 10 sections, with the following captions, which indicate the scope of the work: 1. Automobile Types and Parts. 2. Automobile Engines. 3. Gasoline and Substitutes. 4. Gasoline Carburetors. 5. Automobile Ignition. 6. Magnetos and Ignition Testing. 7. Electric Starters. 8. Clutches, Transmissions and Differentials. 9. Lubrication and Cooling Systems. 10. Automobile Troubles and Noises.

Published by McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York City. Price, $2.

Automobile Questions and Answers, Page—This is a revised 1921 edition of this work which has been considerably enlarged and brought up to date. It is a practical treatise, by Victor W. Page, M. E., in the form of a series of 39 lessons covering, with over 2000 questions and answers, the automobile, its construction, operation and repair. It is superbly illustrated by 387 cuts and plates and the subject matter is couched in simple, understandable language. Among the topics considered are: Parts of the modern automobile, two and four-cycle motors, fuels, carburetion, ignition systems, lubrication, cooling, transmission, differential gear construction and operation, frames and springs, steering gear and axles, wheels, rims and tires, bearings, brakes, driving instructions, oiling, road troubles, equipment and accessories and electric starting systems.

Published by the Norman W. Henley Publishing Co., 2 West 45th Street, New York City. Price, $2.50.

The Modern Motor Truck, Page—This work considers all types of motor trucks and industrial tractors and trailers, their design, construction, commercial application, operation and repair, and lays particular stress on the outstanding features of all types of gasoline and electric commercial vehicles and all varieties of truck bodies.

This is stated to be a companion volume to a previous book by the same author, Victor W. Page, M. S. A. E., entitled the Modern Gasoline Automobile, which has enjoyed a considerable vogue in its field, and the Modern Motor Truck is designed to fill a similar place in the truck field that the former did in that of passenger cars.

Mr. Page has had the cooperation of the engineering and service departments of the leading motor truck manufacturers and the material presented is distinctive and of unusual value. The work is copiously illustrated, showing the essential features of commercial vehicle construction in numerous sectional, disassembled and phantom views, and these are accompanied by simple explanations that cannot fail to be understood by even the casual reader. In brief, it is stated to be not a technical treatise, but a book for the practical business man and mechanic.

Published by the Norman W. Henley Publishing Co., 2 West 45th Street, New York City. 1000 pages, 6 by 9 inches; 750 illustrations. Price, $5.

Spring and Axle Plant Formerly Owned by the Standard Parts Co., Cleveland, O., Now the Property of the Newly Organized Ansted Spring & Axle Co. of Connersville, Ind., Newest Subsidiary of the United States Automotive Corporation.

Old Timers' Directors Meet

"Good laws, good roads, good fellowship," the slogan of the Old Timers' club, was formally adopted at the first meeting of the board of directors. This meeting was held at Flint, Mich., April 2-3, when all but three of the directors were present. At this meeting there were added to the directorate W. C. Rands of the Motor Products Co., who will be treasurer of the organization; Harvey S. Firestone of the Firestone Tire & Rubber Co., vice president of the tire section; Amos G. Batchelder, chairman of the executive committee, and secretary of the American Automobile association, vice president of the Good Roads and Highway section. The directors shown in the accompanying cut are:

Front row, left to right, W. C. Rands, Motor Products Co., treasurer, Wm. L. Hughson, San Francisco, Los Angeles, Portland, Oakland, San Diego, Seattle, vice president, Distributors' Section; Albert Champion, president Champion Ignition Co., Flint; Gregory Flynn, vice president Jobbers' section, vice president Edward A. Cassidy Co., New York; Lloyd Maxwell, Erwin, Wasey & Co., Chicago, vice president advertising section.

Second row, left to right, John Younger, Standard Parts Co., Cleveland, vice president Parts and Accessory section; F. Ed. Spooner of the Detroit Motor Times, vice president and advertising manager Motor West, secretary; Richard Kennerdell, chairman Contest Board A. A. A., vice president Contest section; Walter Bermingham, automobile editor Evening Post, Chicago, vice president Newspaper section; W. S. Gilbreath, manager Detroit Automobile club, chairman Constitution and By-Laws Committee; C. G. Sinsabaugh, editor Motor Life, vice president Automobile section; Martin L. Pulcher, Federal Motor Truck Co., vice president Trucks and Tractor division.

Directors absent—Alfred Reeves, general manager National Automobile Chamber of Commerce, vice president Organization section; Thomas J. Hay, automobile distributor Chicago, vice president Dealers' section; Howard Marmon, Nordyke & Marmon Co., Indianapolis, Passenger Car and Airplane section; Harvey J. Firestone, Firestone Tire & Rubber Co., Akron, O., vice president Tire section; A. G. Batchelder, chairman Executive Committee, American Automobile association, vice president Good Roads and Highway section; J. Ed. Schipper, technical editor Class Journal Co., chairman Membership Committee.

TRASK INAUGURATES CLASS FOR STUDY OF STEAM CAR.

O. C. Trask, president of the Trask-Kennedy Co., Detroit, Michigan distributor for the Stanley Steamer, addressed a class of 800 Michigan State Auto school students Tuesday night, April 12, on the principles and operation of the Stanley Steamer.

The cooperation of A. G. Zeller, president and principal of the Michigan State Auto school, has been secured to establish a regular class to study the steam car, in connection with the school's automobile course. Mr. Trask has furnished the school a completely equipped chassis of the Stanley, which is used to illustrate his lecture, as well as his own Stanley touring car.

It is planned to have members of the Stanley service organization work with the school faculty in the carrying on of this class. Instruction on the steam car will be made a part of the regular course and all students will receive this. The Michigan State Auto school is planning other extensions of its work during the summer season—one being an increase in the welding plant to about four times the present size.

MILES PISTON RING COMPANY MOVES INTO NEW FACTORY.

The Miles Piston Ring Co., Chicago, has recently moved into its new factory at 5353 South State street. In this new plant, which is one of the most modern of its kind, the company is adding additional equipment which will enable it to increase their output.

Increased business has forced the company to move into larger quarters three times since 1918.

The Miles Piston Ring Co. manufactures the Miles One-Piece Triple Seal Piston Ring.

SALES COMPANY OPENS OFFICE.

The Miles Piston Ring Sales Co. has opened a distributing office at 437 Fifth avenue, New York City. The company is a subsidiary of the North American Truck Co., Inc., of which George B. Godfrey is manager.

The Miles Piston Ring Sales Co. is organized for the purpose of distributing the Miles One-Piece Triple Seal Piston Ring in New York state and New Jersey. Irving Miller is in charge of sales of piston rings.

Akron Agency Buys Building

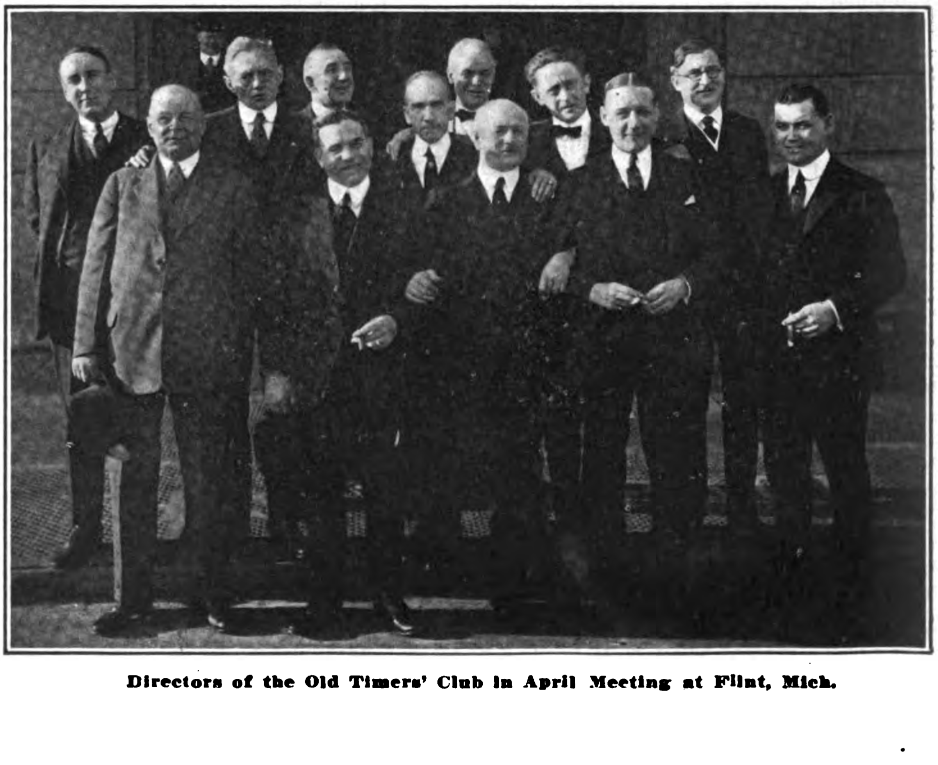
Improved business conditions have made necessary several additions to the staff of the Akron Advertising Agency Co., Akron, O., with a resultant demand for larger quarters. In common with other leading agencies the company has accordingly taken a step ahead by acquiring its own building at 115 South Union street, in the residence section of Akron. At the time this residence was built it was the finest and largest home in the city, and is surrounded by spacious lawns and well kept shrubbery. Built along old fashioned lines, with numerous windows and large, high ceilinged rooms, it was ideal for the purpose of its new occupants with but few alterations.

On the first floor is the private office of President Gordon Cook, the space buyer's office and the administrative and production offices, including the accounting, mechanical and checking, filing and forwarding departments. A large conference room is also located on this floor.

The entire second floor is given over to the creative branches of the agency's work, including the private office of Vice President Edward S. Babcox, and the service and copy departments. The arrangement is such that each account supervisor has his own private office.

Exceptionaly good lighting on the third floor places the art director and his department there as a matter of course. The former ball room is utilized as a recreation room for the members of the organization and as a meeting place for various advertising and allied associations.

Located close to the center of activity in the city, and still away from the noise and distractions of a busy office building, the new quarters are particularly well adapted to the needs of the agency, and to improve the service rendered its clients.



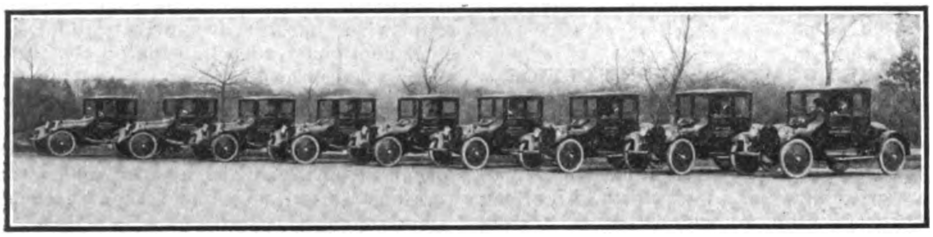
Directors of the Old Timers' Club in April Meeting at Flint, Mich.

PATTERSON-WARNER ACQUIRES INTEREST IN AUTO INDICATOR.

It is announced that E. C. Patterson, president of the Patterson-Warner Co. of Chicago has acquired an interest in the Auto Indicator Co. of Grand Rapids, Mich., and has been made a director in the company. Mr. Patterson is a national figure in the automobile field. He has been one of the foremost automobile racing patrons of America, his cars having been piloted to victory by De Palma, Chevrolet and other noted drivers. He holds individually the long distance return trip record for a run between New York and Chicago.

About four years ago he organized the Patterson-Warner Co., associating with himself A. P. Warner of Beloit, Wis., originator of the Warner Speedometer, in the manufacture and sale of the Warner-Lenz.

Mr. Patterson has been investigating a rear signalling device for automobiles for some time, realizing that there was a tremendous potential demand for a device that would be adequate. His investigating finally led to a connection with the Auto Indicator Co. of this city, and this implies the recapitalization of the company on a basis that twill provide for a world wide business.



Fleet of Dodge Coupes Used by Salesmen of Waitt & Bond, Inc., Newark, N. J., Maker of Blackstone Cigars. Photograph Was Taken During Formal Parade of Salesmen from Newark to Boston, March 21-25. Cars Are Conspicuous on Account of Their Equipment of Orange-Colored Disc Wheels and Gold Bands on Doors.

The increase in the capital stock to $1,500,000 has already been provided for.

The present Auto Indicator is a development of the signal originally manufactured by the Auto Indicator company, of which about 35,000 have been sold. The present device, however, is a very great improvement over any previous models. The action of the Auto Indicator is purely mechanical, the stop signal being flashed automatically upon the pressure being applied to the foot brake; the right and left turns being indicated by a lever conveniently situated on the steering wheel. All three operations giving notice of intended change of speed or direction; and being as automatic with the driver as the steering of the car.

The company will continue to manufacture in Grand Rapids. The board of directors has been increased from five to seven, the other new director besides Mr. Patterson being C. B. Hamilton of the Brearly-Hamilton Co. of Grand Rapids.

The officers of the company are: President. Joseph Renihen; vice president. R. W. Brown; secretary-treasurer, V. T. Cilley.

A shrinkage of $67,700,000 in American exports took place in January.

Protective Committee for Willys Corp.

The Willys Corporation, which has been known as a holding corporation, having 27 per cent. of the stock of the Willys-Overland Co., as well as stock of the Fisk Rubber and Federal Rubber companies. has been placed in the hands of a protective committee in the interests of the first preferred stockholders. The Columbia Trust Co. is the chief depository and the sub-depositories are the First National bank of Boston, the Central Trust Co. of Illinois and the Girard Trust Co. of Philadelphia.

The members of the protective committee are Howard Bayne, chairman; U. N. Bethell, Stedman Butterick, Thomas B. Gannett, Robert E. Hunter, Leclanche Moen, Robert L. Montgomery, Joseph P. Cotton, counsel, and Willard C. Mason, secretary.

The Willys Corporation was incorporated July 24, 1917, in Delaware as the Electric Auto-Lite Corporation and its present name was adopted in September, 1919. In that year the company acquired the capital stock of the New Process Gear Corporation and the Duesenberg Motors Corporation.

It is stated that there are outstanding 4,450,000 shares of common stock of no par value. $15,000,000 first preferred and $10,000,000 second preferred.

WATER IN CARBURETOR.

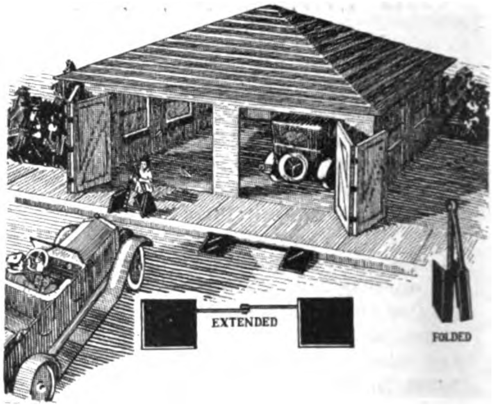
A common, yet at the same time baffling cause of an engine missing explosions is water in the carburetor. When testing other causes of skipping, try draining the carburetor. Catch some of the fuel in the palm of the hand and note if globules form on top. They reveal the presence of water.

KURB-KUMFORT PORTABLE RUNWAY.

The Kurb-Kumfort is a portable runway designed to eliminate the expense of grading and recurbing. It is strong enough to hold the heaviest automobile, but light enough for a child to carry. It consists of two wooden runs connected so as to fold together when not in use. When folded it is easy to carry and to store; when extended the runs are just the right distance apart for the wheels of the automobile; there is no adjusting afterwards.

The Kurb-Kumfort fills the need of many who, because of municipal laws or from fear of theft, wish to keep their runways out of the gutter and safe in the garage. The Kurb-Kumfort is much easier to handle than wooden blocks or built up runs. It is clean in muddy weather and one trip places both runs in the street.

Kurb-Kumforts are made in all sizes to fit any height of curbing. They sell for $3.50 a pair and can be obtained from most dealers, or by writing Arnold & Co., 11 Arch street, Providence, R. I. The height at the curb should be stated when ordering.

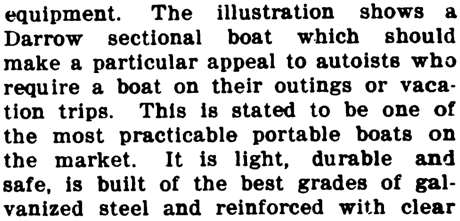


Kurb-Kumfort Portable Runway.

DARROW'S SECTIONAL BOATS.

As the outing season is at hand it is timely to call attention to the products of the F. H. Darrow Steel Boat Co., Albion, Mich., which specializes in the manufacture of steel boats, boat patterns, plans for construction and sportsmen's equipment. The illustration shows a Darrow sectional boat which should make a particular appeal to autoists who require a boat on their outings or vacation trips. This is stated to be one of the most practicable portable boats on the market. It is light, durable and safe, is built of the best grades of galvanized steel and reinforced with clear oak or cypress. It is of the float bottom, flaring side style and is stated to be very steady in the water.

Each section is a complete boat in itself and the sections nest together when the boat is being transported. A 12-foot boat thus nests in a space 50 inches long and 40 inches wide. It can be carried with safety and convenience on the running board of any make of automobile. The sections may be joined in five minutes without the aid of special tools.



Darrow's Sectional Boat for Autoists, Showing Method of Nesting to Save Space in Transportation.

The Elmco Universal Test Stand

THE Elmco Unversal Test Stand is designed to test various makes of generators and starting motors used in the automobile for either electrical or mechanical faults. The simplicity of construction of all the adjustable parts, the fact that they remain rigid and free from vibration at the first setting reduces materially the time required in preparing for an inspection. In addition, an unlimited amount of repair work can be accomplished on the stand through the use of the lathe feature embodied in it.

A repulsion induction type General Electric motor is supplied to operate the machine. This motor will withstand 50 per cent. overload and can be readily connected to a 110 or 220-volt alternating current, single or three-phase circuit. When so specified these machines will also be equipped with motors for either 110 or 220-volt direct current. The motor has a reversing handle, making it a very simple operation to reverse the rotation.

Friction Transmission Used.

The friction transmission used on the Elmco Universal Stand has been designed to deliver to the driving chuck more than the maximum torque of the motor without injury to the working parts. Three Weston meters are supplied for reading generator and battery voltage, generator amperage, charge and discharge and amperage discharge of the battery when the starting motor is tested. For reading revolutions a minute a tachometer of the centrifugal type is used, which registers speeds of from five to 3000 revolutions a minute in either rotation.

The instrument board is of steel construction and finished in baked enamel, thus insuring durability.

Wiring Arrangement.

The wiring is arranged in such a manner so as to make possible the proper connections for testing the units of the various voltage systems in use. The operating switch is connected in the circuit for the purpose of: 1, Obtaining battery voltage at any time during the test, insuring to the operator that all adjustments are made under proper conditions. 2. Running the generator as a motor for the purpose of locating open armature coils and undue load shown by ammeter readings. 3. Enabling operator to short circuit the cut-out furnished with the machine so as to make the test without the same. A pair of removable leads connected to brass prods are furnished for testing armature segments, field coils, etc. Contact is indicated by a red light on the instrument board.

Universal Chuck.

A three-inch union chuck, supplied with both external contracting and internal expanding jaws, is mounted on the driving shaft so as to operate universally when testing electrical equipment. This chuck can be centered and rigidly fixed to the driving shaft through a very simple operation when it is desired to use the machine as a lathe.

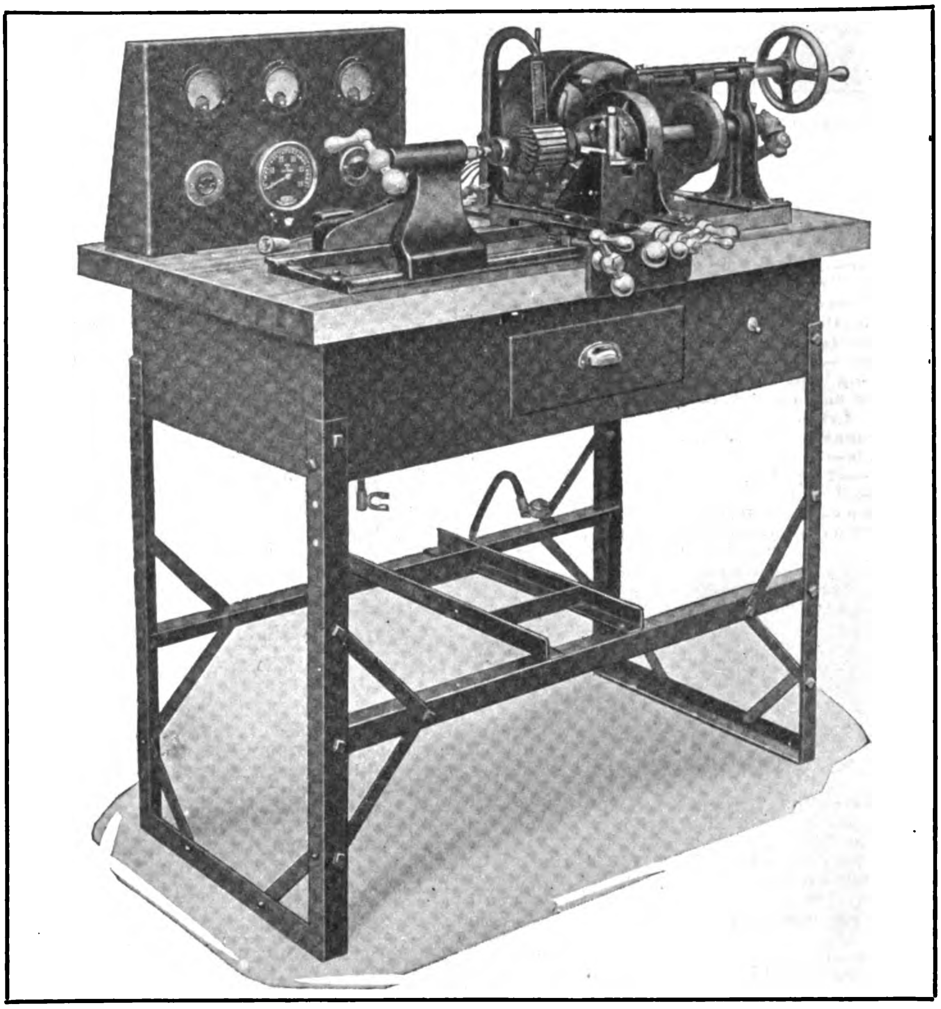
A scale standard is mounted on the stand which is attached to operate from a brake drum mounted on the driving shaft for use in brake horsepower and stall torque tests for starting motors. When this device is put into operation the main motor is released from the friction wheel and the starting motor drives the shaft, thereby making it possible to read the revolutions per minute of the same.

Universal Holding Carriage.

One of the outstanding features of the Elmco Universal stand is the universal holding carriage, designed so that any type of generator or starting motor can be rigidly held and the shaft accurately centered with the driving chuck. This device is sturdily built upon the principles used in lathe construction and all motions necessary to properly set the unit to be tested are controlled through the medium of three ball cranks. The necessity of using any kind of metal blocks to support a generator of unsymmetrical proportions is eliminated. The steadying arm can be easily turned back out of the way when setting or removing the unit.

When it is desired to use the machine as a lathe, one of the V-blocks on the holding carriage is removed by turning the ball crank and a tool rest supplied with the machine is fixed to the remaining block, which can be controlled through the use of the cranks to take an even cut. The driving chuck is made rigid by tightening a centering sleeve over the same and a tail stock is mounted on the bed of the machine for centering the part to be turned or straightened.

The accompanying illustration shows the Elmco Universal Stand in use as a lathe cutting commutator. This equipment is built to stand the hardest usage. As will be noted in the cut, the frame work is of angle iron adequately braced to insure absolute rigidity. Holes are provided at the base through which the stand may be bolted to the floor when advisable. The top of the stand is of laminated hard maple, which is varnished in the natural color. This top is smooth and practically as durable as steel and is vastly superior for electrical devices due to its non conductivity.

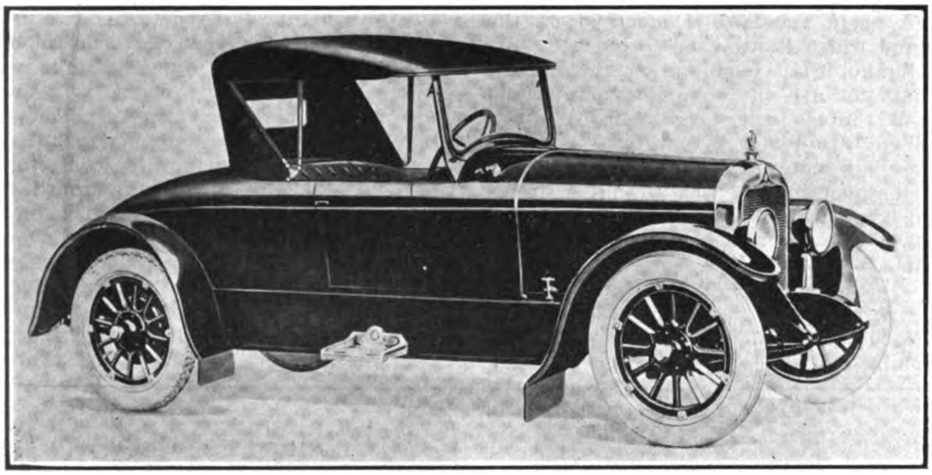


Elmco Universal Test Stand in Use as Lathe Cutting Commutator.

The Elmco Universal Stand is supplied with a growler for armature testing and a battery, at an additional cost, only when specified, as many service stations already have this equipment.

The Elmco automotive equipment is manufactured by the Electric Machine Co., Indianapolis, Ind. Distributed by Detroit Consolidated Sales Co., Inc., 10 Warren avenue, west, Detroit, Mich.

New Models of 1921 Cars, Trucks and



Ace Six Two-Passenger Roadster, Made by Apex Motor Corporation, Ypsilanti, Mich.

ACE MODEL G.

Engine—Guy Disc Valve, Six-Cylinder, 3¼ by 5, En Bloc.

Lubrication—Own Oil Gauge.

Cooling—Pump.

Carburetor—Special.

Ignition—Atwater Kent.

Starting and Lighting—Auto-Lite.

Transmission and Clutch—Gear Set, Unit Forward with Motor; Disc Clutch.

Wheels—Artillery. **Tires**—Firestone, 32 by 4. **Rims**—Firestone.

Wheelbase—123 Inches.

Bodies—Touring, Roadster, Brougham and Sedan.

Finish—Colors Optional.

Equipment—Complete; Individual Side Steps.

MERCER SERIES FIVE.

Engine—Mercer, 3¾ by 6¾, 22.5 horsepower, N. A. C. C. Rating.

Fuel Feed—Vacuum.

Lubrication—Force Feed and Splash.

Carburetor—Ball & Ball.

Ignition—Berling High-Tension Magneto.

Starting and Lighting—Westinghouse.

Clutch and Gear Set—Mercer, Disc Type.

Rear Axle—Mercer, Full-Floating.

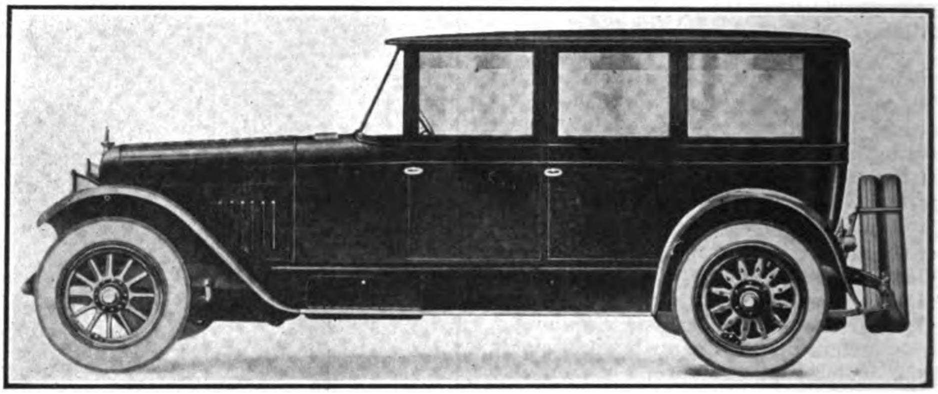
Wheelbase—132 Inches.

Wheels—Wood.

Tires—32 by 4½.

Rims—Standard.

Prices—Two-Passenger Raceabout, $3675; Two-Passenger Runabout, $3950; Six-Passenger Touring, $3950; Four-Passenger Sporting, $3950; Four-Passenger Coupe, $5150; Six-Passenger Touring Limousine, $5650.



Mercer Sedan Model, Manufactured by Hare's Motors, Inc., New York City.

NEW NATIONAL SEXTET PHAETON.

Engine—Own, 3½ by 5¼, 29.4 Horsepower, N. A. C. C. Rating; 6 Cylinders, Overhead Valve.

Fuel Feed—Vacuum, 20-Gal. Tank.

Carburetor—Rayfield. **Ignition**—Delco.

Starting and Lighting—Westinghouse.

Clutch—Borg & Beck; Three Speeds. Ratio, 4.08.

Wheelbase—130 inches.

Wheels—Wood. **Tires**—32 by 4½.

Rime—Firestone.

Seating Capacity—Four.

Price—$3750.

In the Cut Below Is Shown, at the Left, the New National Sextet Phaeton; in the Center the Essex Two-Passenger Cabriolet, While at the Right Is a Late Model Ford Car Chassis, Equipped with a Model Universal Body Made by the Universal Body Co., Mishawaka, Wis., with Disc Wheels—This Lengthens the Wheelbase 20 Inches.

ESSEX TWO-PASSENGER CABRIOLET.

Engine—Own, Four Cylinders; 3⅜ by 5, 18.2 Horsepower, N. A. C. C. Rating.

Fuel Feed—Vacuum, 12-Gal. Tank.

Carburetor—Own. **Ignition**—Delco.

Starting and Lighting—Delco.

Transmission—Three Speeds. Ratio, 5.09.

Wheelbase—108½ Inches.

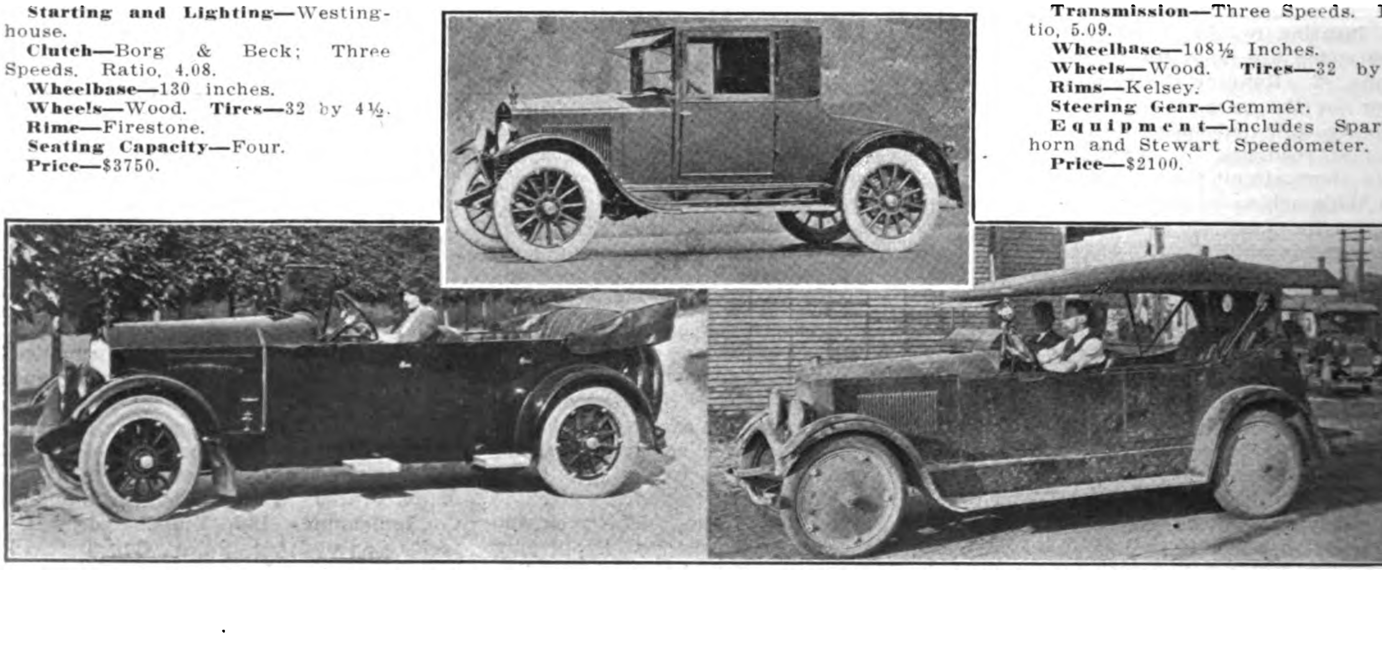
Wheels—Wood. **Tires**—32 by 4.

Rims—Kelsey.

Steering Gear—Gemmer.

Equipment—Includes Spartan horn and Stewart Speedometer.

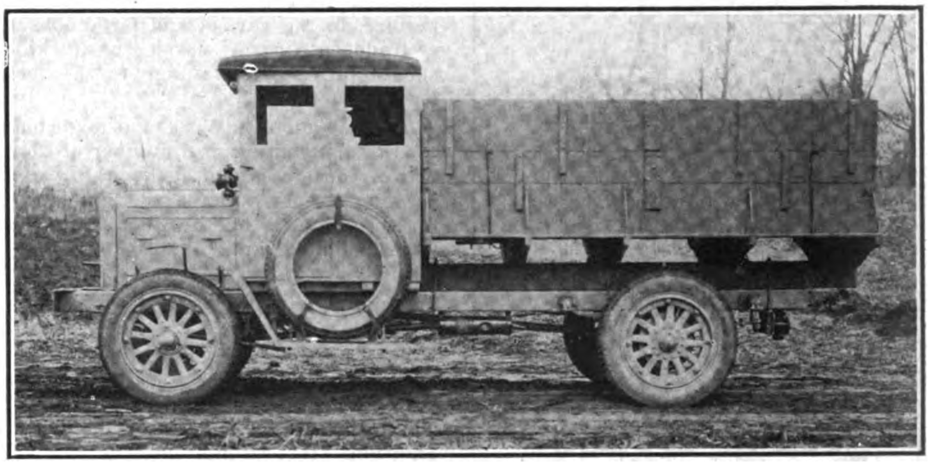
Price—$2100.

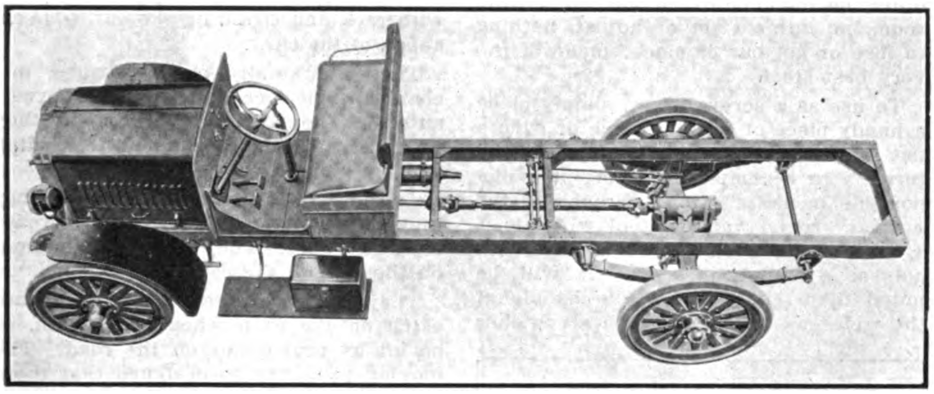


Tractors Now Being Offered to Trade

MOLINE 1½-TONNER WITH FARM BODY.

Engine—Moline Model NT, 4 En Bloc, I-Head, 3½ by 5, 19.6 Horsepower, N. A. C. C. Rating.
Ignition—Splitdorf High-Tension, Impulse Starter.
Cooling—Thermo-Syphon.
Carburetor—Tillotson.
Steering Gear—Ross.
Clutch—Moline Dry Disc.
Transmission—Moline, Three Speeds Forward, One Reverse, Unit with Engine.
Rear Axle—Torbensen Internal Gear.
Gear Ratio—8 to 1 on High.
Wheelbase—130 Inches.
Tires—34 by 5-Inch Front, 36 by 6-Inch Rear, Firestone Cord.
Tread—56 Inches.
Price—$2250 f. o. b.



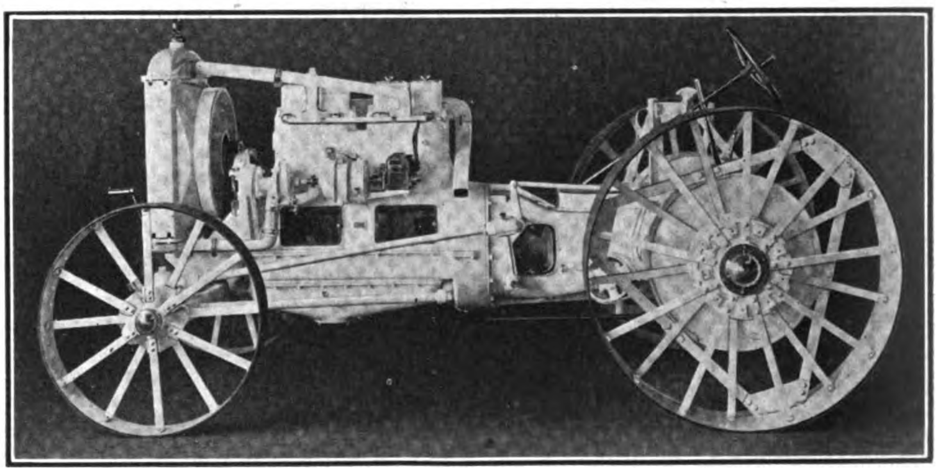


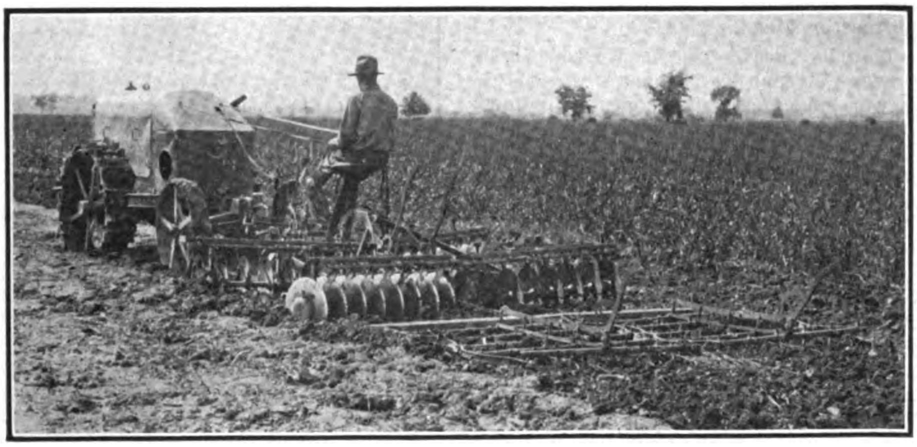
ADVANCE-RUMELY 1½-TON FARM TRUCK.

Engine—Buda CTU; 3¾ by 5¼; 25.5 Horsepower, N. A. C. C. Rating.
Cylinders—Four Vertical, L-Head Type.
Ignition—Splitdorf.
Cooling—Geared Circulation Pump.
Carburetor—Stromberg, Gravity Feed.
Lubrication—Force Feed.
Steering Gear—Gemmer.
Clutch—Fuller Dry Plate.
Transmission—Fuller, Three Speeds Forward, One Reverse, in Unit with Engine.
Rear Axle—Sheldon, Semi-Floating.
Gear Ratio—7.8 to 1 on High.
Wheelbase—144 Inches.
Tires—36 by 3½ Front, 36 by 5 Rear; Goodyear Cords, Front and Rear.
Tread—56 Inches.
Price—Chassis, $2720, f. o. b., Equipped with Combination Farm Body.

IMPROVED ALLIS-CHALMERS 18-30 TRACTOR.

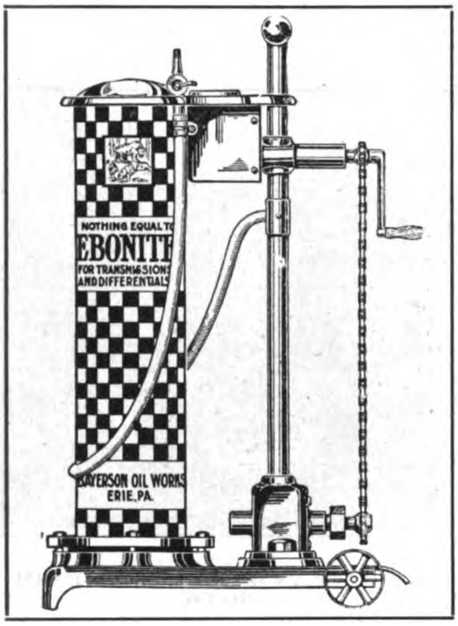
Engine—Allis-Chalmers, Four Cylinders Vertical, 4¾ by 6½.
Engine Speed—830 Revolutions a Minute.
Horsepower—18 Horsepower at Drawbar, 30 Horsepower at Belt.
Lubrication—Combination Force and Splash.
Fuel—Gasoline to Start, Kerosene to Run.
Cooling—Pump Circulation.
Carburetor—Kingston, Bennet Air Cleaner.
Ignition—Eisemann High-Tension Magneto.
Clutch—Expanding Shoe.
Transmission—Allis-Chalmers, with Hyatt Roller Bearings.
Final Drive—Spur Gears.
Rear Axle—Allis-Chalmers, with Hyatt Roller Bearings.
Length—132 Inches Overall.
Width—66 Inches Overall.
Turning Radius—14 Feet.
Weight—6000 Pounds.





AUTOMOTIVE LINE CONTROLLED TRACTOR.

Engine—Hercules, Four Cylinders, Vertical, En Bloc, 4 by 5⅛.
Engine Speed—1000 Revolutions a Minute.
Horsepower—Belt, 29 Horsepower, 13 Horsepower on Draw Bar.
Lubrication—Pressure Through Drilled Crankshaft.
Cooling—Pump Circulation.
Carburetor—Kingston, with Bennet Air Cleaner.
Ignition—High-Tension Magneto with Impulse Starter.
Clutch—Dry Disc.
Transmission—Automotive, Two Speeds Forward, One Reverse; Automatic Gearshift from Line Control.
Final Drive—Internal Gears Operating on Timken Bearings.
Length—123 Inches Overall.
Width—62 Inches Overall.



Ebonite Cabinet or Pump for Transmission Grease.

CABINET FOR EBONITE TRANSMISSION GREASE.

The Bayerson Oil Works, Erie, Pa., is making and distributing with its Ebonite grease product an efficient and practical cabinet or pump for the filling of differential or transmission cases with lubricant. This cabinet, which has the reservoir lithographed on heavy iron in the Bayerson black and white checkerboard trade mark design, has a striking effect and calls attention to the Ebonite product.

The base of the cabinet is heavy cast iron equipped with two large, strong wheels, which serve for rapid and easy conveyance to any part of the garage or street by simply inclining the cabinet and using the wheels as those of a truck. The measuring device is extremely simple and accurate and is so placed that adjustment can be made almost instantly if any adjustment is required. This cabinet is equipped with a gear pump, which removes the menace of mechanical disorder and interruption in operation. Every part is well made of the strongest material available and is stated to have been chosen with the special idea of providing against the defects in this regard. There is no leakage and the operator need not muss hands or clothing, and what usually was conceded to be about the dirtiest job about a garage can now be performed with this cabinet in a clean and rapid manner.

This cabinet was made specially for the Bayerson Oil Works for the handling of Ebonite, and a patent has been applied for.

Ebonite has been on the market for some years and the Bayerson company is reported to be enjoying a large and growing trade for this product, which is claimed to be due to its lasting and lubricating qualities and physical make-up, which prevents the rubbing of any metal at points of contacts, the lubricant being the nature of a ribbon film or cushion of sufficient density to act as a buffer.

Ebonite is being sold in connection with these cabinets on a plan which assures a wide distribution, inasmuch as they are supplied, regardless of the cost of manufacture, to the garage and large consumer trade on a purely service basis, which should prove of advantage to the recipient.

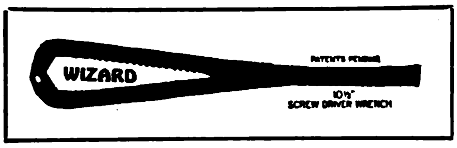
The Bayerson Oil Works has made plans for the distribution of a number of thousand of these cabinets during the present season, and has increased its facilities for the manufacture of Ebonite to conform to the demand.

WIZARD SCREW DRIVER WRENCH.

The very latest Wakefield Wizard Wrench achievement is a screw driver and wrench drop forged in one piece. This is a true one-piece unit, not a combination. It presents no complications, has no ratchet or set screws to get out of order, no bit handles to take up turning room, no nuts to set or adjust, nothing to lose or get out of place; made of the very best steel.

To use as a screw driver, simply place a handy piece of iron or wood, or even a flat stone, in the handle opening and turn. Can be employed where it is impossible to use a ratchet wrench or the ordinary round handled tool will slip.

Used as a wrench the screw driver end acts as a handle or lever. It will be noted that the inside of the handle at the wide end is notched. These notches are made so that any nut up to 1 1/16 inch inclusive can be tightened and set. Since larger nuts are seldom used in general mechanics, automobile or household appliances, the handiness of this tool will be readily appreciated. The notches grip as tightly and hold as securely, it is claimed, as any wrench made; slipping is impossible.



The Wakefield line of patented all-steel adjustable wrenches covers every need in the garage, repair and machine shop field and their value and satisfaction are guaranteed. They are made by the manufacturer of the first adjustable bicycle wrench ever produced, 33 years ago, Wakefield Wizard Wrenches. Worcester, Mass.

The list price of the Wizard Screw Driver Wrench is $1 each; it is 10½ inches long and weighs only 10 ounces; packed one dozen in a box.

STEEL WINGS SHOCK ABSORBER.

It is stated that much thought has been given by the manufacturer of the Steel Wings Shock Absorber to the development of a shock absorbing device that would be free from faults existing in some types of equipment now on the market. It is agreed by automotive engineers that a recoil spring or cushion, suspended to the shackle point of the upper spring or frame of the car, acts practically as a pneumatic tire; i. e., it absorbs the shock, allows for the greatest spring elasticity and yet supplies rigidity so as to afford an elastic poise for the body of the car. It is claimed for the Steel Wings Absorber that it provides the proper type of coil spring in the proper place. This spring is a helical, flat type which should it be compressed to its extremity, is in no way weakened or exposed to breakage by such compression. At the same time this flat spring is stated to offer the maximum in elasticity affording a resilient cushion for the protection of the mechanical parts of the car.

The principal points of excellence cited for the Steel Springs Absorber are as follows: They are self-contained; no adjustment is required; they are of entirely open construction; they are protected with a hard-baked enamel so as not to rust; they absorb the jar and jolt of road shock, thereby saving tires, and do away with rack and strain on the entire mechanism of the car.

They are sightly in appearance, mechanically perfect and absolutely guaranteed. They facilitate driving as they practically eliminate danger of skidding and swaying.

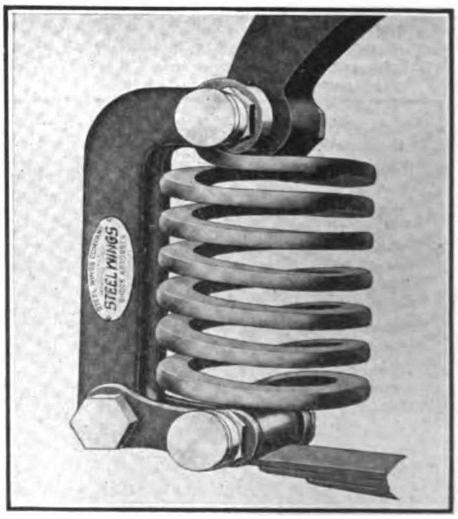
As they are placed between the springs they do not extend below and decrease road clearance. They serve as a bumper on the rear of the car.

They are so situated that they cannot catch on the curb when backing in, or be hit by projections on the road. The moving parts are so designed that there are no pieces to wear, with the result they cannot get noisy and squeak.

The supporting parts are steel forgings of carefully selected alloy steel and the springs themselves are oil tempered of the highest grade of steel. They may be applied to all well known makes of cars.

Steel Wings Shock Absorbers are manufactured and distributed by the Steel Wings Co., 417 South Dearborn street, Chicago, Ill.

Brass is cleansed by rubbing it with spirits of ammonia and vinegar, and then with blotting paper soaked in spirit of wine.



Steel Wings Shock Absorber.

BOE REPEATER BARREL OIL PUMP.

By the attachment of a Boe Repeater Barrel Oil Pump any oil barrel is stated to become a high grade oil pump outfit. It can be attached to the original oil barrel ready for service in a few seconds. The wing nut D, shown in the illustration, locks the entire pump rigidly to the barrel. The pump fits any ordinary 30 to 50-gallon, upright or lay-down wood or steel barrel. It is attached to the latter in the same manner as the lever action barrel grease pump made by this company.

The pump has the Boe exclusive patented leak-proof pump plunger construction. It is equipped with expanding spring pumps, which are claimed to increase the life and efficiency of the piston plunger 10-fold, and to insure perfect suction until the piston cups are entirely worn out. It can be adjusted to measure accurately either one quart or one pint to each stroke. The ringed hook C, engaging stop B, governs the pint stroke. It has three 1⅛-inch steel ball valves perfectly seated. It can be almost instantly adjusted at A and B for imperial or other foreign measuring standards if desired. The overflow drains back into the barrel from the large drain pan.

The pump can be securely locked by the aid of an ordinary padlock around the pump handle and through the ringed C on the pump barrel head. It is stated to be as simple as a cistern pump and easily operated. It is shipped complete with nine by 17-inch heavy galvanized iron drip tray with wire mesh top, and the regular finish is green and black enamel. Shipping weight about 50 pounds.

The Boe Repeater Barrel Oil Pump is made by the Boe Manufacturing Co., Minneapolis, Minn.

WONDER ROTARY PUMP TESTED.

The Houston Manufacturing Co., South Houston, Tex., recently held a successful demonstration of its new Wonder Rotary Pump before a committee of experts at its plant. This is a vacuum rotary pump the chief advantages of which are claimed to be as follows: Efficiency, simplicity, compactness and elimination of maintenance cost. It has only three moving parts, no valves and no packing, the principle sources of trouble in pumps. It can be used for all purposes where a pump is used and has particular advantages in practically every case, it is claimed.

In the test it pumped crude oil 500 feet through a ¾-inch pipe with a 30-inch vacuum. It pumped one barrel of oil in 10 minutes under 100 pounds pressure, with a ½ horsepower motor.

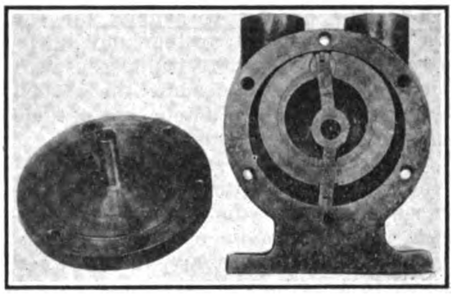
The pump was invented by J. F. Smith, a mechanic living in Houston and now in the employ of the Houston Manufacturing Co. It was the result of 10 years' experimentation in which he was trying to answer the need for this particular type of pump.

The first order was placed by the firm of Clayton, Anderson & Co. of Houston, Tex., who will use it for handling both water and oil and a number of other prominent concerns are investigating its merits.

A joint stock association has been formed at Houston for the manufacture of the Wonder pump, with the following officers: President, O. P. Spilman; vice president, C. C. Young; secretary-treasurer, H. W. Hyde; trustees, L. F. Smith, B. A. Killson, T. J. Baker, I. W. Clark. The authorized capital is $100,000, and it is understood that a factory is to be located in South Houston.

PROTEX-A CAP PREVENTS THEFT.

The rapidly growing thefts of motometers and radiator caps has caused a demand for a lock cap that is both protective and ornamental. In answer to this call the Zinke company is putting on the market a new Protex-A-Cap that is designed to meet every demand of the most fastidious.



Houston Wonder Rotary Pump.

From the protection standpoint it is claimed to be 100 per cent. efficient, being locked in place by an eight-tumbler lock with over 1000 key changes and no master key, precluding the possibility of professional thieves being provided with one or a set of keys to fit.

The action of the lock forces a hardened steel bolt into a slot in the adapter ring, which is secured to the radiator neck by three cup point set screws, seated from inside the ring. These screws are forced tightly into the inside of the neck by means of an L wrench, furnished with each cap and, when seated, it fits into the neck, so that twisting off is utterly impossible. The adapter is stated to be to the utmost degree universal, fitting all radiators with screw caps except a very few special models with caps of abnormal size. This should appeal to the dealer who needs to carry but one style of cap and no extra parts.

From the ornamental viewpoint the graceful design, with long diamond section arms tapering from the cap to the ball ends, make the Protex-A-Cap one of the most attractive radiator trimmings. The cap and adapter ring are made of rust proof white metal highly polished and nickel plated.

A feature of the Protex-A-Cap valuable to owners of cars kept or occasionally placed in public garages is that it prevents unauthorized persons from interfering with any freeze solution or filling the radiator with greasy or dirty water that will clog the radiator passages.

The price of the Protex-A-Cap, complete, with adapter and two keys, is $4.75. As the screw threads of the removal cap fit the Ford radiator the adapter may be omitted and, for Ford cars, the cap only is supplied at $3.75.

The Protex-A-Cap, as delivered, is closed at the top so that it may be used without a heat meter or other ornament, but an indented ring on the inside allows the center to be easily removed, giving the proper opening for the meter.

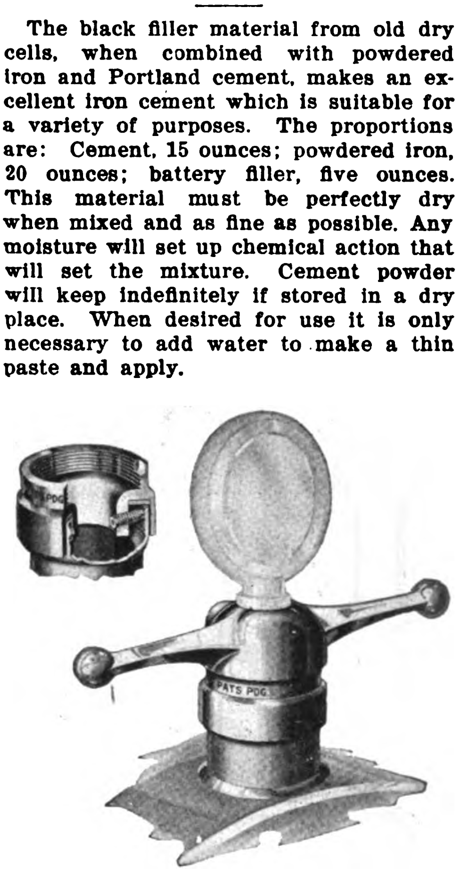
Protex-A-Cap sales are handled through recognized jobbers only by the Zinke Co., 1335 Michigan Avenue, Chicago, Ill.

PASTE FOR DIFFICULT SOLDERING.

A paste, prepared as follows, will flux whatever it touches at once; will stick to cast iron, and work in out-of-the-way places: Take half-and-half bar solder and reduce it to coarse filling. Figuring this as 100 parts weight, add to it 10 per cent. of zinc chloride in dry powder form, and three per cent. of powdered sulphate of copper. Wet the mixture with water and glycerine, sufficient to mix it thoroughly. Add about five per cent. of common vaseline to give it a paste form. Apply in any convenient way and it will be found that the paste will keep the iron in good condition.

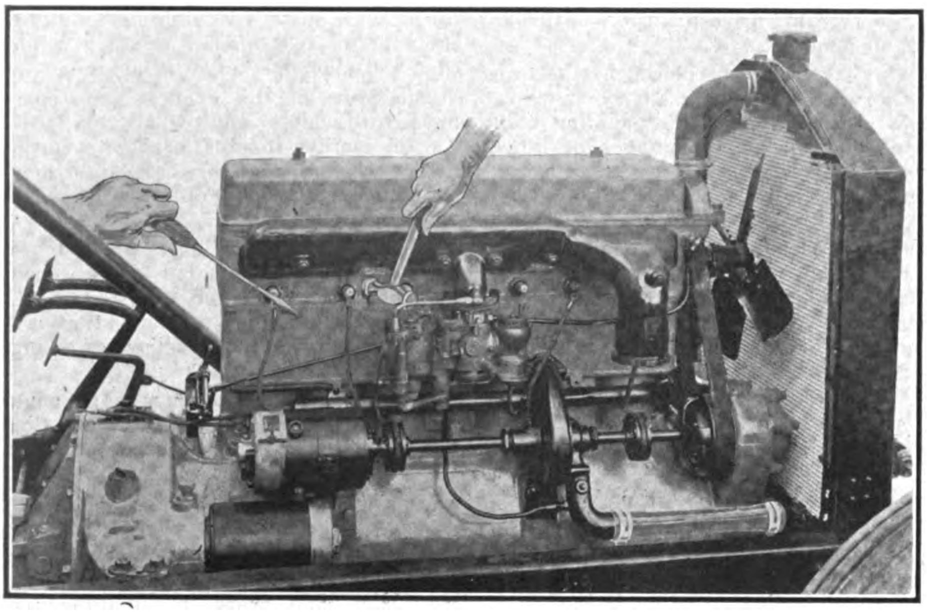
IRON CEMENT DRY CELL FILLER.

The black filler material from old dry cells, when combined with powdered iron and Portland cement, makes an excellent iron cement which is suitable for a variety of purposes. The proportions are: Cement, 15 ounces; powdered iron, 20 ounces; battery filler, five ounces. This material must be perfectly dry when mixed and as fine as possible. Any moisture will set up chemical action that will set the mixture. Cement powder will keep indefinitely if stored in a dry place. When desired for use it is only necessary to add water to make a thin paste and apply.



Protex-A-Cap Being Marketed by Zinke Co., Chicago, Ill.

Tracing Electrical Troubles by Process of Elimination



Short-Circuiting Plugs to Detect Missing Cylinders.

IT HAS been estimated that about nine-tenths of the troubles that occur in gasoline engines can be traced directly to some defect in the electrical system of the car. The other one-tenth is traceable to carburetor defects, a plugged fuel line, poor valve action, or weak compression.

Often a car is brought to the service station with practically nothing wrong with it except a slight skip in one or more of the cylinders. What is the result? The car is turned over to a repair man and, in many cases, considerable time is taken to locate the skip. The trouble may then not be found and the engine still skips when the owner takes it away. He naturally becomes dissatisfied and may try another service station, where the repairers are perhaps better posted, and the skip is located and eliminated in short order. The question naturally arises, why did the first repair man fail to find the trouble, while the second located it almost at once? The answer is simple, for the first worked without system and apparently looked everywhere but in the right place for the trouble, while the second soon found it by the simple and systematic process of elimination.

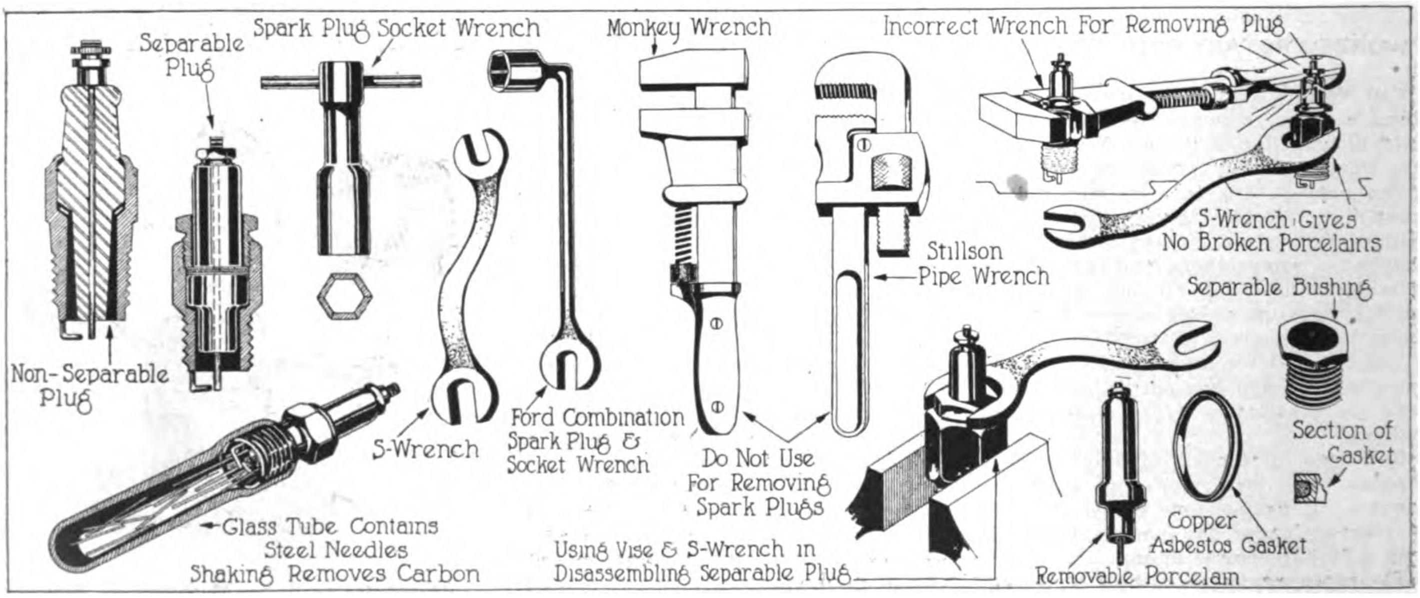
Systematic Search Necessary.

In tracing trouble in either a passenger car or a truck, the repairer who proceeds in a systematic manner, eliminating the units which are found, when tested, to be all right, will have no difficulty, while the mechanic who wanders aimlessly from one unit to another without any definite plan in mind will have difficulty in locating the trouble.

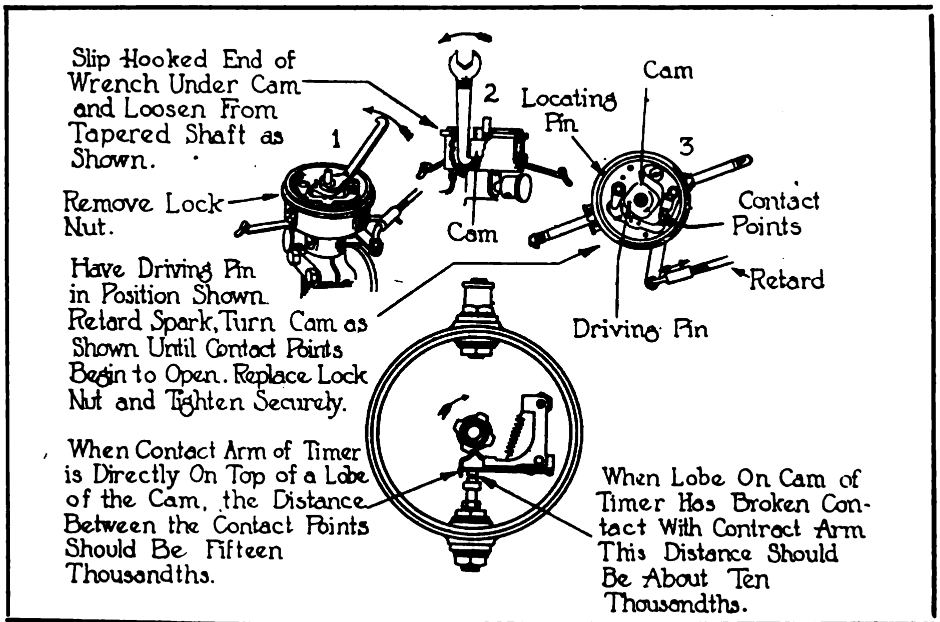
In the case of a skip in the engine three things may cause the trouble. The first and foremost is the electric ignition system; the second the fuel line, and the third the carburetor. The carburetor is considered last for the reason that this unit should not be disturbed until the other two have been tested and eliminated. The adjustment of the carburetor cannot change through the vibration of the engine unless the locking nuts have carelessly been left loose. Again, if it has been working properly up to the time that the skip started, it is probable that the adjustments are correct.

Test Ignition First.

The mechanic should first test the ignition of the engine cylinders, two at a time, either with a screw driver having an insulated handle or a screw driver and hammer, short-circuiting the plugs to cut out the cylinders and noting from the sound of the engine if the other two cylinders are firing regularly. This method should be followed with the other cylinders and if the engine is a six, the third set in the same manner. If there is any doubt, the doubtful cylinders should be tested again, or the plugs should be removed. Carbon deposits may be found inside the shell of the plug, the porcelain may be cracked or the points may not be properly spaced. The carbon accumulation should be cleaned out with a sharp knife or, if the plug is of the separable type, it should be disassembled, cleaned with a cloth and soaked in gasoline or kerosene. The porcelain should never be sandpapered or scraped with a jackknife, as it is glazed and the knife or rough paper will cut the glazing, causing it to collect carbon faster the next time. The plug again should then be reassembled, the points set to 1/32 inch and the plug screwed into the cylinder. Testing with screw driver and hammer again will determine whether the plug is firing or not. If the porcelain is cracked or otherwise damaged, it will be necessary to fit a new plug. If, after testing and examing the plugs of the cylinder or cylinders that are not firing, you are sure they are correct, the trouble will have to be sought for elsewhere.


Separable Plug
Spark Plug Socket Wrench
Monkey Wrench
Incorrect Wrench For Removing Plug
S-Wrench Gives No Broken Porcelains
Stillson Pipe Wrench
Separable Bushing
Non-Separable Plug
S-Wrench
Ford Combination Spark Plug & Socket Wrench
Do Not Use For Removing Spark Plugs
Section of Gasket
Glass Tube Contains Steel Needles Shaking Removes Carbon
Using Vise & S-Wrench in Disassembling Separable Plug
Copper Asbestos Gasket
Removable Porcelain

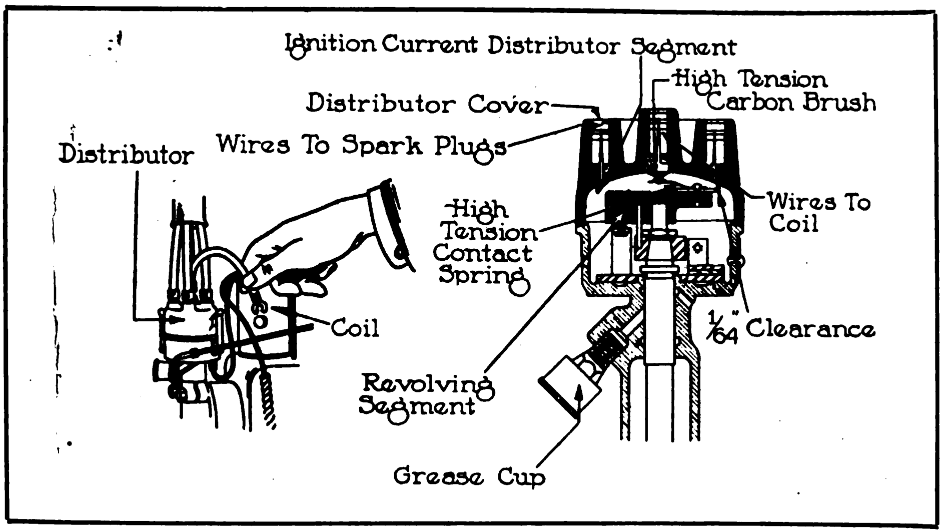
Cleaning Spark Plugs, Showing Correct and Incorrect Method of Removal and Wrench That Should and Should Not Be Used.


Slip Hooked End of Wrench Under Cam and Loosen From Tapered Shaft as Shown.
1
2
3
Locating Pin
Cam
Remove Lock Nut.
Cam
Contact Points
Retard
Have Driving Pin in Position Shown. Retard Spark, Turn Cam as Shown Until Contact Points Begin to Open. Replace Lock Nut and Tighten Securely.
Driving Pin
When Contact Arm of Timer is Directly On Top of a Lobe of the Cam, the Distance Between the Contact Points Should Be Fifteen Thousandths.
When Lobe On Cam of Timer Has Broken Contact With Contract Arm This Distance Should Be About Ten Thousandths.

Disassembling Breaker Box and Showing Correct Method of Adjusting Points.

Examine the high-tension wire terminals leading from the distributor case to the plugs that are not working. Possibly a leak may occur between the inner wire through the insulation to a metal conduit which carries the wires to the engine. This is rather difficult to locate in the day time but, by pulling the wires from the tube and allowing them to lay apart on the outside, tests can be made which will show if they are causing the trouble. If the engine runs on all cylinders after this is done the repairer can be sure that he has located the trouble, and all that will be necessary then will be to supply a new high-tension wire in place of the one found defective.

If, however, the trouble is not located here, the next step is to remove the distributor cover and examine the breaker points under the rotor arm. The rotor arm slips off the top of the shaft easily and allows easy access to the breaker box. Oil in the interior of the distributor may cause a skip in the engine. If the points are dirty, burned or pitted, they require cleaning, truing up and adjusting. Clean distributor cover inside with soft cloth to remove oil. If the lower point is burned excessively a new one should be soldered to the arm to make the contact perfect. Oftentimes a skip that is difficult to locate will be found here. The points should be set to clear about .020 to .025 of an inch, or about the thickness of a piece of writing paper.


Ignition Current Distributor Segment
High Tension Carbon Brush
Distributor Cover
Distributor
Wires To Spark Plugs
High Tension Contact Spring
Wires To Coil
Coil
1/64" Clearance
Revolving Segment
Grease Cup

Left: Method of Testing Spark Between Distributor and Coil; and Right, the Proper Clearance Between Points.

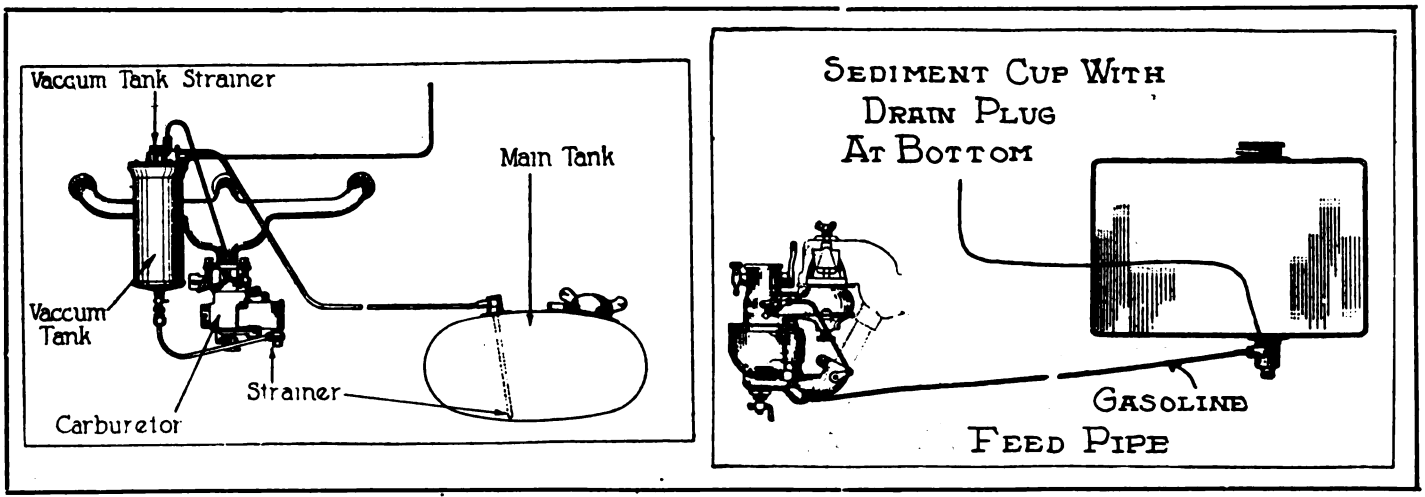
Examine Fuel Line.

If the trouble is still present after testing by running the engine and noting how the cylinders are firing, the next step is to examine the fuel line, as dust or lint may have worked through the main tank and fouled the screen which is placed in the fuel pipe to prevent its passage into the carburetor.

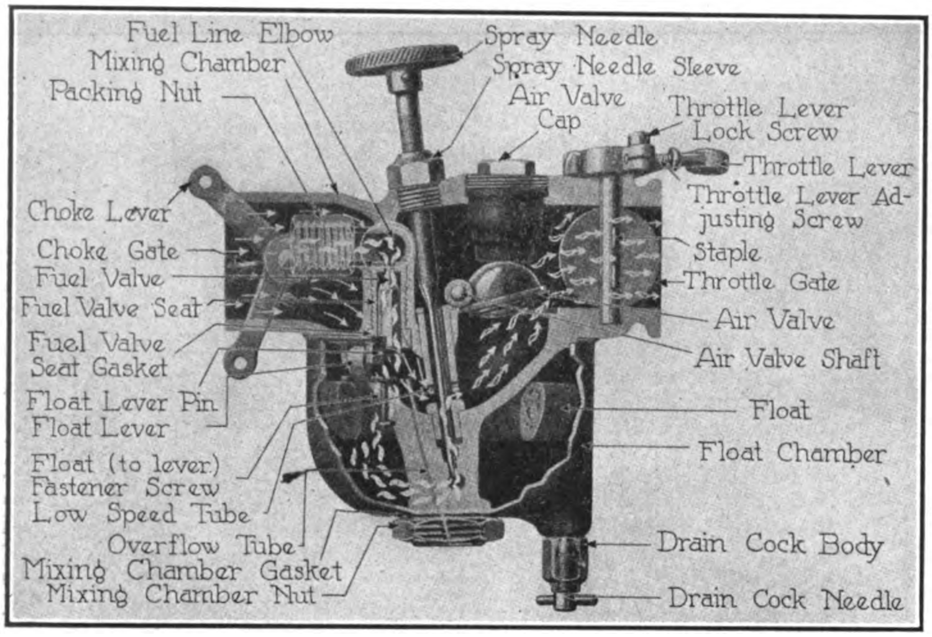
If a vacuum tank is used in the line, remove the pipe which connects the tank at the top. This pipe leads to the main tank in the rear and draws the gasoline from the main tank into the vacuum tank by the operation of the engine.

Remove the small screen under the pipe connection and clean. Replace the screen and connect the fuel pipe, taking care not to strip the threads of the connection. Where the fuel pipe which leads from the vacuum tank connects to the carburetor, on some cars will be found another screen as an additional safeguard to prevent sediment from entering the carburetor. This screen is found more particularly on eights and 12s, but may also be found on sixes. Loosen the connection remove the screen and clean with gasoline or kerosene. Replace again and tighten the connection.

It is a good plan to blow back through the connecting pipe to see if the pipe is clear. If this cannot be done readily, disconnect the opposite end and blowing


Vaccum Tank Strainer
Main Tank
Vaccum Tank
Strainer
Carburetor
Sediment Cup With Drain Plug At Bottom
Gasoline Feed Pipe

Left: Typical Vacuum Tank Fuel Feed Installation, Showing Location of Strainers. Right: Gravity Feed Fuel System, Conventional Type Used on Many Low Priced Cars.


Fuel Line Elbow
Mixing Chamber
Packing Nut
Spray Needle
Spray Needle Sleeve
Air Valve Cap
Throttle Lever Lock Screw
Throttle Lever
Throttle Lever Adjusting Screw
Choke Lever
Choke Gate
Fuel Valve
Fuel Valve Seat
Fuel Valve Seat Gasket
Float Lever Pin
Float Lever
Float (to lever) Fastener Screw
Low Speed Tube
Overflow Tube
Mixing Chamber Gasket
Mixing Chamber Nut
Staple
Throttle Gate
Air Valve
Air Valve Shaft
Float
Float Chamber
Drain Cock Body
Drain Cock Needle

Ford Carburetor, Puddle Type, Used on Late Models.

or running a wire through will remove any accumulation in the pipe.

Testing Carburetor Adjustments.

After the connections are remade, test the engine by running and note if the skip is still present. If it is noticeable, it is safe to assume that the trouble is probably due to the improper adjustment of the carburetor. Up to this point it has not been necessary to race the engine to eliminate the skip. To test the carburetor adjustments this may be necessary, but the repairer is cautioned that racing of the engine should be avoided whenever possible, as it will eventually lead to troubles of greater consequence, such as loose bearings, noisy engine, etc.

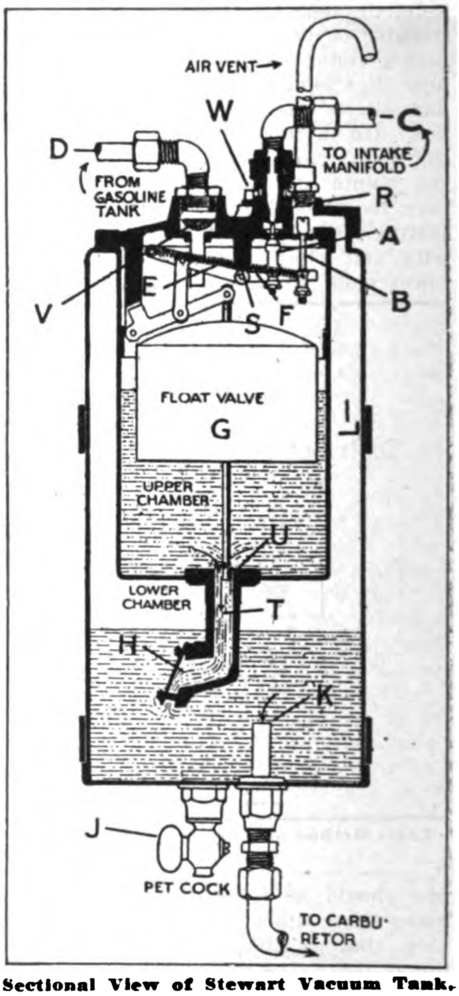
Carburetors vary as to the number of adjustments found upon them. Simple puddle type carburetors, such as are used with the Ford engine, are fitted with only one adjustment, the needle valve, which gauges the amount of gasoline admitted to the venturi tube, where the gasoline mixes with the air and passes on through the intake manifold to the combustion chambers of the engine.

Still other types, such as the Marvel, Schebler, etc., use an air adjustment which gauges the amount of air taken in through the air inlet, while a third type, such as the Rayfield, uses three adjustments.

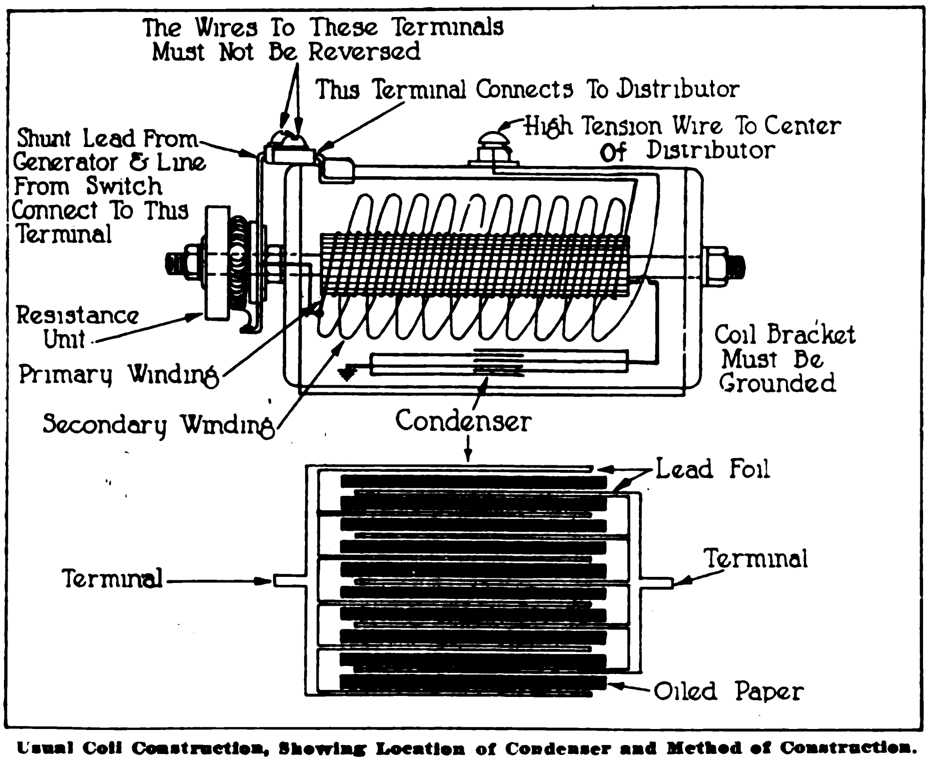
Such carburetor as the Zenith, Stromberg and several of foreign make do not use a needle, but fit spray nozzles having fixed openings, which allow a certain amount of gasoline to flow at certain speeds. Two or more jets are supplied, the extra jets coming into operation as the speed of the engine increases.

Carburetors of the puddle type may be tested by screwing in the needle valve until the valve seats and the engine stops. Unscrew the needle valve 1½ turns, start the engine and gradually turn the valve until the engine idles properly and seems to accelerate slightly as the mixture reaches the correct density. Allow sufficient time for the engine to take the gas from the intake manifold before noting the difference in the speed of the engine. Test the engine and set the carburetor only when the engine is warm, for if the carburetor is set with the engine cold, the operation will not be the same when the engine warms up.

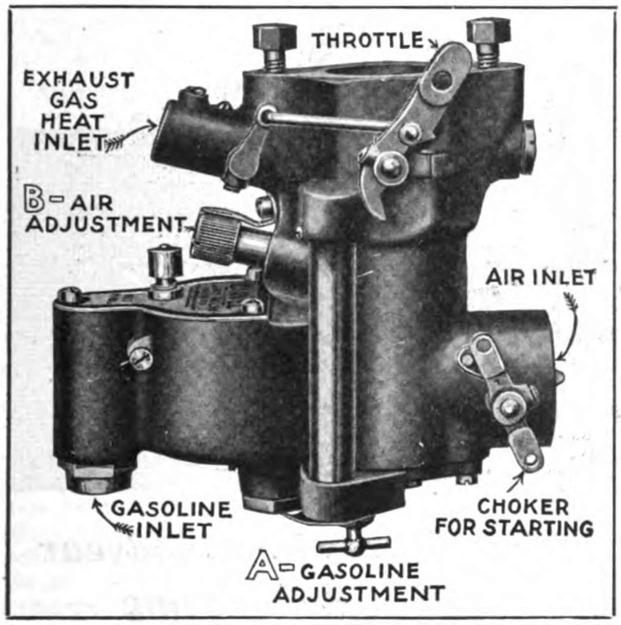
Carburetors similar to the Marvel, used on the Buick car, have two adjustments, one for the needle valve and the second for adjusting the tension on the air shutter in the air inlet. The needle valve adjustment is used for low or idling speeds and the air adjustment for acceleration and high speeds. To adjust the needle valve, if there is doubt as to its setting, turn the valve down to the right till it seats and the engine comes to a stop. Open the needle valve about 1½ turns, start the engine and turn the valve first to the right and then to the left until the engine runs smoothly without skipping and the engine seems to accelerate slightly or pick up. This is the correct point for setting the valve and to prove whether it is right for idling, fully retard the spark and throttle. The engine should idle smoothly without skipping or showing indications of stalling.


AIR VENT
W
C
D
TO INTAKE MANIFOLD
FROM GASOLINE TANK
R
A
V
E
S
F
B
FLOAT VALVE
G
L
UPPER CHAMBER
U
LOWER CHAMBER
T
H
K
J
PET COCK
TO CARBURETOR

Sectional View of Stewart Vacuum Tank, with Components Clearly Indicated.


The Wires To These Terminals Must Not Be Reversed
This Terminal Connects To Distributor
High Tension Wire To Center Of Distributor
Shunt Lead From Generator & Line From Switch Connect To This Terminal
Resistance Unit
Primary Winding
Secondary Winding
Coil Bracket Must Be Grounded
Condenser
Lead Foil
Terminal
Terminal
Oiled Paper

Usual Coil Construction, Showing Location of Condenser and Method of Construction.



Marvel Carburetor Indicating Adjustments and Connection

If the engine runs too slowly for idling, adjust the butterfly opening of the throttle by screwing in the adjusting screw on the butterfly arm till correct idling speed is obtained; the engine should not race, neither should it run so slowly that it will stall.

When the engine is found to idle properly, the next step is to set the second adjustment for acceleration. This is accomplished by advancing the spark from one-half to two-thirds the distance on the quadrant and grasping the accelerator rod with the hand, opening and closing quickly the throttle or butterfly valve in the carburetor intake. If the engine accelerates freely without backfiring, the high-speed adjustment is correct. This may be determined after three or four trials in succession. If, on the other hand, the engine back-fires into the carburetor, the high-speed adjustment will have to be changed and this is done by tightening the tension on the spring by means of the knurled nut at one side of the carburetor above the bowl of the spring. The adjusting nut mentioned connects with one end of this spring while the other end fits a coned point on the top center of the hinged cover. Additional tension applied to the coil spring cuts down the flow of air through the air intake at high speeds, preventing the popping back into the carburetor when the engine is accelerated. This adjustment can be made to a fine point by means of the adjusting screw mention above.

Carburetors of the type of the Zenith, Stromberg and several others of foreign make, instead of using a needle valve to govern the flow of gasoline, have spray nozzles or tubes with fixed openings. One is used for idling speeds while the second comes into action when the speed of the engine reaches a certain point. Several sizes of nozzles are made by the manufacturers of these carburetors in millimeter sizes, and if it is found necessary to change to a smaller or larger size, this can be accomplished by unscrewing the nozzle and replacing with another size. This is usually unnecessary as the correct sized nozzles are fitted to the carburetor when the engine is tested at the factory.

Troubles that occur with this type of carburetor are generally those caused from particles of dust working up into the small end of the nozzles, plugging the openings and preventing the passage of gasoline. Below the nozzle in the casting of the carburetor will be found two small hexagonal bronze studs; removing either of these will allow the repairer to run a wire up through the nozzles, forcing out any particles that may have lodged at this point. As the gasoline is pretty thoroughly strained through fine screens in the fuel line, the possibility of these particles finding their way into the nozzles is a remote contingency.

Careful attention to details in making the systematic search will in the end result in the definite location and repair of the trouble. Considerable time will be saved for other work and the car owner will be satisfied, as his car will again be running properly.

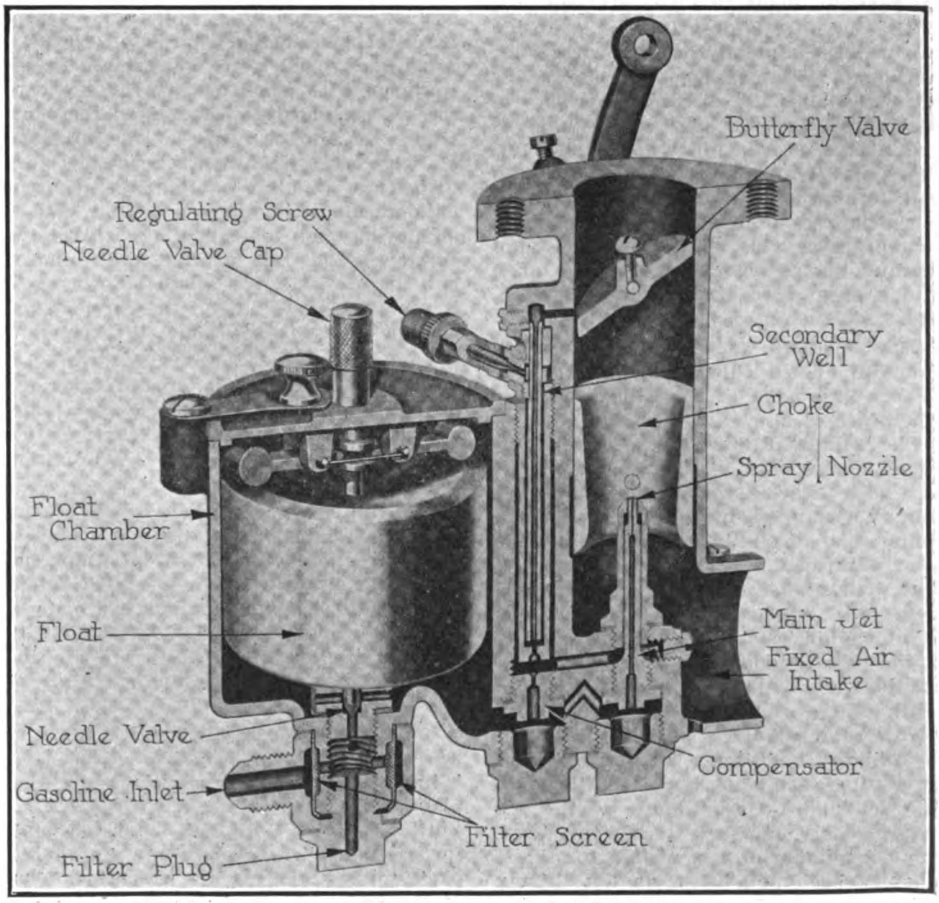
TO REPAIR BATTERED THREADS ON AXLES.

In removing the wheels from semi-floating type axles the repairer will sometimes hammer the end of the axle in loosening the wheel, battering the end of the axle to such an extent that the castellated nut will not readily go on. To remedy this turn the castellated nut and screw it to the axle with the castellated end first. The threads of the nut will act as a die and will cut the threads of the axle, the chips falling out through the castellated openings at the side. Reversing the nut again it will be found that the nut fits the thread easily.

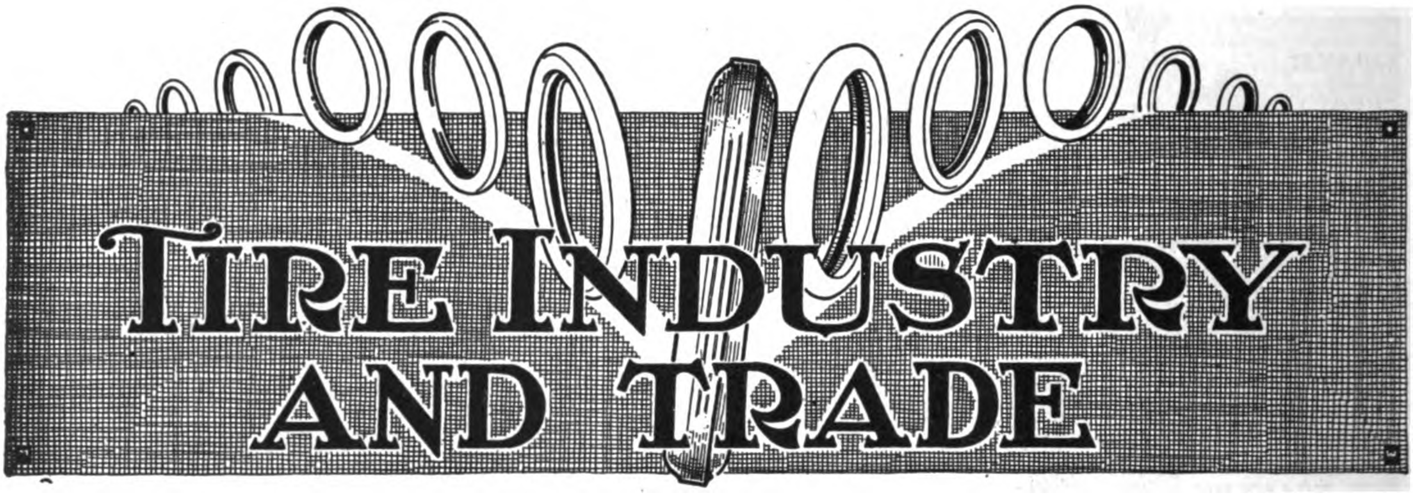
HOME-MADE TOWING DEVICE.

In case of accident where it is necessary to tow the car, procure a 10-foot length of pipe, one inch in diameter. Thread a 14-foot length of chain through the pipe and attach two snap catches at each end of the chain. Slip a section of rubber hose over the chain and snap hook, nearly to the end of the pipe. The hose is to prevent the chain from marring the part of the car to which the towing device is attached, while the pipe will keep the towed car from running up too close to the towing car and damaging it.

Often the brakes of the towed car become inoperative. This device will allow such a car to be towed to the garage with safety to the operator and the towing car.



Zenith Model "L" Carburetor Equipped with Fixed Spray Nozzle and Secondary Idling Well.



TIRE INDUSTRY AND TRADE

K W Co. Taken Over by Climax

The Climax Rubber Co., Columbus, O., with factory at Delaware, O., has recently merged or taken over the business heretofore operating under the name of the K & W Rubber Co., which business was established in 1908 at Ashland, O.

The K & W Rubber Co. is stated to have been a pioneer inner liner and blow-out patch manufacturer in this country and, about three years ago, moved its plant to Delaware, O., where the manufacture was began on a larger scale of the Maxotire, which had started at Ashland about two years previously.

The Maxotire is described as an inside tire which completely encircles the inner tube and, by a locking effect secured by the embedding of a circular steel wire in the outer flap of the inner tube, is claimed to prevent blow outs and further, the Maxotire is of such strength and, by reason of its rubber tread which is vulcanized to the tire by means of a cement, it is able to hold the air and permits the use of the tire proper until it has been worn through to the Maxotire.

This business was established by Ora and Guy V. Krichbaum, who are still largely interested in the Climax Rubber Co., which is now carrying it on.

The Climax Rubber Co. recently perfected a new form of mould whereby it is now successfully manufacturing Climax Compression inner tubes on a commercial basis. This product has been described in the Accessory & Garage Journal heretofore as the compression tube constructed with numerous "dimples" or "pockets," which disappear as the tube is inflated, thereby compressing the excess rubber represented by the depth of the various "pockets."

New representatives for the Maxotire, as well as the Climax standard line of inner tubes, are being appointed throughout the country as rapidly as the enlarged sales staff can reach the territory. A number of new distributors have recently been appointed, as the Climax Rubber Co. is offering a very attractive proposition to dealers and especially to accessory and garage men throughout the country.

OAKES ACQUIRES PATENT ON MATHER TIRE CARRIER.

The Oakes Co., Indianapolis, Ind., a manufacturer of radiator cooling fans and other automobile parts, is reported to have acquired the sole license to manufacture and market automobile tire carriers under the Mather patent, No. 1,324,461.

The Mather patent covers the demountable feature of a tire carrier on a standard type of support bracket and has already been adopted by the builders and designers of several well known makes of high grade cars. The chief advantage claimed for this type of carrier is the interchangeable feature of the bracket, which permits the motor car builder to mount a standard carrier bracket on each car frame in regular production. Then if the car is to be equipped with wood wheels, the tire carrier as produced by the Oakes company is attached to the face of the bracket. If wire or steel disc wheels are furnished as regular equipment the car builder simply mounts a dummy wheel on the bracket, instead of the spare rim carrier. The rim carrier and dummy hub are easily interchangeable, as each is secured to the face of the carrier supporting arm with the same three bolts.

This interchangeable equipment is a great convenience to motor car makers, dealers and users, because it gives one convertible carrier bracket instead of the three different types formerly required for wood, wire or disc wheels.

The Oakes company has started quantity production on this tire carrier to take care of substantial orders now on hand. It states that the acquisition of this tire carrier patent is one of its steps in the development of a plan which will broaden its manufacturing scope to include a wide range of equipment.

EXPANSION OF LEE TIRE CO.

Improvements and additions to the plant of the Lee Rubber & Tire Co., New York City, have been completed and paid for, so that the company now has a capacity of 2000 tires a day, as against 1000 at the end of 1919. Sales for 1920 were the highest on record, amounting to $6,705,929, an increase of 45 per cent. over 1919, the best previous year.

Plans for Goodyear Refinancing

While the special meeting of stockholders of the Goodyear Tire & Rubber Co., Akron, O., to ratify a plan of reorganization has been postponed from time to time pending the completion of the preliminary details, it is stated that negotiations for refinancing have been definitely consummated. It is understood that Goldman, Sachs & Co. of New York will head a syndicate which will offer $25,000,000 in 20-year eight per cent. first mortgage bonds, while Blair & Co. will head a syndicate to offer $25,000,000 in 10-year eight per cent. debentures.

The company has filed with the secretary of State of Ohio articles reducing its common capital stock from $100,000,000 to $1,000,000.

It is also reported that a bill was recently introduced in the General Assembly of Ohio by Senator W. H. Chatfield which will permit any corporation to borrow money without regard to the rate of interest. Ohio at present limits this to eight per cent. It is claimed that the passage of some such act will be necessary in order that the Goodyear plan of refinancing may be completed.

STERLING RESUMES DIRECT SALES.

The Sterling Tire Corporation of Rutherford, N. J., announces the termination of its arrangement whereby Sterling tires and tubes during the past year have been sold exclusively through the Rubber Corporation of America, which also was the selling agent for products of the Empire Tire & Rubber Corporation of Trenton, N. J. It is further stated that there has never been any connection between the Sterling and Empire organizations except that both employed the same selling agent.

The Sterling Tire Corporation has never been financially interested in Empire and no one connected with Empire has been interested in Sterling.

Since resuming the direct sale of its product the Sterling Tire Corporation reports a distinct revival of business. Its plant is now running at about 70 per cent. of its capacity and production is being increased daily.

Durant Buys Goodyear Plant

According to an announcement recently made the Long Island, N. Y., plant of the Goodyear Tire & Rubber Co. has been purchased by William C. Durant, who formed Durant Motors, Inc., following his retirement from the General Motors Corporation. The price paid was said to be $2,000,000.

The plant will be used by the Durant Motor Co. of New York as first of a chain of assembling plants which will be scattered about the country at important points.

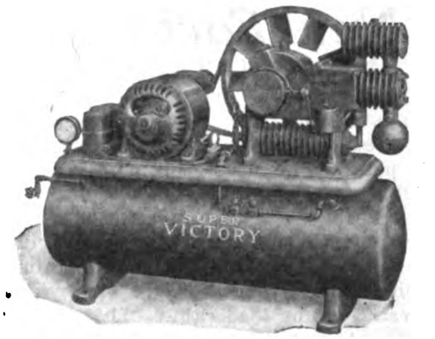
The building, one of the largest of its type in the metropolitan district, has an area of about 500,000 square feet. It covers a plot having a frontage of 406 feet on Jackson avenue and 238 feet on Honeywell street, and was originally built and used by the Ford Motor Co. as an assembly plant. It is of reinforced concrete and steel construction and fronts on the Long Island and Pennsylvania railroad tracks, having side track accommodations for 34 cars.

GLOBE SUPER VICTORY MODEL S 448 TRUCK TIRE INFLATOR.

The Globe Manufacturing Co., Battle Creek, Mich., is in production with the Super Victory Model S-448 stationary compressor, which is especially adapted to motor truck service stations, in which it is customary to inflate many large sized giant pneumatic cord tires daily. This compressor is fitted with a four by four-inch cylinder, 21 by two-inch driving pulley, and runs at a speed of 350 revolutions per minute.

The compressor has a capacity of 10 cubic feet per minute and is suitable for a large garage vulcanizing shop, repair shop or filling station. The air tank is of large size and carries a working pressure of 250 pounds. A three-horsepower electric motor supplies the power which is delivered to the compressor pulley through a two-inch belt. The pressure gauge is calibrated to 300 pounds, more than sufficient for average needs.

The equipment includes 25 feet of best air hose with air chuck, brass taper connection and needle valve attached. Shipping weight 950 pounds and floor space needed for installing 19 inches by 50 inches.



Globe Super Victory Tire Inflator.

EXCELSIOR 225-TON TIRE PRESS NO. 34.

The Excelsior Tool & Machine Co. 30th to 32nd streets, Ridge to Jefferson avenue, East St. Louis, Ill., announces a new hydraulic press, especially designed for forcing all sizes of solid rubber truck rims on and off the wheels of commercial vehicles. The operating principle of the press is such that no skill, experience or special attention is necessary to install, operate and maintain this press, other than the accompanying instructions.

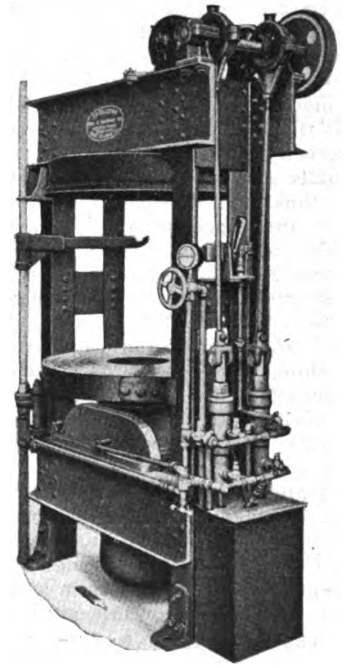
The frame is of structural steel, consisting of four six by six by ⅝-inch angles, hot riveted to four 15 by ¾-inch channels, with ⅞-inch rivets, and reinforced by eight additional angles and steel plates, making a combination having equal stress to withstand the strain.

The cylinders, ram, platens and pump castings are of a special mixture of semi-steel. The valves are phosphor bronze of the company's own make and design, easily reground or replaced.

The pump plungers are of forged steel and all packing is the best obtainable for the purpose. The pump packing is easily replaced by releasing a set screw on the plunger casting, lifting out the plunger and using a special wrench furnished for the removal of the inside packing.

A 25-gallon oil tank is located directly under the pumps fitted with cover plates to protect the oil from dust.

Each press is operated and tested to 250 tons capacity, shipped assembled and ready for use, bolted to skids and crated. A special feature of the Excelsior press is the hydraulic swinging hoist, which will raise the largest truck wheel from the floor and locate the wheel centrally on the forcing rims between the platens.



Excelsior 225-Ton Tire Press.

More than 1000 men will be re-employed by the Firestone Tire & Rubber Co. during April according to an announcement made recently. Production will be increased nearly 50 per cent.

Record Sales for U. S. Rubber Co.

Net sales of the United States Rubber Co. for 1920 established a new high record, the amount being $256,150,130, compared with $225,589,465 for the preceding year. In 1913, the year before the war, net sales amounted to only $87,349,692. Net profits for 1920 after interest were $21,220,983, compared with $17,730,237 in 1919. The balance for the common stock was $16,002,265, which was equivalent to $19.75 a share on the $81,000,000 of common stock outstanding, compared with $24.18 a share earned in 1919.

The general balance sheet as of Dec. 31, 1920, showed net current assets of $187,128,201, as compared with $161,875,058 at the close of 1919. Cash on hand at the end of last year was $14,534,846, against $20,037,646, and inventory was valued at $123,403,029, against $87,633,699. Accounts receivable were $46,329,738, as compared with $40,770,428 the year before. Net current liabilities were $67,373,547, against $26,971,737.

The board of directors declared the regular quarterly dividend of $2 a share on the common stock, payable April 30 to stockholders of record April 15. The regular dividend on the preferred stock was also declared.

It was stated that there has been expended upon the plants and fixed properties of the company during the year 1920 $28,316,616, notably in the enlargement of tire plants at Detroit, Hartford, Providence and Indianapolis.

Ex-Ambassador Davis Elected a Director.

John W. Davis, former United States ambassador to England, was elected a member of the board of directors of the United States Rubber Co. at the annual meeting.

Samuel P. Colt, chairman of the board of directors, declared earnings for 1920 were about $10,000,000 over all dividend requirements and that all regular eight per cent. dividends on common and preferred stock had been paid.

"Notwithstanding the sudden change in the times," he said, "I feel we have perhaps more satisfaction in the conduct of the business of our company during the past year than of any previous year."

The tire trade has reached normal, he said, and declared his belief the worst of commercial depression has passed and that business for this year would be greater than in any other.

FISK EARNINGS FALL.

The annual report of the Fisk Rubber Co. shows surplus earnings, following inventory adjustments and federal taxes of $2,130,133. After payment of preferred dividends this was equal to $1.68 a share on the $15,494,000 common stock of $25 par value. In 1919 the company reported earnings of $3,994,657, equal to $5.99 a share on the $12,254,500 stock in that year.

Net profits for the year were $5,034,950; inventory adjustments called for $2,669,117 and federal taxes $235,700,

Kelly-Springfield's New Factory at Cumberland, Md.

LIMITED production facilities with increasing demand for Kelly-Springfield products made it necessary for the Kelly-Springfield Tire Co. to seek a site for another factory, and it was decided to construct a model tire manufacturing plant especially designed in every way for the most economical and efficient production on a site as advantageously located geographically as it was possible to obtain. After months spent in an intensive study of the most desirable situations by two firms of engineers especially expert along these lines, a 100-acre plot along the Potomac river about a mile from the heart of the thriving city of Cumberland, Md., was selected. The plant is here served by three trunk line railroads, one of which skirts the property.

The main factory building is two stories high with mezzanine and basement, and consists of a main wing, 760 by 120 feet, to which are connected five wings, each 405 by 60 feet, and each wing is connected to the other. The arrangement of departments is such that from the receipt of raw materials, through the various processes of manufacture to the shipping of finished goods there is one continuous progressive movement.

The building contains all of the most modern rubber machinery, as well as electric travelling cranes, and the piping is placed in an accessible trench under the basement floor. At both ends of each wing stair towers and toilet rooms are located. Each tower is equipped with a high speed heavy duty eight by 17-foot elevator with a capacity of 10,000 pounds.

The floor construction is of two by 10-inch yellow pine on edge, covered with a one-inch maple flooring. The entire building and its foundations are of extra heavy construction and have been designed to carry additional stories.

Power Plant Most Modern.

The power plant is equipped with the most modern apparatus and has ready for operation six 750 horsepower boilers capable of developing a total of from 9000 to 12,000 horsepower. All coal and ashes are handled by automatic machinery. There are also installed and ready for operation mammoth turbines, as well as condensers, motor generator sets, pumps and all other apparatus necessary for the proper and efficient operation of the plant. The circulating pumps are capable of pumping 30,000,000 gallons of water each day. The electric current is carried into the main factory distributing stations by large copper bars through tunnels, and from there to the various sub-stations by lead cable. There is also a complete fire alarm and watchmen's system throughout the entire factory, with several alarm boxes in each building, and the central station is located in the power house.

Pump House Completely Equipped.

In the pump house is found a most complete equipment of modern standard and special pumps ranging from a 500-gallon to a 6,000,000-gallon compound pump, together with accumulators, air compressors, tanks, etc. Water is taken from the river through seven-foot tunnels into a pit in the pump house, all of which is constructed below the river bed. The water intake house, located on the bank of the river, is a large building containing four screens, each 30 feet long, through which the water is screened before flowing into the pump house.

The machine shop or mechanical building was the first unit of the development to be erected and has been in operation continually since completion. Great saving in time and expense was thus effected in the expeditious handling of innumerable machining jobs incidental to the construction of the main factory. It is a U-shaped building of two wings, 160 by 46 feet, connected by a wing 40 by 34 feet, and contains all modern machine shop, blacksmith and carpenter shop equipment, as well as a large number of boring mills for the manufacture of moulds and cores essential to the building and vulcanizing of tires.

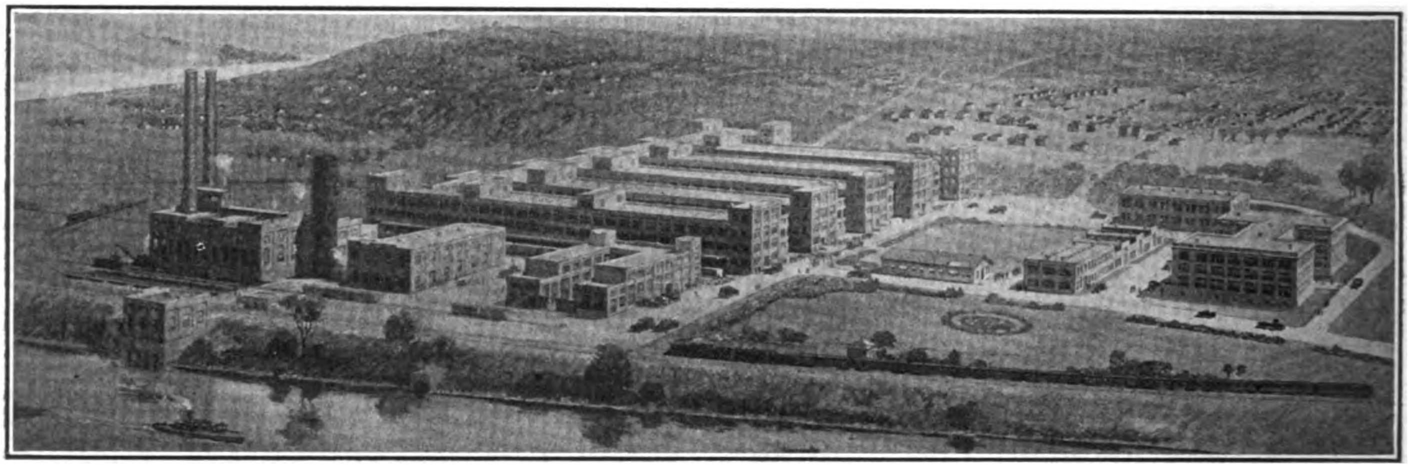
The manufacturing departments have all been designed to secure the maximum of day light, and the milling, calendering and vulcanizing departments have been especially equipped with monitors and saw tooth roofs for this purpose.

The Laboratory Building.

As the tire industry is largely dependent on chemical and mechanical development, most careful thought was given to the construction, arrangement and equipment of the laboratory building. This unit is about 300 feet long and 55 feet wide and the greater portion two stories high, and contains complete apparatus for every conceivable character of rubber industry experimental work. Two large general laboratory rooms are provided, as well as a number of special rooms for research work. Complete equipment for experimental tire making on full sized scale is also installed in this building.

In addition to the buildings mentioned a temporary hospital is being erected, as well as a large fireproof garage and several smaller auxiliary buildings, all of the finest modern design and construction and properly equipped for their purpose.

The entire plant is completely protected by an automatic sprinkler system, fire hydrants, hose and necessary apparatus of this character.



Kelly-Springfield Tire Co.'s New $1,000,000 Plant at Cambridge, Md.—First Tire Turned Out April 2.

Summarization Showing Extent of Plant.

The following memoranda of amount of material used in construction and other data will give a graphical idea of the extent of this new Kelly-Springfield Cumberland plant:

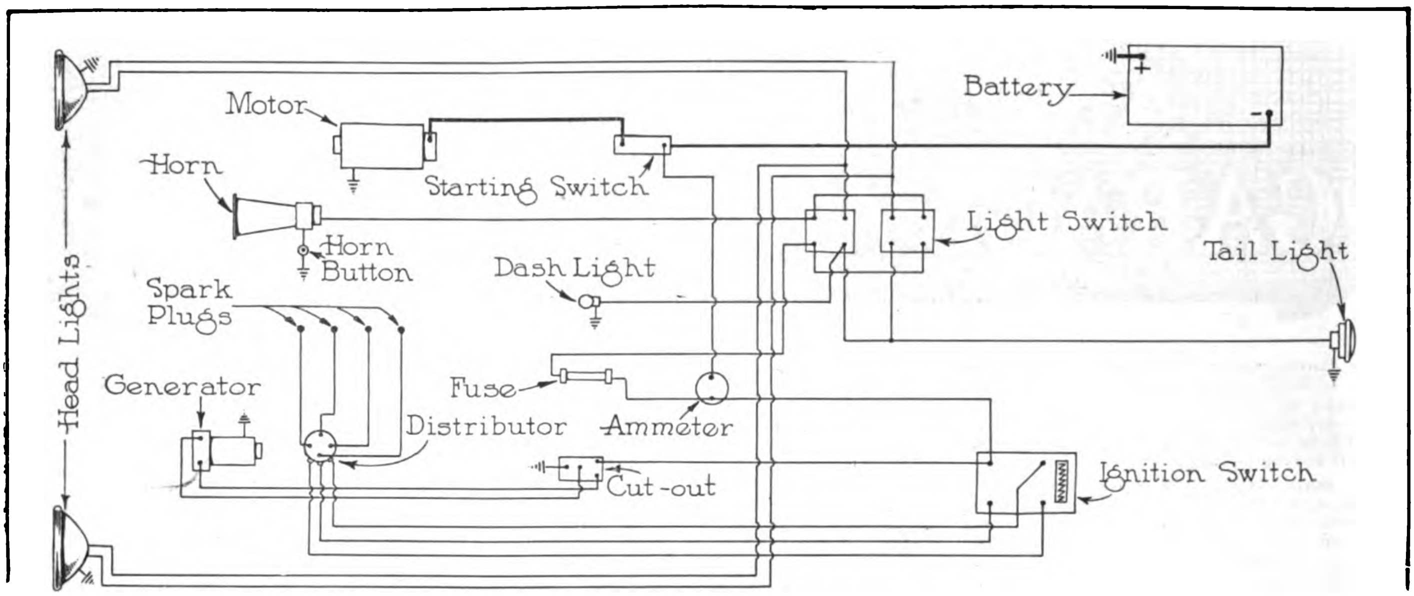
Five thousand eight hundred car loads, or 270,000 tons, of constructive material; 15,000,000 bricks, 8500 tons of structural steel, 100,000 yards of concrete, 6,000,000 feet of lumber, two by 10 inches, in floor of main building.

All foundations and steel installed so as to permit erection of additional stories when required, and the entire plant is laid out to permit economical expansion in all directions.

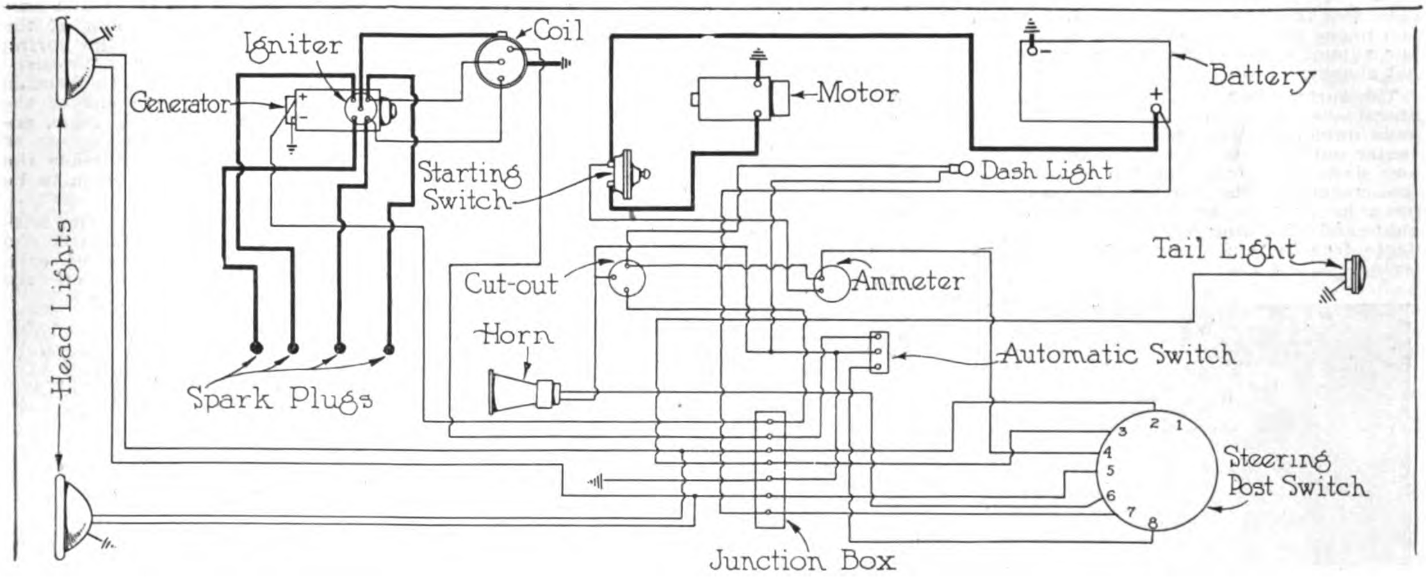
Main building floor area, approximately 2 acres. Walls of buildings, placed end to end, would extend over 1½ miles. Coal pockets will store 10,000 tons of coal. Two boiler stacks, each 14 feet inside diameter, 275 feet high.

One and a half years were consumed in the building of this plant. The engineers were S. Diescher & Sons, Pittsburgh, Pa., and the architect was Edward Necarsulmer of New York City.

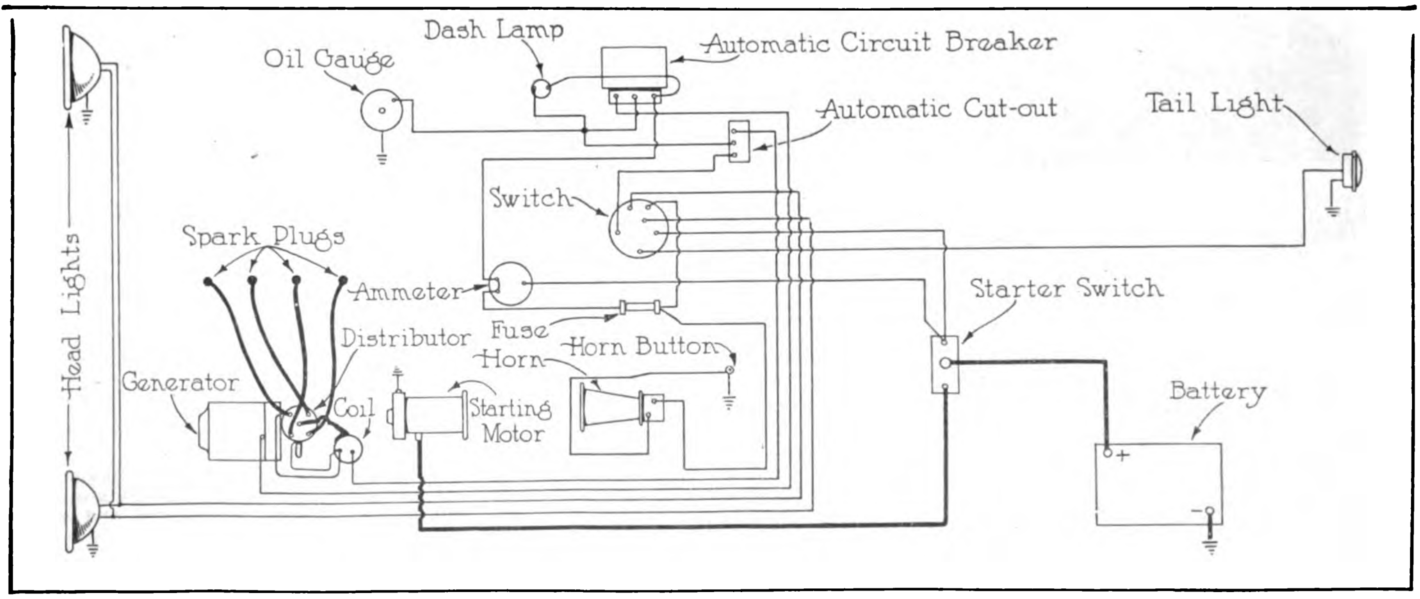
Monthly Wiring Diagram, No. 15


Motor
Horn
Starting Switch
Battery
Light Switch
Tail Light
Horn Button
Dash Light
Spark Plugs
Head Lights
Generator
Fuse
Distributor
Ammeter
Cut-out
Ignition Switch

1917 Allen, Westinghouse Starting and Lighting System.


Igniter
Coil
Generator
Motor
Battery
Starting Switch
Dash Light
Head Lights
Cut-out
Ammeter
Tail Light
Horn
Automatic Switch
Spark Plugs
Steering Post Switch
1
2
3
4
5
6
7
8
Junction Box

1918 Allen, Model 41, Auto-Lite Starting and Lighting System.


Dash Lamp
Oil Gauge
Automatic Circuit Breaker
Automatic Cut-out
Tail Light
Switch
Spark Plugs
Head Lights
Ammeter
Starter Switch
Distributor
Fuse
Horn
Horn Button
Generator
Coil
Starting Motor
Battery

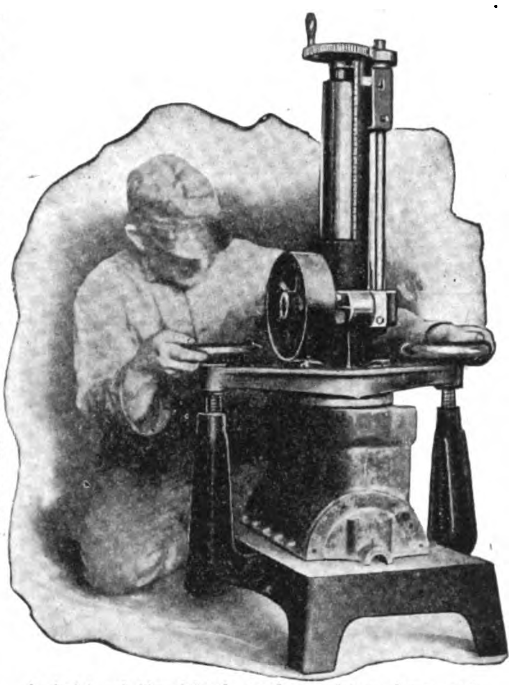
1919-20 Allen, Model 43, Westinghouse Starting and Lighting, Connecticut Ignition.

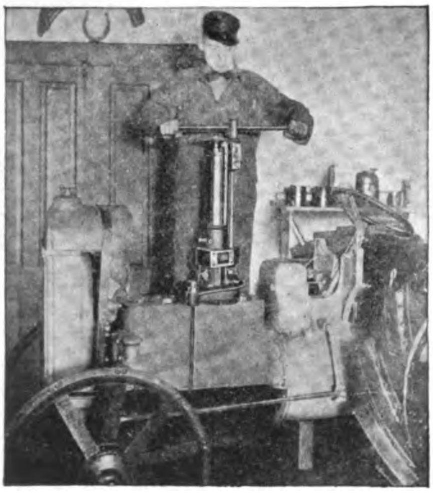
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The Storm "Type M" Reboring Machine, which is now being offered to the trade, possesses a number of unique features and advantages, making it admirably adapted to the needs of shops doing cylinder reboring of all kinds.

The main body is a one-piece, heavy casting and supports the boring bar, feeding and driving mechanism. The construction provides two heavy, adjustable bearings in which the boring bar operates. The boring bar is of hollow, carbon steel, hardened and ground, and having a travel of 14 inches. It is actuated by means of cut spiral gears and the feed is obtained through heavy, internal screw and upper feed gear, as shown in cut. The bar supports the cutter heads, which are not shown.

The cutter heads are of the well known Storm Patented Six-Cutter type, which have universal adjustment by means of a center cutter adjuster, so that they cut to any desired size within the capacity of the machine. The machine is supported by a heavy base provided with a clamp yoke and clamping screws. It rides or floats free in this clamp and is self-centering.





A valuable feature of this tool is its adaptability to different methods of drive. It is regularly furnished with a connection for a drill press, but can also be furnished with a pulley for belt or for motor drive. It will be noted that the machine does not set directly in front of or over the drill press base, but instead sets to one side, so that it does not interfere with the use of the drill press for other work. Furthermore, it is back geared so that it may be used with any ordinary 20-inch drill press.

On other types where the boring bar is driven directly from the drill press spindle, a back geared drill press only could be used, otherwise proper speed could not be obtained. Then, too, the combined height of the block and machine does not interfere with its use under any ordinary drill press.

Each machine is also provided with a double-end wrench for operating by hand so that it may be removed from the base and used as illustrated for reboring motors without removing them from the chassis, by merely withdrawing two small pins in the clamping device.

The cut shows a Fordson block being rebored in this manner. Users find this very convenient not only for tractors, but for marine engines, trucks and passenger cars. The total capacity of the machine is from 3⅝ to 6½ inches, and its weight is approximately 300 pounds.

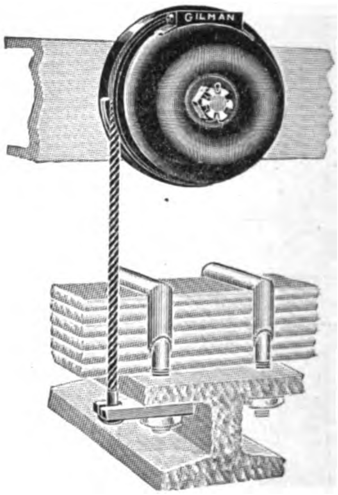
Manufactured by the Storm Manufacturing Co., Minneapolis, Minn. Prices and literature on application.

The Gilman Shock Absorber, in principle and operation, is claimed to afford the ideal method of shock absorption for motor vehicles, for it controls the spring's recoil the full distance of its travel. While permitting the springs to perform their intended function to the limit of their efficiency under normal road conditions, it prevents abrupt or violent movement when road conditions change from normal. Like the spring itself, it is placed between the body and the axle. It offers no restraint to the downward or contracting movement of the spring, but when road variations tend to provoke violent recoil, it smoothly checks such recoil at every stage.

When the Gilman shock absorber is in action, its friction belt band is adjusted to engage the circumference of the stationary friction drum. Any tendency of the body and the axle of the car to suddenly separate, because of the upward thrust of the vehicle springs, causes a sufficient tightening of the friction belt band upon the drum to counteract and retard this upward thrust. This result is accomplished by the frictional contact between the free end of the band and the drum and to the forward movement of the opposite end of the band by the rotation of the drum.

On the other hand, when body and axle approach each other, the tension of the flexible cable is released and the spring is permitted to exert its force in returning the body. Accompanying this action the friction between the free end of the friction belt and the stationary drum, cooperating with the reverse movement of the opposite end of the band, loosens the band sufficiently to allow the drum to be returned by the spring.

The tightening and release of the friction belt band are entirely automatic and instantaneous at the beginning of each forward or reverse movement of the drum.



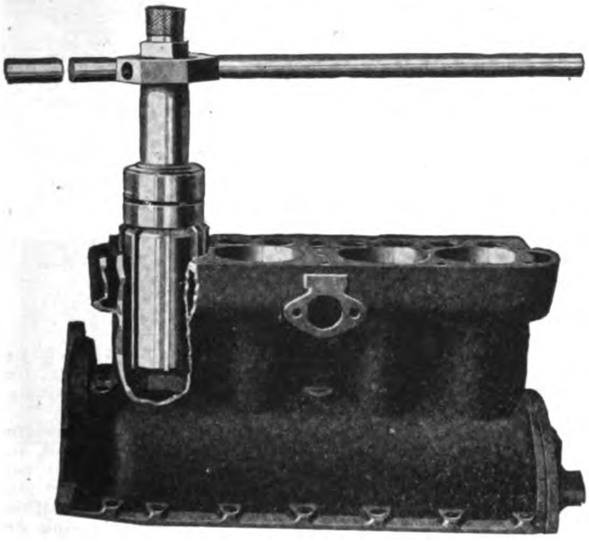
The gripping effect of the band on the drum can be increased or decreased as desired by means of a simple adjusting device near the top of the absorber. A few turns to the right of the small screw with a screw driver increases the tension; a few to the left decreases it. The main bearing of the device is self-oiling, as it is made of a wood impregnated with lubricant. It thus requires no attention.

The Gilman shock absorber is guaranteed by the maker to give absolute satisfaction or the purchase price will be refunded.

Manufactured by the Gilman-Davis Manufacturing Co., 224 South Michigan Avenue, Chicago, Ill. Literature and prices on application.

The F-J Adjustable Reamer presents as one of its outstanding features, the ease with which it can be adjusted to any size within its range by simply turning the knurled head screw at the shank end of the reamer. The blades, which move absolutely parallel, can be expanded or contracted in the same manner as a micrometer is adjusted. For sizing a hole this feature is invaluable.

The F-J reamer is stated to be a pioneer in that it introduces a new method of hand reaming. The reamer is contracted to a size slightly smaller than the hole, is inserted in the same and expanded gradually as the hole is reamed. By means of the graduations on the knurled screw the amount of expansion can be read off very accurately.



The cut shows the cylinder reamer in place in the first cylinder of a block. The reamer is inserted in the cylinder far enough to leave the top end of the blades about an inch above the top of the block. The blades are expanded until the edges just take hold in the cylinder walls and then about .0015 to .002 of an inch more for the cut. The cylinder is then reamed through by using the wrench as shown in the illustration. The blades are contracted, the reamer brought back to the starting position, expanded for the second cut and the former operation repeated. For the final finishing and sizing cuts the feed should only be about .0005 or .001 of an inch.

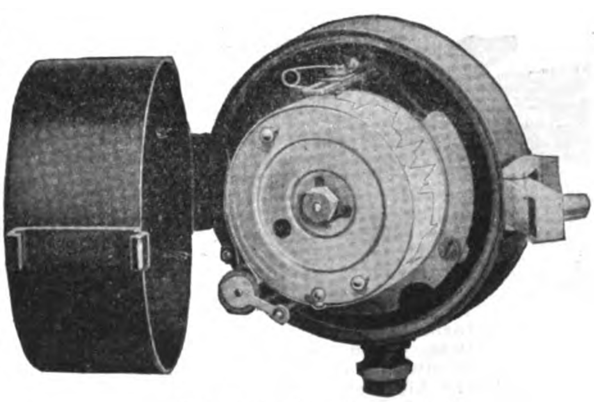
Complete instructions as to the use of the reamer and method of sharpening the blades, etc., are furnished with the tool, or the maker of the equipment will regrind the blades at a small cost.

Manufactured by the Foster-Johnson Reamer Co., 1002 Beardsley Avenue, Elkhart, Ind. Prices on request.

The Recordograf, an instrument giving forth on a paper tape a graphic record showing all the time, distance, speed and stops of the motor vehicle to which it is attached, is presented in its refined form after 15 years constant and successful operation on diversified motor equipment ranging from light runabouts to huge motor trucks.

It is simple, accurate and tamper proof and the indelible record it writes of each movement or stop of the car permits of a detailed analysis of the vehicle's operation.

The instrument consists of three essential parts, the clock, the recording device and the pencil mechanism. The clock, the manufacturer's own design, is of unusually heavy construction and is not in any way affected by vibration. The recording mechanism, which is driven by the flexible shaft, is merely a worm shaft driving a worm wheel; this in turn rotates an eccentric cam. The pencil mechanism is actuated by the eccentric cam and travels in a guide way.



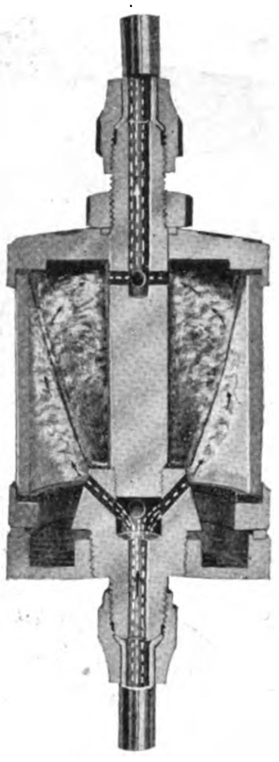
The tape is run from the tape holder and threaded into the clock drum. The combination of clock, recording mechanism and pencil mechanism produces on the tape a clear, mechanically accurate record of time, distance, speed and stops. Each tape is 36 hours long, divided and marked in hourly periods beginning at 4 p. m. and running 36 hours to 4 a. m. The a. m. hours are denoted by a light margin at the top and bottom of the tape. The hour is sub-divided into five-minute periods by small squares. A horizontal line marked by the pencil denotes that the vehicle remained stationary five minutes for each square through which it travelled. When the vehicle moves the pencil travels obliquely on the tape. The tape is eight squares wide, representing two miles of travel; each square thus stands for a one-quarter of a mile. It will be evident, therefore, that the speed of the vehicle is graphically shown by the angle of the oblique line. For example, if the oblique line entirely crosses the tape eight squares in 10 minutes, it would indicate that the vehicle had travelled two miles in that time, or at a rate of 12 miles an hour.

The transmission consists of a simple but effective collar fastened to the inside front spokes. This rotates a star wheel, which in turn operates the flexible shaft. The speed of this shaft ranges from only 58 to 62 revolutions a mile as against 1000 or 1500 revolutions of an ordinary speedometer.

The company also manufactures the Ford and Dreadnaught types of hubodometer which record the accumulated mileage covered, both backwards and forwards. These require no mechanical work for their installation, being simply screwed or bolted on to the hub like a hub cap.

Manufactured by the American Taximeter Co., home office, Broadway at 61st street, New York city, with branches in all principal cities. Prices:, Recordograf, complete with 100 tapes and speed scale to ascertain rate of speed, $65 f. o. b. New York. Installation will be made at any of the company's service stations at small additional cost. Ford type Hubodometer, $17; Dreadnaught type, $20.

The Ro-Gas-Fi'ter is claimed to be one of the most effective devices of its type on the market in that it positively removes all the dirt and water from the gasoline. It is a small instrument, made from brass, with a glass cylinder, inside of which is a chamois filter held taut and in shape by a wire frame. The flow of gas is from the bottom up, the refuse remaining outside and below the cone shaped chamois.



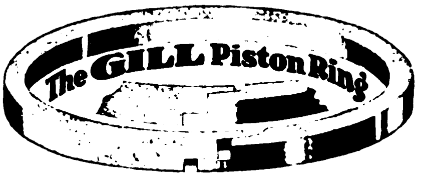
It may be attached anywhere on the gasoline feed line between the tank and the carburetor. This is easily done in a few minutes time without special tools and it is adaptable for use on any car whatever feed system may be employed.

Directions for attaching: Cut about four inches from the feed line, slide the compression nuts on to each end of the tube and, with any convenient instrument, roll the end of the tube into a slight bell shape. This should give a tight connection without the use of solder or other device. The Ro-Gas-Filter is simply put into place and the compression nuts tightened. Care should be taken that the filter is in an upright position. If by chance the nuts furnished should not fit the tubing they may be returned to the manufacturer together with the name of the car and they will be replaced with a set that will fit.

Manufactured by the Roll Manufacturing Co., Fond du Lac, Wis. Price, $6.

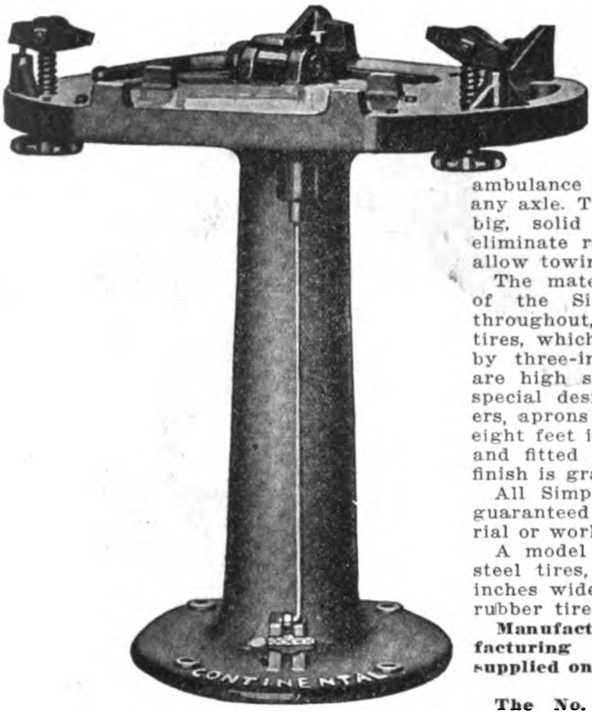
Gill Piston Rings are made from single piece castings of special grey iron and machined accurately. They are self-fitting, one-piece rings of sturdy construction, having a distinctive joint which forms a seal that prevents the passage of gas or the pumping of oil from the cylinder walls into the combustion chamber.

Gill rings are guaranteed to increase power, prevent smoking resulting from oil suction, to overcome excessive carbon trouble, and to reduce gasoline and oil consumption. When the engine is fully equipped with Gill Piston Rings the company states that it will refund the full purchase price upon return of the rings if they fail to meet this guarantee. This guarantee does not cover rings used in scored or out-of-round cylinders until they have been reground.



They are made in all sizes to replace the rings in all types of motor trucks and tractor engines.

Manufactured by the Gill Manufacturing Co., 83rd Street and Jeffery Avenue, Chicago, Ill. Literature on request.



The Ford Assembly Table is a combination of the Continental assembly table and Ford bench clamps. The clamps on the 32-inch diameter top hold the motor in the upside-down position and with the cylinders horizontal. It handles two motors at the same time and brings any part instantly at hand. It is stated to be a real money maker and time saver in Ford work.

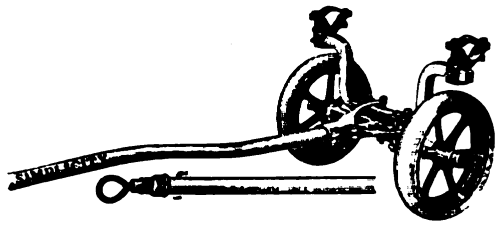
Two slots are placed in the table for hanging wrenches and ample space is provided for additional tools.

The value of the Ford Assembly Table is claimed to lie in the fact that it does away with sloppy, mussy bench work and speeds up Ford repairing and rebuilding.

Manufactured by the Continental Auto Parts Co., 125 East 17th Street, Columbus, Ind. Prices and detailed description on request.

The Simplicity Ambulance is stated to represent a distinct departure in construction and application from devices of this nature. As its name would seem to indicate, it is simple in design, attachment and operation. It is complete in itself and the manufacturer claims that there is nothing to break or wear out, no small parts to fall off, mislay or lose.

It comprises simply a block and jack. To use, remove one bolt from each saddle, run the ambulance under the axle of the car to be towed, either front or rear, pull the pole down, the car slides into place and the outfit is ready to travel after the bolts are replaced in the saddles. Only one man is required, there is no time lost and no chance for accidents. The saddles are adjustable as to width.



Features that are claimed to be exclusive with the Simplicity ambulance are its wide tread, 32 inches; that it tracks absolutely, holds to the road no matter how high crowned, and cannot buckle under the disabled car. The Simplicity swivel with which the ambulance is equipped provides easy turning without binding or wrenching, and there is no danger of the towed car overturning. The swivel has a locking device to be used when under the rear end of a car. The yoke of the ambulance effectively cradles the differential housing of the car, affording plenty of room no matter how large the differential may be. The car is always securely fastened to ambulance by adjustable clamps which fit any axle. The ambulance is equipped with big, solid rubber tired wheels, which, eliminate rattle, vibration and noise and allow towing safely at increased speed.

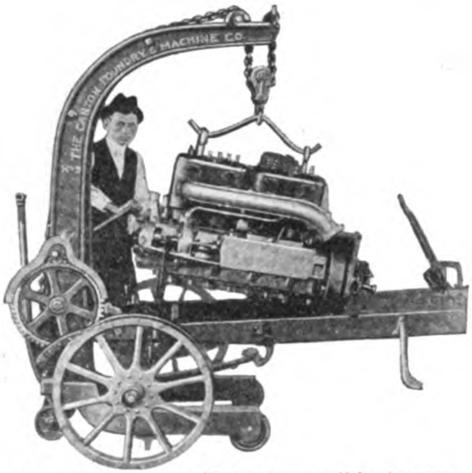
The material used in the construction of the Simplicity ambulance is steel throughout, with the exception of the tires, which are standard solid rubber, 16 by three-inch, and the bearings, which are high speed bronze. The pole is of special design, bent to avoid the bumpers, aprons or truss rods of the car; it is eight feet in length, adjustable to 12 feet and fitted with a strong eye bolt. The finish is gray and black enamel.

All Simplicity products are absolutely guaranteed against all defects in material or workmanship.

A model is also made, furnished with steel tires, 15 inches in diameter, three inches wide, but otherwise similar to the rubber tired model.

Manufactured by the Interstate Manufacturing Co., Milwaukee, Wis. Prices supplied on request.

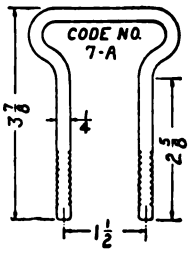
The No. 3 Low-Bed Canton Portable Crane is shown in the accompanying cut, being utilized in lifting a motor out of an automobile chassis. This is stated by the manufacturer to be the size best suited for general garage work, as it can be quickly transported to parts of the garage where it would be impossible to use other equipment. It is claimed that with this outfit the handling of motor car repair work may be speeded up so that seven or eight men may be displaced.

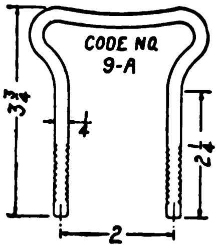


The Canton cranes are made of semi-steel throughout, all the intricate parts are of high quality drop forgings and they are equipped with hand forged, tested and guaranteed BBB chain and Hyatt roller bearings, a feature which increases their ease of operation to a great degree.

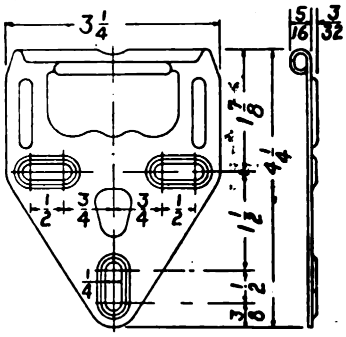
Manufactured by the Canton Foundry & Machine Co., Canton, O. Literature and prices on request.

Mueller Battery Handles are produced automatically in quantity lots and therefore can be sold at a very low price. The No. 6-A handle, illustrated in the largest cut, is of the narrow stamped type and offers the manufacturer an opportunity to standardize on one handle only for use on all batteries. What is stated to be a new feature is that slots are used instead of holes, which make possible the fitting of this handle on boxes drilled for practically any other design of handle. The slots also allow compensation for any inaccuracies in the drilling of the boxes and thus assembly is speeded up. This No. 6-A handle is lead coated by the maker's special dipping process; is deeply ribbed for strength and the grip is smoothly formed and well rounded. The screw holes are upset, which strengthen where countersinking might weaken.



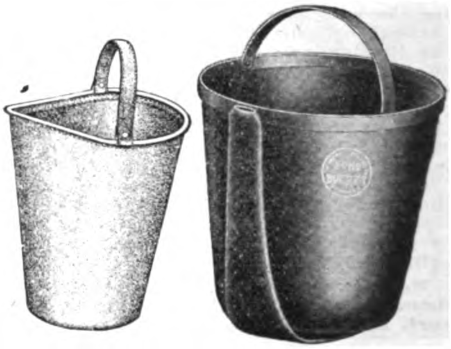


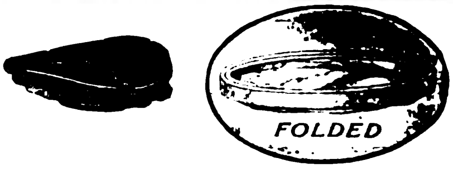
The No. 7-A and 9-A, shown, are of the wire type and are just being placed on the market. It will be noted that they have deep serrations on the legs for taking the lead, which holds the handles in position in the side of the box.



Manufactured by the Mueller Electric Co., 2535-43 Fairmount road, Cleveland, O. Literature and prices on request.

Boko Bucket No. 1500, with funnel, is adapted for conveying either gasoline or water. It is constructed of gasoline proof fabric, double-sewed and tightly cemented. It may be used as a bucket or filler. When not in use as a funnel the flexible tube fastens over the top. A slight pressure of the finger gives perfect control of the flow. There is no spilling or waste.



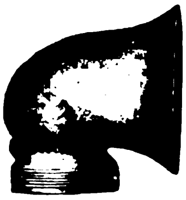


Boko buckets have a capacity of two gallons and may be folded and placed in the tool kit or under the seat.

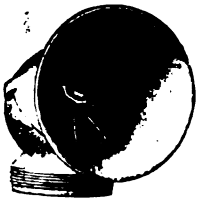
The same concern also makes the Boko bucket, No. 1507, without funnel. This bucket is made of the same gasoline proof fabric as the No. 1500 but, instead of the funnel, it has a specially designed spout top, which gives the user full control of the stream at all times. This bucket folds up to a size, seven by nine by one-half inch, and will fit into the door pocket of any car.

Manufactured by the Defiance Welding Co., Defiance, O. Sales department: The Bailey-Drake Co., Inc., 1120 Michigan Avenue, Chicago, Ill. Prices: No. 1500, list, $1.75; No. 1507, $1.

The Radiator Funnel Cap is one of the latest radiator ornaments combining beauty and utility. It is constructed of highly polished cast aluminum and is claimed to include in one simple, sturdy and sightly device the following essentially valuable features: A stationary filler cap; 2, a reliable overheat indicator; 3, a radiator cooler; 4, a practical funnel; 5, an ornament of beauty. It consists of two principal members, a funnel and a base upon which the funnel swivels. The funnel terminates along the diagonal parting line in a web pierced with seven triangular radial holes. In an annular recess in the base, also along the parting line, rests a round brass disc having holes identical with those in the funnel web, but placed in such a fixed position with relation to the same that the two form a register which is closed when the funnel is in normal position facing forward, partially open when it is in the cooling position and fully open when it is rotated 180 degrees to the filling position.



NORMAL POSITION
FACING FORWARD



COOLING POSITION
PARTIALLY OPEN

FILLING POSITION
SWUNG 180°

A bronze bolt, having a spring under its head, passes through the funnel web and is screwed into the base and there firmly locked with a jam nut. The two members are thus held firmly together, though still permitting the funnel to be freely rotated on the base, as desired.

The whole forms a combination which is substantial, rust proof, always in adjustment and practically indestructible.

Manufactured by the Radiator Funnel Cap Co., 3852 Grand Boulevard, Chicago, Ill. List price, $3.75 postpaid.

Ray Socket Wrench Sets are packed in pressed steel boxes and are so compact that they can be carried in the side pocket, under the seat, or in the tool box of any car, even in the largest size.

All parts are finished in the Packer rust-proof finish, and are furnished with either the tubular ratchet handle or flat ratchet handle. The socket wrench sets are furnished in different sizes, so that the sockets in some sizes will fit any nut or bolt on any car.

The Packer automobile specialties are sold exclusively through the jobbing trade, but if anyone cannot obtain them at his nearest dealer he is invited to take the matter up direct with the manufacturer.

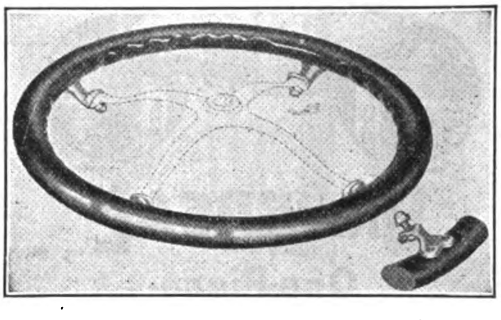
Manufactured by the Packer Auto Specialty Co., 1420 South Michigan Avenue, Chicago, Ill.

The P. C. Line of Radiator Caps is designed to meet the need for good, low priced, attractive equipment of this character. The first size made was for Fords and even on such a small article it is stated that a great deal of thought was put into it. According to the reasoning of Robert F. Miller, designer of this product, first of all it should be practical, and if anyone has ever tried to take off a Ford radiator cap when the radiator is steaming, the practicality of the design of the P. C., with its non-heat conducting wings, will be realized. Again, Mr. Miller affirms that even a practical article of this nature does not make an appeal unless it is at the same time pleasing to the eye. This point was also incorporated in the P. C. design.

The P. C. caps are made from a special alloy by a secret process which combines small diameter with great strength.

Manufactured by the Parts Corporation, 733–735 Virginia Avenue, Indianapolis, Ind. Jobbers and dealers are invited to write for special proposition.

The W-A Extension Wheel is designed to replace the regular Ford steering wheel rim, making a 17-inch wheel by utilizing the regular spider. The rims are of two-piece, high-grade maple, walnut or ebony finish, corrugated or plain. The extensions are of aluminum highly polished, fastened to the rim by two screws and fit firmly to the ends of the original spider by means of nickel plated bolts and nuts, and can be easily installed without removing the spider from the steering column.



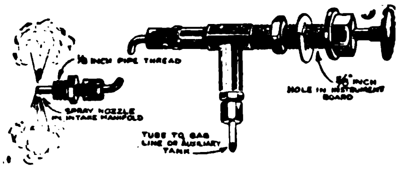
To install: Remove the regular rim from the spider and replace with the W-A extension. This operation requires only a few minutes time.

The W-A extension is also made for Chevrolet and Dort cars.

Manufactured by J. H. Whetstone & Co., Lapeer, Mich. List price, $4.

The Carleton Master Primer is a powerful force pump mounted on the instrument board of the car. It draws gasoline from a small auxiliary tank or direct from the fuel line and sprays it into the intake manifold of the engine. Then when the engine is turned over, whether by hand or starter, the gas is right there waiting to be sucked into the engine and it starts at once.

The Carleton Master Primer is made of a heavy brass casting, accurately machined, heavily nickel plated and polished. The piston is made of cork discs, impregnated with graphite and not affected by gasoline. It has a screw adjustment to provide for possible wear. The check valves are of brass and of the ball type. The needle valve on the piston stem is seated by spring pressure, thus cuts off automatically. As an additional safeguard the piston itself covers the gasoline inlet.


⅛ INCH PIPE THREAD
SPRAY NOZZLE IN INTAKE MANIFOLD
TUBE TO GAS LINE OR AUXILIARY TANK
⅝" INCH HOLE IN INSTRUMENT BOARD

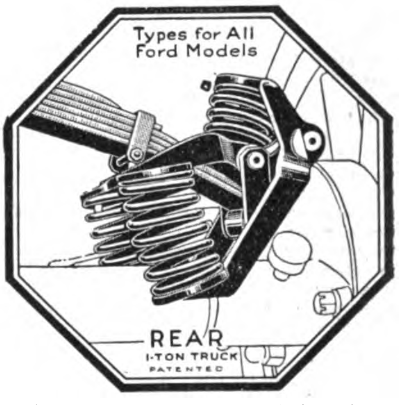
The Carleton Master Primer is furnished either with or without an auxiliary gasoline tank. If the auxiliary tank is used it affords independence of the regular gasoline system, high test gasoline may be used or ether mixed with gasoline or any desired liquid for cold weather priming and, in case of trouble with the carburetor, vacuum system or fuel line, the car can be run by the primer alone.

The Carleton Master Primer is stated to require no care except an occasional oiling and can be used on any car.

Manufactured by the Carleton Co., 170 Summer Street, Boston, Mass. Price list: Complete with tank, tubing and all necessary fittings, $6.50; with gasoline fitting instead of tank, $6. In ordering without tank the outside diameter of gasoline tubing shoud be given.

The FloatAforD Ford Shock Absorber is built on the complete suspension principle, forming a spring cushion. It is claimed that it positively will not break the Ford spring or in any way interfere with the original Ford mechanism. It is scientifically designed so as to meet the rebound after the first shock is absorbed by the large springs. The third spring, which forms an essential part of the construction of the FloatAforD, takes care of this rebound and is claimed to be an exclusive feature of its design.

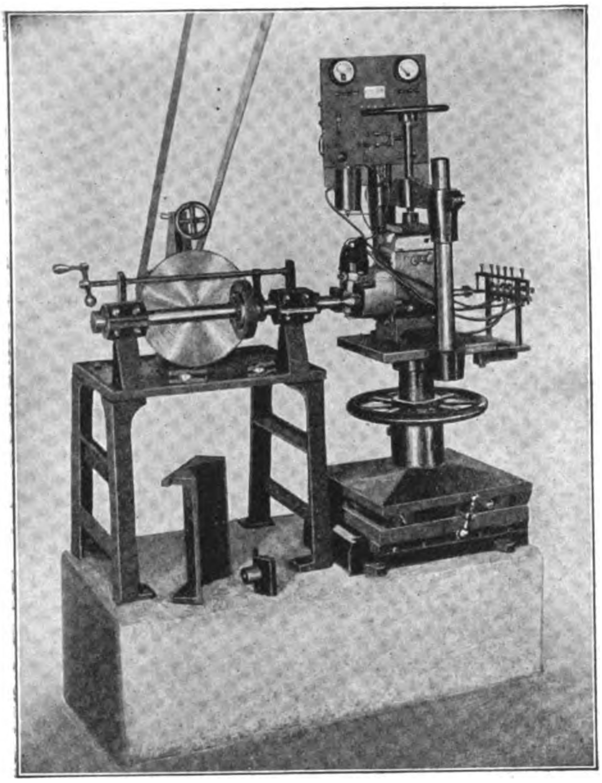
The FloatAforD absorber is stated to be made of the very best grade of malleable iron and high carbon steel, and is guaranteed for one year against defect in material or workmanship.



Claims made for the FloatAforD are that it will cut down repair bills, save tires and gasoline, give added cushioning effect to the springs and increased riding comfort.

The FloatAforD is made in four types, for touring car or coupe, sedan or commercial car, roadster and one-ton truck.

Manufactured by the Burpee-Johnson Co., Indianapolis, Ind. Literature and prices on request.



The M. G. S. Testing Device for magnetos, electrical generators, electrical engines, starters and other dynamo machines is stated to be a proven success as, before applying for a patent, it was given severe tests on all kinds of work for which it is designed.

The machine is adapted to drive and test all kinds of electrical units which have been removed from their original driving means, making it possible to properly install new parts and know that they will give satisfactory service before installing them with the motor or other driving power from which they were originally removed. It is built with adjustable features to enable it to run from any permanent line shaft.

It will be noted that the entire machine is not complicated and any man familiar with automobile work should find it an easy matter to test any magneto, generator or starter with this equipment. There is no guess work, as the entire output of the generator is shown on the ampere meter on the switchboard facing the operator.

It is stated that the required time for testing the average generator with this machine should not exceed 15 minutes, and that a magneto can be satisfactorily tried out in less than 10 minutes. If any one of the leads is defective it will be shown in the sparking gap, and as a plurality of sparking gaps are provided, it enables a number of cylinders to be tested just as rapidly as one.

The machine is equipped with a V-shape clamping arrangement, which insures a positive holding position for any style of generator or magneto, and it is unnecessary to remove the drive gear or other couplings from the electrical units being tested. It is also provided with a set of flexible drive couplings, which adjust themselves to any shaft or driven coupling, as they have a long range of adjustments.

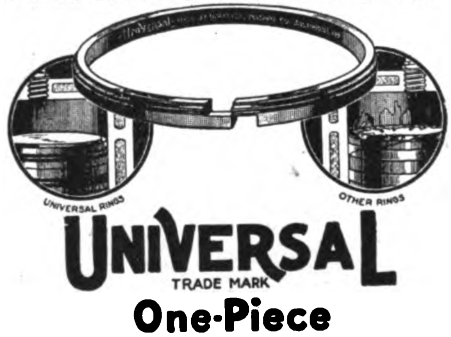
When operated according to instructions furnished, this device is guaranteed for a lifetime against poor workmanship and material.

The illustration shows the testing generator coil and distributor, with a Delco generator with distributor and coil being tested, all in one operation.

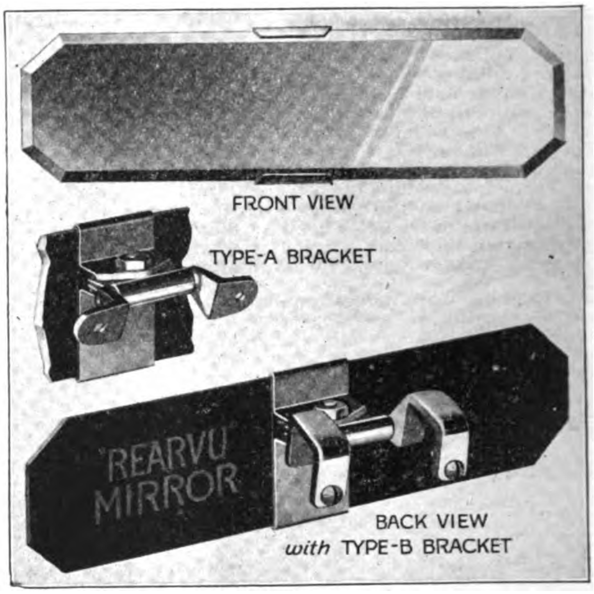
Manufactured by Klemmer Brothers & Co., 128 West Bridge Street, Owatonna, Minn. Particulars and prices at request.

The Universal One-Piece Piston Ring is stated to have unusual merit for keeping down oil, minimizing carbon troubles, giving increased power, which in turn gives decreased gasoline and oil consumption per mile, and it was recently placed on a popular price basis.

Universal One-Piece Piston Rings have an outer and inner circumferential groove which gives a forced lubricating feature to the cylinder walls. All rings are placed on the piston with the grooves up, and the excess oil is collected on top and when compression starts this excess oil is started downward by being collected in the upper groove, and as compression increases it is forced on into the inner groove, giving a perfect seal to the motor; when firing takes place the excess oil is down and away from the firing chamber and, as the piston goes down after firing, the oil that is packed in the inner groove lubricates the side walls of the cylinders, which gives a forced lubrication at all times to the cylinder walls. The oil sealing feature of the ring is claimed to give as near perfect compression as is possible and, by starting the oil downward on the compression stroke, the oil is kept away from the firing chamber, which practically eliminates carbon trouble and gives a minimum amount of engine trouble from this source, with increased mileage per gallon of gasoline and a decreased consumption of gasoline and oil per mile.



Manufactured by the Universal Machine Co., Industrial building, Baltimore, Md. Literature and prices on request.



The Auto Rearvu Mirror reflects clearly road conditions in the rear, enabling the driver to keep his eyes ahead. It can be instantly adjusted to the position most convenient for the individual driver with the windshield open or closed.

The assembly of the Rearvu mirror is very simple. But one nut and screw is used. Along with this simplicity is a construction that is claimed to positively eliminate vibration, and there is no undue strain on the glass. The metal assembly is of spring brass and bronze, which will retain their original luster and will not rust. The mirror is of the highest grade of beveled French plate, size 2½ by 10 inches. The brackets are of heavy brass, nickel plated, and sufficiently rigid to avoid vibration. The windshield may be opened for ventilation and other purposes without changing the position of the mirror.

Made in two types: A for closed cars; B, for open.

Manufactured by Automotive Accessories, Inc., Kokomo, Ind. Exclusive sales representative, Fulton Co., Milwaukee, Wis. Price, each, $3.50. Packed in individual cartons, 25 to the standard shipping package.

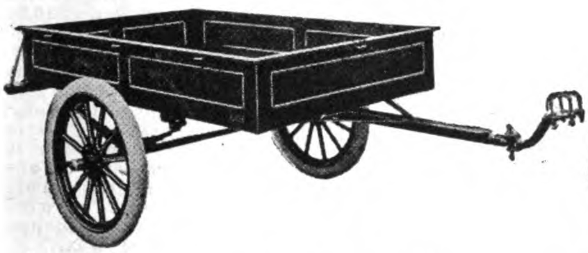
The Prest-O-Grip All Unit Chain has been designed especially for steel spoke wheels and this type of chain and fastening device is especially adapted for steel spoke wheels that cannot be fitted with a regular spoke clamp, particularly on the dual tire type.

Particular stress is laid upon the fact that they can fit practically any type of motor truck wheel equipped with either solid or giant pneumatic cord tires.

Special fasteners are used which hold the chains securely on the wheel and allow plenty of slack to prevent them from cutting into the tires.

Manufactured by the Rowe Calk & Chain Co., Plantsville, Conn. Literature and prices on request.

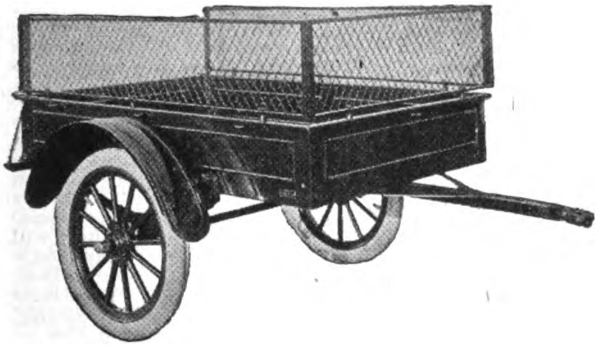
The Lyons Steel Trailer is illustrated herewith in two models, the A, the Lyons Thrifty, which is a simple type without top or side boards and the Model D, Lyons Favorite, which is equipped with wire side boards, giving it a finished effect and adding to its utility. They are designed for any kind of a load and to run on any kind of a road, and may be utilized for business, pleasure or sport. With it goods of all kinds may be delivered, its capacity being the same as that of a light delivery car. A contractor or workman can carry his tools or material to the field of operations. Baggage and camping outfits may be carried on the summer tour and a special type of bungalow camp trailer is made.



The Lyons trailer may be easily and quickly attached to any make of touring or passenger car without injury or disfigurement. It is stated to be sturdily built and beautifully finished; is strong enough to haul a piano or heavy express load.

The Lyons loading racks are made for all purposes.

The specifications are as follows: Steel body, 72-inch by 46-inch body, 12 inches deep, 30 by 3 wooden automobile wheels, ball bearings; 1¼-inch axle; 30 by 3 non-skid pneumatic tires, standard American make. Wood flooring with steel protecting strips. High grade auto springs. 750 pounds capacity. Color, dark green body, black wheels and trimming.



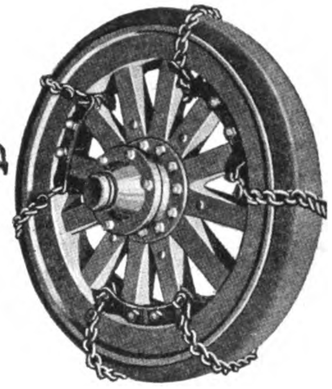
Manufactured by F. P. Lyons, Inc., Manchester, N. H. Literature and prices on request.

Giant Grip Traction Equipment for motor trucks includes a standardized twin clamp that is stated to insure the vehicle against time lost through tie-ups due to mud, sand, snow or other bad going.

The device is extremely simple and consists of a twin hook and eye clamp of drop forged special analysis steel and a back plate bolted to the spokes at the felloe. Each clamp anchors two chains. The chains are carried in the tool box and when needed are hooked on in two minutes time. A patented connecting hook engages in the eyelet of the clamp, locking the chain securely.

The truck operator is enabled to attach the chain without tools and without jacking up the wheels—the clamps being left on permanently. The simplicity of the device saves time and makes removal of the chains so quick and easy that the driver is not tempted to leave the chains on when not needed.

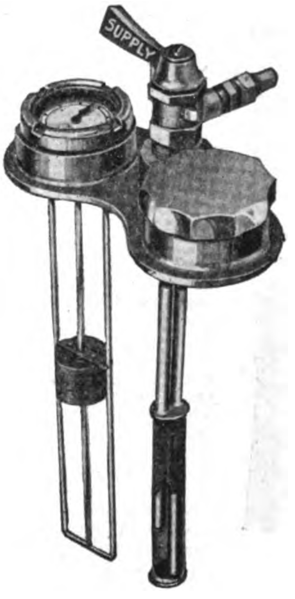
Giant grip twin clamps are made in three sizes, graduated according to tonnage to equip all trucks with wood wheels and solid tires.



Giant Grip Traction Equipment is proving particularly interesting to service stations, as they do not have to carry a large assortment. One size fits over 400 different makes of trucks. The company also manufactures equipment for all types of steel wheels.

Manufactured by the Giant Grip Manufacturing Co., Oshkosh, Wis. Prices and literature on request.

The Ideal Reserve Valve and Filler Neck is a new device assembled in one piece for use in connection with the vacuum system. When being supplied by a full tank of fuel this reserve valve feeds through the short tube, as shown in the cut, until the supply has been consumed on this tube (regular supply), which will then refuse to feed the engine, but will leave a supply of gasoline in the tank to carry the car to a gasoline supply station by operating the reserve valve from supply to reserve, which permits the reserve fuel to be consumed. The reserve valve now being in operation the filler cap cannot be removed from the filler neck until the valve has been reversed to the regular supply.

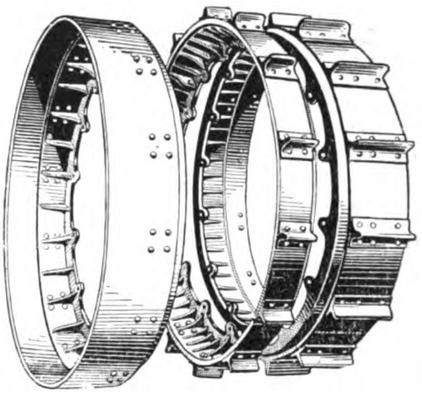


The valve is made in such a manner that it is leak proof. It will be noted that it is so embodied in the assembly with the filler neck and gasoline gauge as to make an artistic assembly of three parts in one. This automatically eliminates a large portion of the expense in applying the device to the gasoline tank by making one opening in the tank instead of three, and the final operation of sweating or soldering one piece rather than three pieces.

The Ideal reserve valve is made entirely of brass, highly polished and nickel plated.

Manufactured by the Ideal Brass Works, Indianapolis, Ind. Price, complete, $5.50.

Foley Traction Rims are being made in sizes and types adapted for quick attachment to or detachment from the rear or traction wheels of all motor trucks and tractors regardless of the make or type. The line includes traction rims for wheels using 32 by 4½ inch and 33 by 5 inch pneumatic tires (which are intended for Ford trucks rear wheels using pneumatic tires), also the 35 by 5 inch pneumatic tire rim, and traction rims of different designs and types for use on truck wheels equipped with solid rubber tires. The standard type of rim is made so that the width conforms with the size tire on the wheel. For instance, the 32-inch rim is 2¼ inches wide overall, and the 36-inch rim is 3½ inch wide overall. Special rims are also made in various widths up to and including eight inches and are of double reinforced construction, made up from a combination of electric steel casting and boiler plate steel. This latter rim is designed in particular for the heavy duty trucks engaged in road building and similar work having to negotiate unusual unstable road conditions.



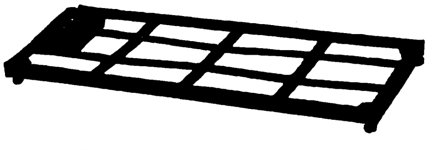
The Foley rims are guaranteed as to their construction and practicability and the many thousand now in use is unquestionable evidence of their merit. They are guaranteed to increase the traction efficiency of motor trucks anywhere from 200 to 300 per cent. when negotiating soft roads. They automatically come into action when a soft road is reached.

The maker is prepared to ship in quantities of one set of rims or in car load lots as the occasion requires.

Foley Traction Rims are fully covered by United States and foreign patents.

Manufactured by Foley Traction Rim Co., Inc., 1311 Hennepin Avenue, Minneapolis, Minn. Prices and literature on request.

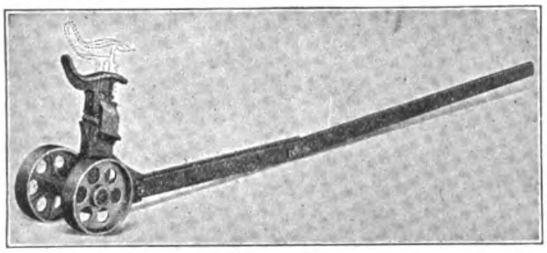
W-A All-Steel Creepers are designed to afford the most service at the least cost in repair shops and garages. They are stated to be well constructed of angle steel and steel bands so as not to fill with dirt, thus assuring a clean creeper at all times. They are tested to 400 pounds capacity and will stand the roughest usage.



W-A creepers are 36 inches long, 15 inches wide and two inches high, have leatherette covered head rests and roller bearing casters. The shipping weight is 10 pounds.

Manufactured by J. H. Whetstone & Co., Lapeer, Mich. Price, $4.

The No. 3 Hovey Jack is designed to combine the principles of durability, strength and speed, as well as appearance, at a low price. It is so constructed that it can be used under a rear axle equipped with a truss rod without any interference. It has an improved locking principle, overcoming any possible danger of the handle flying up until lifted by the operator. The handle is so designed that it clears the floor at its extreme end sufficiently to allow plenty of hand room. There are no spring or delicate parts to get out of order.



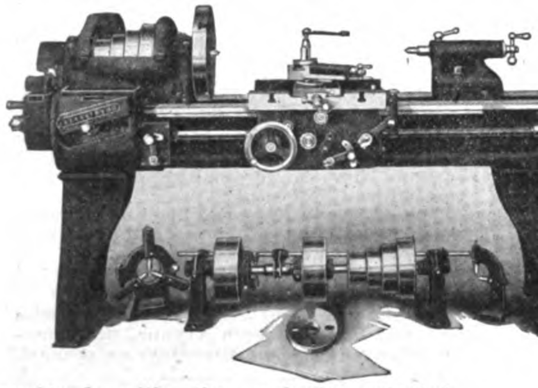
Method of operation: To raise the car, merely kick up the movable head to the desired height, roll under the car and push down on the handle. To lower the car, raise the handle.

The No. 3 Hovey jack has six-inch malleable wheels with 1½-inch faces, and a 60-inch round-edge bar stock handle. All the working parts are steel. It can be adjusted to pick up a load three inches from the floor, or high enough to reach the axle of any car.

Hovey jacks are guaranteed against defective material and workmanship. The weight is 35 pounds.

Manufactured by J. H. Whetstone & Co., Lapeer, Mich. List price, $15; west of Rockies, $16.50.

The Carroll-Jamieson New 14-Inch Quick Change Gear Lathe, with either single or double back gear, is shown in the accompanying illustration. It has a 15½-inch swing and is guaranteed to meet all the requirements of the up-to-date garage, service station or tool room, and will manufacture parts up to the full capacity of any 14-inch lathe. It is equipped with the maker's patented quick-change gear box, cutting threads from three to 64 per inch. One handle and knob does it all.



Convenience and durability combined with accuracy and simplicity are some of the good points claimed for the Carroll-Jamieson lathe.

All standard and odd threads can be cut up to 64 per inch, including 11½ inch pipe threads, right or left hand. The gearing in gear box is made from bar steel running on hard studs and supported by two walls.

The apron has a reverse for feeds and is provided with an interlocking device--preventing any two feeds being engaged at the same time. The power cross feed and longitude feed are friction, the most approved design for engine lathes. The new clamping device which secures the carriage to the bed when facing off work, maintains the accuracy of the lathe and no strain is applied to the corners of the carriage.

The head is massive and well proportioned and fitted with reverse or right and left hand screw cutting. The bearings are phosphor bronze hand scraped to fit the spindle. The spindle is made from a high carbon special spindle steel ground on the most improved grinding machinery, having a 1¼-inch hole its entire length. Taper center bush reamed to No. 3 Morse taper.

The face gear and cone pulleys are locked with a spring pin, which is adjusted when using the back gear without the use of a wrench. The cross feed and compound rest screw are graduated to read into thousandths. The compound rest swivel is graduated to 360 degrees and as will be noticed the tail stock is cut away, allowing same to be swung around to 90 degrees.

Taper gibs are used in both the cross slide as well as compound rest. The carriage is gibbed both front and back. Each machine is furnished with large and small face plate follow rest, steady rest, compound rest, centers, wrenches and double friction countershafts and thread indicator.

Attachments that can be had with this lathe include milling and keyway cutting attachment, taper attachment, patented increase swing attachment, draw-in chuck attachment. Special garage equipment, including lathe tool holders, cutting off tools, boring tool, chucks, lathe dogs, etc., furnished at small additional cost.

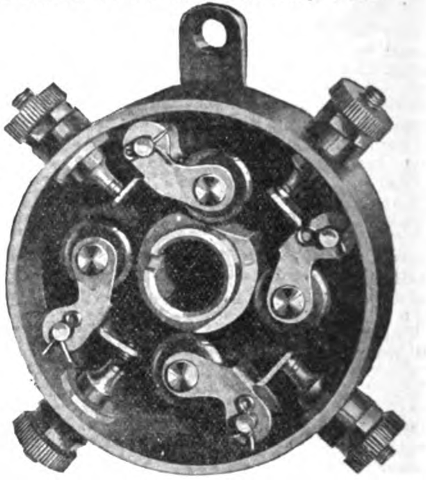
Manufactured by the Carroll & Jamieson Machine Tool Co., Batavia, O., who will supply full details, prices, etc., on request. Special propositions from dealers are also solicited.

The Eveready Standard Lunch Kit offers, in compact, convenient and inexpensive form, a complete automobile and outing lunch set, which is especially constructed with regard to service and durability to please the most discriminating taste. The case is of three-ply veneer basswood and the frame is covered with wear resisting black enamelled cloth. It is 18 inches long, 12½ inches wide and 5½ inches deep; is reinforced with metal corners, has a Corbin spring lock with two strong spring catches and a hand turned leather handle fastened securely with steel loops. It is lined throughout with washable Sanitas fabric. On the inside of the lid of the case are loops, for holding knives, forks and spoons, made of Fabrikoid, firmly sewed to the cover. The partitions of the compartment of the case itself are grooved into the walls. There are special compartments for a quarter size vacuum bottle, lunch box, drinking cups and salt and pepper shakers.

Each kit affords a complete service for six people and contains six nickel plated, steel knives, six solid cast, pure aluminum forks, six solid cast, pure aluminum tea spoons, two solid cast, pure aluminum serving spoons, six white enamelled drinking cups, one pair of aluminum salt and pepper shakers and one lunch box.

Manufactured by the Ben S. Loeb Co., 200 Fifth Avenue, New York City. Price for basswood case (shown in cut), $16.50 complete; black fiber case, $11.50.

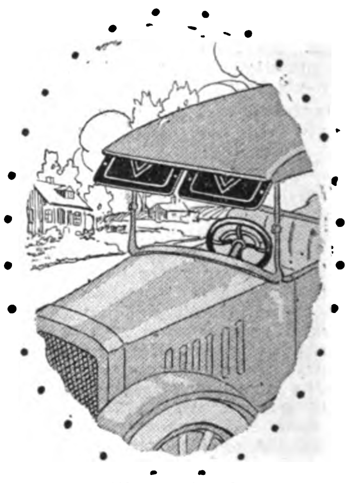
The Fansteel Magneto Break Timer is designed for use on Ford cars, trucks and tractors. It has heavy tungsten points; is of rust-proof construction, as the parts are heavily coppered and the housing is covered with shellac; is designed to obviate oiling, as contact is not made through a rotating part; there are no wipe contacts to wear out the timer and change the timing of the spark as they wear.



The maker guarantees that any difficulty which may arise, due to defective workmanship or material, will be adjusted at his expense.

Manufactured by W. J. Walsh, 528 Monadnock block, 53 West Jackson Boulevard, Chicago, Ill. Price, $5.

The Code Twin Visor is especially designed to protect the car driver from sun and glare, rain and snow and, as will be noted from the illustration, they add an element of ornament to utility. They are made of pressed steel, black enamel finish, with nickel trimmings. They will fit any car, are adjustable to any angle and their installation is very simple. They are absolutely guaranteed not to rattle or buckle. Made only in one size, but are adaptable to any open or closed car.



The maker will supply, free, to dealers, an effective counter display equipment.

Manufactured by the Code Manufacturing Co., Ltd., 1329 West Lake Street, Chicago, Ill. List prices: Double set, $5; single, $2.50 each.

Signa-Lite Safety Signal.

SIGNA-LITE SAFETY SIGNAL.

A safety signal device that is creating considerable interest and enthusiasm wherever exhibited is the Signa-Lite Safety Signal, manufactured by the Auto Safety Signal Co. of 197 State street, Rochester, N. Y.

This device is stated to be practically the first automatic signal to be placed on the market, and is particularly interesting because it works automatically, instinctively and naturally. In other words, the driver of the machine may completely dismiss from his mind the matter of signalling to the car behind. He can forget all about buttons, levers and the usual contraptions of the average safety signal. When he operates the foot brake of his car, this operation automatically flashes the stop sign on the Signa-Lite Signal. The turning of the steering wheel to guide the car left, automatically flashes the left-pointed arrow; for a right turn, the right-pointed arrow.

The Signa-Lite is connected with the car storage batteries and operates also from the magneto. It requires a very small current, yet produces a large voltage. It is illuminated at night and is visible in the daytime without the necessity of lighting.

The simplicity of the operation of this safety signal device commends itself. The signal is a small, compact, neat metal box of black enamel with glass front. It is placed on the rear of the automobile immediately over the number plate, and attached to it.

Special reenforced models for trucks and heavy vehicles are also produced by the Auto Safety Signal Co.

DAYTON DISCWOOD WHEELS, A UNIQUE PRODUCT.

A wood disc wheel for motor vehicles constructed on somewhat unique principles is the Dayton Discwood. These wheels are thin, rotary cut slices of wood glued together under great pressure, the grain of each piece running in a different direction from that of the piece next to it. This process of lamination is stated to make the complete disc into a very strong, non-warpable, but resilient whole, which is guaranteed by the manufacturer against any fault and is backed by over 60 years' experience in wheel building. The veneer is made by a special process and is rigidly inspected through every step of fabrication.

The Dayton Discwood Wheel is stated to combine all the qualities of wood wheels on which vehicle users have learned to rely through many years of service, lightness, strength and economy. Its weight is approximately the same as the regular wood spoke wheel, so it adds nothing to the unsprung weight of the car.

The inflation problem has been eliminated through the use of the patent angle valve connection, thereby enabling the tire to be inflated from the outside face of the wheel. The point of attaching the air line and the construction and mechanism of the wheel itself are indicated in the accompanying illustrations.

In laboratory and road tests the Dayton Discwood is stated to show almost 100 per cent. more resistance to side strains than the spoked wheel. Road shocks are distributed evenly throughout the wheel instead of being localized on the felloe, the action of this shock distribution being stated to be similar to that accomplished by the air in the pneumatic tire.

On account of the method of construction of the Discwood wheel any standard type of steel equipment, rims, felloe bands, hubs, bearings, brake drums assembly or spare tire outfit may be used, so that there is no additional outlay in equipping with Discwood.

Dayton Discwood Wheels are manufactured by the Dayton Automotive Wheel Co., Dayton, O.

STEEL WINGS TRIPLE PURPOSE SPRINGS.

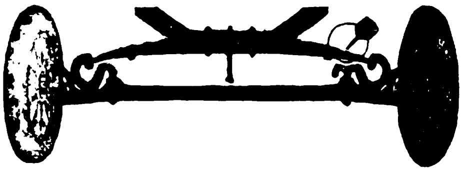
Steel Wings Triple Purpose Springs for Ford fronts are designed to eliminate the necessity for shock absorbers on these cars. The spring contains two more leaves than the Ford front spring and is 10 inches longer. It is made of alloy steel, oil tempered.

This spring may be installed on a Ford without changing the construction—that is, without drilling any holes. It is the work of a few moments only.

The Steel Wings Spring gives additional strength through its boltless center feature, which eliminates liability of breakage at the center bolt. The Steel Wings Spring is locked together with a patented corrugated center lock. The hangers are extra heavy drop forgings.

Additional stability is obtained by the extra long spring which carries the load of the car to the extreme end of the axle, preventing side sway, making steering easier and obviating the necessity for stabilizers.

Steel Wings Springs are equipped with the Stanley self-oiling feature, which not only makes the upkeep easier, but keeps the spring constantly lubricated, thus insuring its perfect resiliency at all times.



Steel Wings Triple-Purpose Springs.

Steel Wings Triple Purpose Springs for Ford fronts are guaranteed for the life of a car.

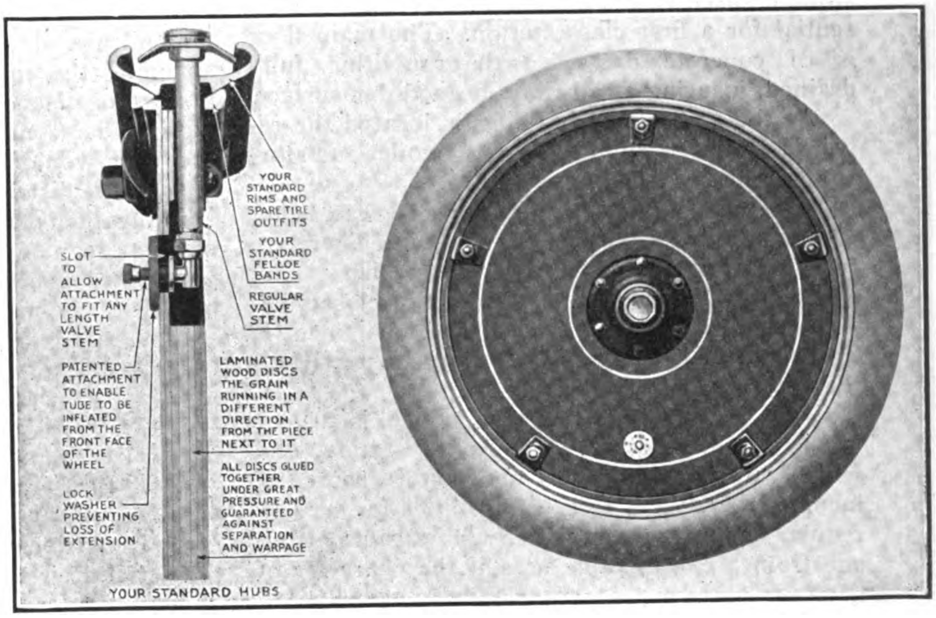
Manufactured and sold by the Steel Wings Co., 417 South Dearborn street, Chicago, Ill.

OLD PLATINUM CONTACTS.

Formerly when platinum was not quite as expensive as it is now, in the screws of old magnetos and contact coils there was often inserted a good size piece of the metal. By using a file carefully it is possible to remove the brass and reclaim the platinum, when it can be soldered upon the end of a new screw.

HEAVY DUTY SCREW DRIVER.

The ordinary screw driver is not adapted to all classes of work. By making a heavy screw driver with the center portion in the form of a heavy square of metal, a socket wrench may be placed on top of the square so that all the leverage necessary may be applied to move the screw.


YOUR STANDARD RIMS AND SPARE TIRE OUTFITS
YOUR STANDARD FELLOE BANDS
REGULAR VALVE STEM
SLOT TO ALLOW ATTACHMENT TO FIT ANY LENGTH VALVE STEM
PATENTED ATTACHMENT TO ENABLE TUBE TO BE INFLATED FROM THE FRONT FACE OF THE WHEEL
LAMINATED WOOD DISCS THE GRAIN RUNNING IN A DIFFERENT DIRECTION FROM THE PIECE NEXT TO IT
ALL DISCS GLUED TOGETHER UNDER GREAT PRESSURE AND GUARANTEED AGAINST SEPARATION AND WARPAGE
LOCK WASHER PREVENTING LOSS OF EXTENSION
YOUR STANDARD HUBS

Dayton Discwood Wheels Constructed on Somewhat Unique Principles.

GENERAL SERVICE STATION

Designed to Meet the Needs of an Average Combination Sales, Storage and Repair Business with Every Necessary Facility.

THE accompanying sketch illustrates a medium sized station, designed to have sufficient space and the convenient arrangements that will meet the demands of the average dealer who is desirous of establishing a suitable home for the sales and general service of one or two cars. It is thoroughly modern and equipped with all conveniences for the efficient handling of repairs of any nature at short notice.

As to the general nature of the structure it is one story high, measuring 50 feet in width by 100 feet in length, fireproof construction with the exception of the roof, which is of the slow burning mill type. If fire laws in certain vicinities call for an absolute fireproof structure a cinder roof may be installed at a slight additional cost.

In the front of the structure is located the office, about 20 by 20 feet, and this is divided by a driveway or entrance from the show room, which is located just opposite the office. The office has an entrance from the street flanked by two windows, as can be seen from plan, while the show room entrance is from the inside, and this has a large light area unbroken except for the mullion bars of the window.

The entrance to the garage proper is through a driveway at the center, having swing type doors, that are 10 feet high. Next is the garage proper, which is designed for the storage of customers' or transient cars, and this is 50 by 60 feet, an area ample to house 15 to 18 cars. This space is lighted and ventilated by three large skylights, as shown on the plan, and these should be of good quality galvanized metal, having wired glass throughout. At the rear and at the left of the storage space is a wash stand, this being an essential for a first class station. The main floor is of concrete dressed with granolithic, fully drained, insuring at all times a good dry surface.

At the rear of the building is located the repair shop and machine shop, and a toilet and storage area have also been provided.

The repair department is 18 by 23 feet, being equipped to handle work of any nature. There are two large work benches as shown, also a sink and plenty of space for installation of closets beneath or above the benches. This department is lighted by a large skylight taking in nearly all the roof area.

Next is the machine shop, which is a very important division of any service station, and which can be made a very satisfactory source of income if equipped with the facilities for serving regular customers, and which will attract patronage from a considerable area if the character of the work is good. If such a department is to be operated it ought to be made as profitable as is possible, and obviously much depends upon the arrangement of the benches and machine tools. There should be no congestion that will retard work and sufficient space to handle any reasonable volume of business that may be offered.

The machine shop shown in the plan is 12 by 18 feet, having room for a lathe or two, power drill, a small shaper and emery wheel, also a forge and anvil. This is lighted by a large skylight as shown covering the entire roof. Access is from main garage directly opposite the entrance to the repair department.

Provision has been made for a toilet and wash room at the rear, this leading off of the repair department. Directly in front of the toilet is a storage closet, where grease, oil, etc., may be kept.

Owing to the general construction being fireproof, only materials that are non-combustible can be used and as these must have a first class fire resistance the following stock is suggested:

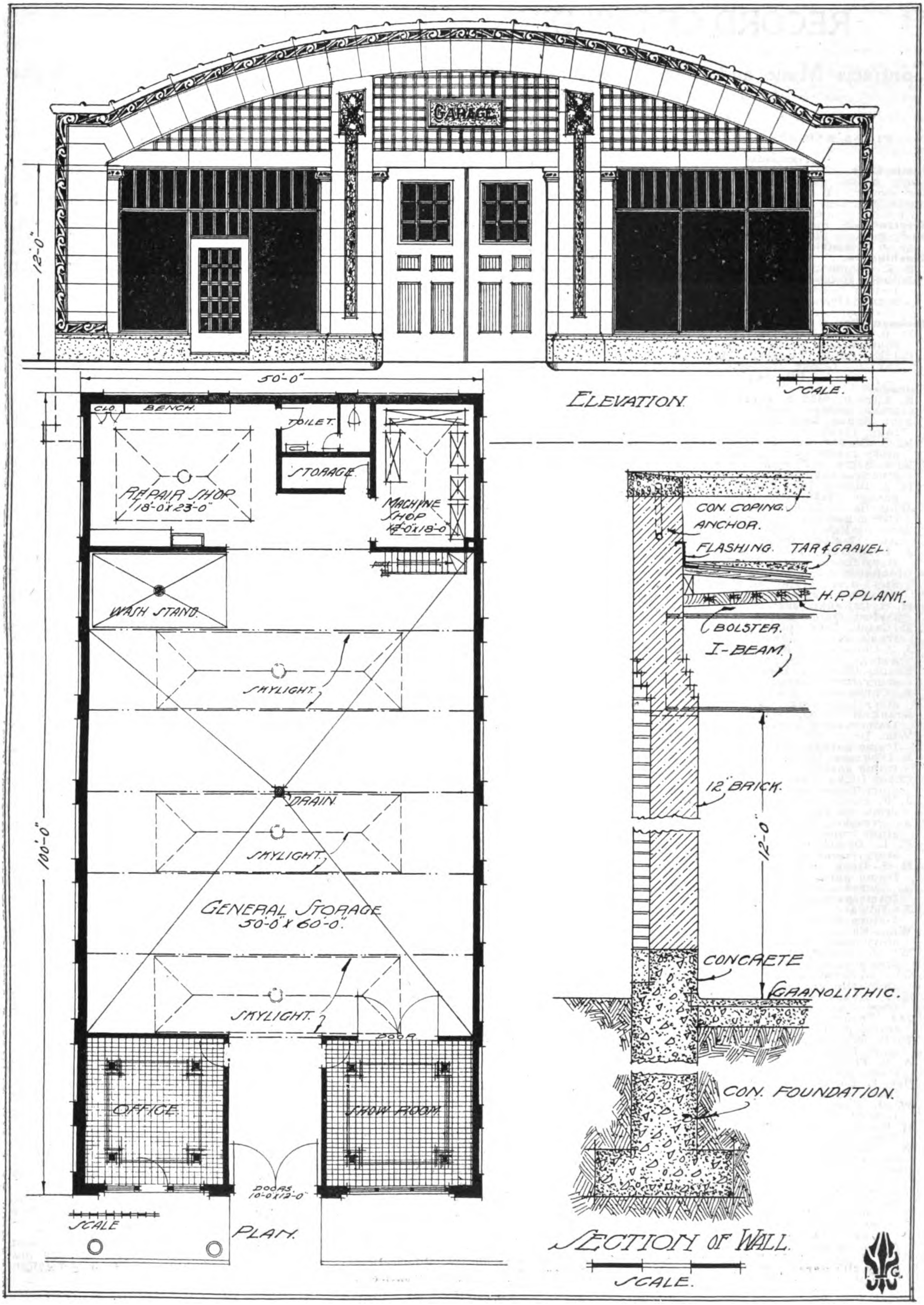
A foundation of concrete, suitable in size to carry all load placed upon it, and a spread footing is suggested to insure against uneven settlement. (See section.) A good mixture for this type of work is a 1:3:5 formula, which gives first class results for mass concrete structure. The size here shown is a 16-inch foundation, with 16-inch piers and a 12-inch wall; the piers and walls are of brick or its equivalent. The front or facade is of terra cotta with ornamental treatment as shown. This can be so tinted that a marked individuality is obtained which will help in the advertisement of one's business.

The roof construction is plank covered with tar and gravel, supported by steel girder beams spanning the entire width. If required by law in certain districts, these beams can be covered with cinder concrete, the same composition that the roof would be composed of under the fire laws in fire districts.

A heating plant can be placed in the compartment at rear of building beneath machine shop, which is reached by a stairway as shown just outside of the machine shop wall.

The approximtae cost of the station, considering average prices for labor and material and where the excavation is all earth, will be from $7000 to $8000, but will differ somewhat according to location, cost of transportation, etc.

Any further information concerning this design can be obtained by addressing the Architectural Department of this publication, specifying the detail desired.


GARAGE
12'-0"
50'-0"
ELEVATION
SCALE
CLO.
BENCH.
TOILET.
STORAGE.
REPAIR SHOP 18'-0"x23'-0"
MACHINE SHOP 12'-0"x18'-0"
WASH STAND.
SKYLIGHT.
DRAIN.
SKYLIGHT.
GENERAL STORAGE 50'-0" x 60'-0"
SKYLIGHT.
DOOR
OFFICE.
SHOW ROOM.
DOORS 10'-0"x12'-0"
100'-0"
SCALE
PLAN.
CON. COPING.
ANCHOR.
FLASHING.
TAR & GRAVEL.
H.P. PLANK.
BOLSTER.
I-BEAM.
12" BRICK.
12'-0"
CONCRETE
GRANOLITHIC.
CON. FOUNDATION.
SECTION OF WALL.
SCALE.

RECORD OF BUILDING OPERATIONS FOR APRIL

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Arkansas.

Little Rock—Gibson Oil Co., Ft. Smith; 1-story filling station, 50x130; warehouse for storage of oil and two 15,000-gallon tanks; $7000.

Connecticut.

Stratford—S. Sherman, 425 State St.; 2-story garage, 22x40; $14,000.

District of Columbia.

Washington:

J. E. Chapman; 1-story garage; $10,000.
Milburn Heister Co., 710 14th St., N. W.; 4-story reinforced concrete public garage; $150,000.

Florida.

Jacksonville:

R. B. Parri; 1-story garage and repair shop; $12,000.
B. E. Collie; 1-story brick garage, 75x125. Lessee, Murwell Motor Co.

Illinois.

Chicago:

S. Altman, 6426 S. Lincoln St.; 1-story frame garage, 18x20.
John Arkus, 5502 May St.; 1-story garage, 12x18.
R. G. Becker. 5100 N. Western Ave.; 1-story frame garage, 13x18.
K. S. Berry, 6128 Kenmore Ave.; 1-story stucco garage, 15x20.
H. A. Bishop, 7638 Paxton Ave.; 1-story garage, 20x20.
John Blair, 5415 Augusta St.; 1-story frame garage.
Samuel Bloom, 1523 S. Central Park Ave.; 1-story frame garage, 16x18.
J. Borgstrom, 1438 Highland Ave.; 1-story frame garage, 12x18.
Brenna & Cummins, 4233 W. Harrison St.; 1-story brick and stone trim public garage, 25x120; $10,000.
H. G. Callahan, 3928 N. Sacramento St.; 1-story frame garage, 16x18.
J. Caton, 7808 Burnham Ave.; 1-story frame garage, 15x20.
J. J. Chapin 6131 Kenwood Ave.; 1-story garage, 15x20.
Frank Charvat, 1243 Kesler Ave.; 1-story frame garage, 16x18.
A. Christensen, 6956 Anthony Ave.; 1-story tile garage, 16x16.
Frank H. Davis, 1361 Hyde Park Blvd.; 1-story brick garage, 30x22.
Wm. Dean, 3327 Carroll Ave.; 1-story frame garage, 16x18.
Z. Dickman, 915 S. Kedzie Ave.; 1-story frame garage.
Chas. Dirks, 4201 S. Artesian Ave.; 1-story frame garage, 12x18.
J. F. Doyle, 5623 Normal Ave.; 1-story brick garage.
A. Dreschel, 7050 S. Elizabeth St.; 1-story frame garage, 10x14.
F. L. Druin, 6610 Claremont Ave.; 1-story frame garage, 15x20.
E. S. Duck, 2702 Harrison St.; 1-story frame garage, 12x16.
A. Durek, 4056 W. 20th St.; 1-story frame garage, 12x18.
J. Edwards, 7152 S. Winchester Ave.; 1-story frame garage, 18x12.
Wm. Ekenberg, 2027 Fletcher St.; 1-story frame garage, 16x18.
W. J. Ernell, 1464 71st Pl.; 1-story frame garage, 12x18.
Geo. J. Ernst, 6548 University Ave.; 1-story tile garage.
S. J. Evans, 417 E. 42nd Pl.; 1-story frame garage.
Jas. Farnur, 5509 Quincy St.; 1-story frame garage, 16x18.
F. P. Farnham, 421 Oakwood Blvd.; 1-story frame garage, 16x18.
A. R. Fisher, 2634 Wilcox Ave.; 1-story frame garage.
Geo. L. Fortier, 4523 Ellis Ave.; 1-story frame garage, 16x18.
W. J. Fugh, 223 N. Leamington Ave.; 1-story frame garage, 16x18.
H. Garbey, 3544 California Ave.; 1-story frame garage, 22x20.
W. Gedulig, 5612 Maryland Ave.; 1-story brick garage.
Henry Gerberding, 1915 N. Park Ave.; 1-story frame garage, 10x16.
Gordes & Whiton, 3613 Archer Ave.; 1-story garage, 15x20.
U. Gustafson, 5221 Wentworth Ave.; 1-story frame garage, 12x18.
B. Haas, 2625 Sheffield Ave.; 1-story frame garage.
E. J. Hanley, 11,958 Princeton Ave.; 1-story tile garage, 22x20.
R. Hansen, 1663 N. Richmond St.; 1-story frame garage, 16x18.
U. S. Haraey, 554 N. Lockwood Ave.; 1-story garage, 10x16.
A. Hermanson, 7518 Sangamon St.; 1-story frame garage, 16x18.
Wm. Higgins, 1637 N. Leclaire Ave.; 1-story brick garage, 18x20.
Frank Hoetzel, 2458 Aubert Ave.; 1-story frame garage, 16x16.
Holton Seelye Co.; 2-story brick garage and service station, 2633 Indiana Ave.; $36,000.
A. Ilher, 7254 Pingree St.; 1-story garage, 12x16.
V. Jacobson, 4117 N. Albany Ave.; 1-story frame garage, 20x14.
Max Jaecker, 506 S. Homan Ave.; 1-story frame garage, 16x18.
C. E. Johnson, 1621 Catalpa Ave.; 1-story frame garage, 16x18.
E. R. Johnson, 2220 N. Kenneth Ave.; 1-story frame garage, 16x18.
L. Jutso, 5432 Carpenter St.; 1-story brick garage, 25x30.
L. Kalzenberger, 6443 S. Morgan St.; 1-story frame garage, 16x18.
T. Kopta, 7805 Drexel Ave.; 1-story frame garage, 10x18.
C. W. Lampe, 155 N. Clark St.; 1-story garage and accessory shop; $30,000.
Edward Larson, 730 N. Spaulding Ave.; 1-story frame garage, 16x18.
Max Lasch, 4505 N. Troy St.; 1-story frame garage, 17x17.
J. V. Liden, 8221 Justine St.; 1-story frame garage, 16x18.
O. E. Lipton, 1008 E. 41st Pl.; 1-story frame garage, 10x16.
Mr. Lukind, care Anthony Charvat, 2621 S. Millard Ave.; 1-story garage; $10,000.
Mrs. S. Lundin, 845 Waveland Ave.; 1-story brick garage, 21x35.
Phil McCarthy, 5446 Monroe St.; 1-story frame garage, 16x18.
Wm. McDonald, 5218 S. Ashland Ave.; 1-story frame garage, 16x18.
J. J. McKenzie, 3330 W. 62nd St.; 1-story frame garage, 12x14.
Patrick Maloney, 4344 Wilcox Ave.; 1-story frame garage, 15x20.
A. R. Martin, 7231 Langley Ave.; 1-story frame garage, 12x17.
J. B. Matthews, 22 W. 112th Pl.; 1-story frame garage, 10x16.
J. Mesch, 3901-03 Addison St.; 1-story brick garage, 16x18.
F. Metevier, 4533 Champlain Ave.; 1-story frame garage, 16x18.
Chas. Modlik, 3422 Belden Ave.; 1-story frame garage, 16x18.
R. B. Moffett, 4542 N. Oakley St.; 1-story frame garage, 16x18.
B. J. Morris, 6459 Glenwood Ave.; 1-story brick garage, 20x22.
G. J. Murray, 177 N. Laporte Ave.; 1-story frame garage, 15x20.
J. Murray, 20 Latrobe Ave.; 1-story brick garage.
Philip O'Brien, 154 N. La Crosse St.; 1-story frame garage, 15x20.
C. F. O'Rourke, 7600 Yates Ave.; 1-story brick garage, 24x20.
H. L. Park, 5720 Woodlawn Ave.; 1-story frame garage, 16x22.
L. Palmer, 1960 Farragut Ave.; 1-story frame garage.
O. H. Peoples, 6538 Rockwell St.; 1-story garage, 10x16.
J. E. Peterson, 1010 N. Lorel Ave.; 1-story frame garage, 16x18.
Jos. Popp, 609 E. 90th St.; 1-story frame garage, 20x14.
E. E. Pressler, 7831 Eberhart; 1-story frame garage, 16x18.
A. Roberts, 4906 Cortez St.; 1-story frame garage, 16x18.
A. Rollah, 1621 W. 38th Pl.; 1-story brick garage, 20x20.
Paul Schaeppi, 4042 Greenview Ave.; 1-story brick garage, 20x20.
C. Schaflein, 6208 Langley Ave.; 1-story brick garage, 25x20.
L. H. Schall, 10411 Ave. L.; 1-story frame garage, 20x20.
J. Scholtes, 5530 Justine Ave.; 1-story frame garage, 12x12.
E. Schultz, 3233 Fullerton Ave.; 1-story frame garage, 16x18.
H. Schwartz, 3559 Medill Ave.; 1-story frame garage.
Jos. Schwartz, 952 N. Monticello Ave.; 1-story frame garage.
I. Sharpe, 607 74th St.; 1-story garage, 12x15.
Dr. V. Sheets, 153 N. Lorel Ave.; 1-story stucco garage.
R. Shopp, 3054 Roosevelt Rd.; 1-story brick garage.
Walter Sievek, 3556 S. Paulina St.; 1-story brick garage, 24x26.
Wm. Smith, 28 S. Hoyne Ave.; 1-story frame garage, 16x10.
C. H. Snell, 6656 Diversey Ave.; 1-story frame garage, 15x20.
C. Swanson, 4914 Winchester Ave.; 1-story brick garage.
Chas. Thompson, 3423 Lyndale Ave.; 1-story frame garage, 16x16.
Geo. Thoresen, 2433 N. Lawndale Ave.; 1-story frame garage, 16x18.
M. Uhlman, 1130 N. Mozart St.; 1-story garage, 16x18.
J. Vanderhoop, 10650 Ewing Ave.; 1-story garage, 20x20.
J. S. Vogt, 10002 Parnell Ave.; 1-story concrete garage, 20x20.
H. Voelkner, 2762 St. Mary's Ct.; 1-story frame garage, 10x20.
W. W. Walkey, 431 S. Oakley Block; 1-story frame garage, 12x18.
J. Weber, 1362 Holt Ave.; 1-story garage, 18x20.
Geo. F. Weiland, 6153 Kimbark Ave.; 1-station, 98x130; 6850-59 Parnell Ave.; story brick pubic garage and service $50,000.
Theo. Waller, 2131 Broadley Pl.; 1-story frame garage, 18x20.

Indiana.

Ft. Wayne:

Alvin Ried, 2611 Bowser Ave.; 1-story cement block garage and service station; $8000.
Vetter Bros.; 2030 Broadway; 1-story garage and service station.

Iowa.

Cedar Rapids—Pusateri Bros., 1446 First Ave.; 1-story brick and hollow tile garage, 40x80; $10,000.

Waverly—Clark & Burns; 1-story brick garage, 88x132; $30,000.

Kansas.

Dodge City—Producers' Consolidated Oil Co.; 1-story brick and stucco filling station, 22x26; $10,000.

Eldorado—J. W. McClure; 1-story brick garage, 88x147.

Garden City—Producers' Consolidated Oil Co.; 1-story brick and stucco filling station, 22x27; $10,000.

Osage City—Producers' Consolidated Oil Co., 702 Scaritt Bldg.; Kansas City, Mo.; 1-story brick and stucco filling station, 22x26; $10,000.

St. Marys—Producers' Consolidated Oil Co.; 1-story brick and stucco filling station, 22x26; $10,000.

Louisiana.

New Orleans—Standard Motor Accessories & Garage Corp.; two 9-story garages and service stations.

Maryland.

Baltimore:

E. A. Holofoner, care Standard Garage, 418 High St.; 2-story brick garage, 71x100, 418-24 East St.; $20,000.
James Keelty, 1123 Poplar Grove St.; 1-story garage; $8800.
C. P. Manning, Center and Park Aves.; 1-story brick garage, 20x60; 615 St. Paul St.; $6000.
Thomas Mullan, 3945 Greenmount Ave.; 1-story brick garage, 28 compartments; $6000.
John Sause, 800 S. Ellwood Ave.; 1-story brick garages; one 17x142 and two 34x142; 80 compartments; $15,000.
Southern Holding Co.; 1-story concrete garage, 120x64; 24 compartments; $6000.
Waldorf Developments Co.; 1-story garage; $15,000.

Ellicott City—Elicott City Garage; 1-story brick garage, Main St.; $25,000.

Frederick—Star Motor Co., 13 Court St.; 1 and 2-story brick garage, 90x300. $30,000.

Salisbury—Lloyd A. Richardson Motor Co.; 3-story service station and repair shop. 30x105.

Detroit:

Detroit Motor Bus Co., 1701 Dime Bank Bldg.; 1-story brick garage and machine shop, Connors Creek and Jefferson Ave.

E. Walton, 1152 Lawrence Ave.; 1-story brick public garage, 26x51, Harper and Beaubien Sts.; $12,000.

F. J. Whiteney, care Lane, Davenport & Peterson, 2320 Dime Bank Bldg.; 2-story garage and sales station, Canfield Ave.; 100x190.

Grand Rapids:

P. M. Hutchins, care Robinson & Campau, Michigan Trust Bldg.; 4-story garage and repair shop; $200,000.

D. D. Stegman, 669 Stocking St., N. W.; 1-story brick and cement block garage 60x120, 669 Stocking St.; $20,000.

Vickers & Jackson, 627 Michigan Trust Bldg.; 2 or 3-story concrete garage and show room, 52x100; $40,000.

Jackson—Buick Sales Co.; 1-story brick and tile garage and salesroom, 40x190; $20,000.

Minnesota.

Appleton—Bartlesscott Oil Co., Willmar Minn.; 1½-story brick and stucco filling station; $10,000.

Benson—Bartlesscott Oil Co.; 1½-story brick and stucco filling station; $10,000.

Faribault—Kummer Mutual Auto Co.; 1-story brick public garage, 50x100.

Minneapolis—Kremer Motor Car Co., 1518 Hennepin Ave.; 1-story garage and service station.

Missouri.

Kansas City—D. L. Piggot, 12th St. and Prospect Ave.; 1-story garage and repair shop.

Marshall—Mrs. Minnie Barnett; 1-story brick and stone trim garage, 16x22.

St. Joseph—J. R. Hipkins, 4th and Francis Sts.; 1-story brick garage, 5x140; $10,000.

St. Louis:

Frank Obear & Son Realty Co.; 1-story garage and service station; Delmar Blvd. and Lake Ave.

Vesper-Buick Co., 3550 Lindell Ave.; 1-story brick and reinforced concrete sales room, garage and repair shop, 100x120, Vanderventer and Pine Sts.; $75,000.

New Jersey.

Belleville—S. M. Saxe, 203 Dayton Ave., Passaic, N. J.; 1-story garage, 44x100.

Clifton—Morris Liefowitz, 265 Madison St; 1-story concrete garage, 664 Main Ave.; $30,000.

Haddonfield—Jos. F. Wallworth, care Benj. H. Lackey, 509 Federal St., Camden, N. J.; 1-story garage and service station; $30,000.

Montclair:

Frank Schait & Son, 197 Bellevue Ave.; 1-story cement block garage, 22x100; $8000.

Frank E. Clayton, 20 Spring St.; 1-story concrete block public garage, 47x65, rear 20 Spring St.; $10,000.

Newark:

John Ebersberger, 188 Wilson Ave.; 1-story garage and repair shop, Passaic Ave., near Blanchard St.; $30,000.

Hayman Rachlin, 797 S. 12th St.; 1-story brick and cement block public garage, 50x100, 696-4 S. 11th St.; $3000.

Jos. Weisberger, 96 Hunterdon St.; 1-story brick garage, 100x125, 146-52 Belleville Ave.; $15,000.

New York.

Albany—H. M. Pollock, 476 Manning Blvd.; 1-story concrete block garage, 60x150, 447 Manning Blvd.; $3000.

Brooklyn:

E. Lieberman, 758 Ocean Ave.; 1-story brick garage, 150x70 $75,000.

Linef Realty Corp., 271 E. 2nd St.; 1-story brick garage, 100x95, N. E. corner Norman Ave. and N. Henry St.; $25,000.

Max Rich, 753 Throap Ave.; 1-story brick and concrete garage, 100x202, 1812-18 1st Ave.; $65,000.

Shale & Bogatus, 103 Park Ave.; 1-story brick garage, 500x80; $12,000.

Shamrock Towing Co., 667 W. 50th St.; 2-story brick garage, 35x100, 661-65 W. 50th St.; $75,000.

Jameston—Frank D. Duell and Merle Shearman, 12 Martin St.; 2-story public garage, 60x114, 4th and Lafayette Sts.; $50,000.

Kingston—John Van Kleek, care Myron S. Feller, Union Trust Bldg.; 1-story brick public garage, 35x120, 10 N. Front St.; $15.000.

Malone—Hogul Motor Sales Co.; 2-story concrete garage, 58x120; E. Main St.; $50,000.

New York City:

Mary Blossom, 36 W. 57th St.; 1-story garage, 100x114; N. E. corner Tinton Ave. and 151st St.; $65,000.

John Brown, 614 W. 146th St.; 2-story garage, 151x153; 47-53 Jumel Pl.

Jeremiah Buckley, 2233 Croston Ave.; 1-story public garage, 50x122; $25,000.

S. Calabro Bldg. Co., 825 Burke Ave.; 1-story brick public garage, 90x119; $30,000.

Richard F. Carman, care Thos. J. Brady, 31 Nassau St.; 1-story brick garage, 124x89, 632-40 W. 153rd St.; $50,000.

Samuel Garry, 523 W. 187th St.; 1-story garage and repair shop; $50,000.

Hugh Getty, 359 W. 26th St.; 1-story public garage, 100x98, 526-32 W. 29th St.; $20,000. Lessee, Henry E. Goldin, 1140 St. Johns Pl., Brooklyn.

Albert J. Goodwin, 332 E. 35th St.; 2-story brick public garage, 75x100, 322-36 E. 35th St.; $60,000.

Robert Hartshorne and Julia H. Trask, care H. Smith, 63 Wall St.; 2-story brick garage, 175x98, 550-52 W. 25th St.; $125,000. Lessees, John Lang and Harry Goodwin.

Estate John M. Jones, 226 Halsey St.; 1-story garage and repair shop; 160 Jumel Pl.; $50,000.

Irving Margon, 355 E. 149th St.; 1-story brick and stone trim public garage, 100x100, S. W. corner Whitlock Ave. and Barretta St.; $90,000.

I. F. Realty & Improvement Co., Inc., 608 E. 137th St.; 1-story brick public garage, 100x99, 431-39 W. 209th St.; $20,000.

Nathan & Wolfe, 1587 Bathgate Ave.; 1-story brick public garage, 90x96; $15,000.

City of New York, Dept. Plant and Structure, 321-25 Delaney St.; 1-story concrete garage, 196x95, 35-44 Goreck St. and 35-43 Mangin St.; $75,000.

Ida L. Phillips, North Castle, N. Y.; 1-story public garage, 85x300; $75,000.

Anton Pirner, 2069 Westchester Ave.; 1-story brick public garage, 100x100; $30,000.

Frank Ranaldi, 167 E. 121st St.; 1-story brick public garage, 115x108, 141st St. and Southern Blvd.; $40,000.

Scharlin Bros., 238 E. 20th St.; 4-story concrete garage, 52x98, 148-50 E. 24th St.; $100,000.

N. Swignia & Sons, 2122 1st Ave.; 1-story brick garage, 100x25, N. E. corner 109th St. and 1st Ave.; $10,000.

Bertram M. Smith, 2527 Hughes Ave.; 1-story public garage, 69x100; N. E. corner Ditmars St. and City Island Ave.; $25.000.

Speedway Garage, 168-70 Dykman St.; 2-story brick public garage, 50x200, 168-70 Dykman St.; $35,000.

233 Spring St. Holding Co., Inc., 141 Marcy Pl.; 2-story garage, 114x150, 233-45 Spring St.; $80,000.

Woodruff Construction Co., 700 Trinity Ave.; 1-story garage and accessory shop; $50.000.

Watertown—T. N. C. Motor Sales Co.; 1-story hollow tile and terra cotta trim sales room and service garage, 72x138.

Ohio.

Cleveland:

Jacob Babin, 807 Superior Ave.; 1 and 2-story brick commercial garage, 90x135 Hough Ave. and E. 55th St.; $40,000.

I. Feigenbaum, 704 Ulmer Bldg.; 2-story garage and sales room, 5124 Prospect Ave.; $150,000.

M. Goldstein, 2562 E. 40th St.; 1-story cement block garage, 50x60, 2562 E. 40th St.; $10,000.

H. Morris, 603 Republic Bldg.; 1-story brick garage, 50x60, 1814 E. 63rd St.; $15,000.

New Center Garage Co., 15,250 St. Clair Ave.; 1-story brick and terra cotta trim commercial garage, 60x160, 16,250 St. Clair Ave.; $35.000.

M. Weinberg, 7807 Cedar Ave.; 1-story brick commercial garage, 50x60; $18,000.

Columbus—Miller & Reeves, 20 S. 3rd St.; 2-story brick and stone trim garage and service station, 60x90, 5th and Broad Sts.

Lima—S. S. Coons; 1-story garage and repair shop, Spring and Union Sts.; $30,000.

Middletown—D. L. Snider; 1-story concrete garage, 2nd and Main Sts.; $45,000.

Portsmouth—Universal Motor Co.; 2-story brick commercial garage, 125x150, 7th and Gay Sts.

Spring Valley—Henry T. Walton; 1-story brick public garage, 30x100; $20,000.

Toledo—Frank G. Crane; 1-story garage and repair shop, 13th and Jackson Sts.; $45.000.

Clara R. Dicks, care Sidney Aftel, 948 Ohio Bldg.; 1-story garage and sales room, 20th and Madison Sts.; $30,000.

Landman Griffith Co., 1402 Madison Ave.; 2-story brick sales room and service station, 100x130, Adams and Warren Sts.; $150 000.

Warren—D. E. Miller; 2-story brick and stone commercial garage, 80x120.

Oklahoma.

Pawhuska—Soderstrom Bros.; 1-story brick and stone garage, 54x108.

Pennsylvania.

Allentown—Queen City Motor Co., care Jos. Mirth, Front and Tilghma Sts.; 3-story brick and concrete public garage, 61x230, 730-36 Linden St.; $200,000.

Beaver Falls—J. F. McCreary & Son; 3-story brick commercial garage, 7th Ave. and 17th St.

Coatesville—Ralph Gruber; 2-story public garage, 40x136.

Hanover—F. W. Weber, care Hanover Cordau Co.; 1-story brick garage, 26x46; $8000.

Harrisburg—Eureka Coal Wagon Works; 1-story brick public garage, 60x60, 618 North St.; $15,000.

Hazleton—Tunnessen Mfg. Co., McKinley and 7th Sts.; 1-story brick and concrete public garage, 48x172; $50,000.

Kingston—Turon P. O. Bldg., Pittston; 1-story brick garage and show room, 46x120; $16,000.

Lancaster—Wm. and Sam. Kaihler, 536 Penn St.; 1-story community garage, 27x150, 618 Lime St.; $6500.

Pittsburgh—H. D. Shawkey Motor Co., 5925 Baum Blvd.; 2-story service station and repair shop, Penn and Stratford Aves.; $80,000.

South Dakota.

Sioux Falls—J. G. Sharp; 1-story garage and repair shop; $2500.

Texas.

Ft. Worth—S. C. Cunningham, 709 N. Main St.; 2-story garage; $15,000.

Taft—Herbert S. Green; 1-story tile and stucco garage and oil station, 50x100.

West Virginia.

Weston—G. I. Keever; 2-story brick commercial garage, 103x115; $15,000.

Wheeling—West Virginia Motor Sales Co., 930 Market St.; 1-story machine and repair shop.

Wisconsin.

Baraboo—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Blanchardsville—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Bloomer—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Canoe—United Consumers' Corp.; 1-story concrete filling station, 12x20; $5000.

Cedarburg—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Donges Bay—Geo. Zagel & Bros., 144 Oneida St., Milwaukee; 1-story brick public garage, 50x40; $6000.

Granton—J. F. Finnigan; 1-story brick and hollow tile garage, 50x65; $10,000.

Green Bay—Standard Oil Co., Waldheum Bldg., Milwaukee; 1-story concrete garage, 60x120.

Janesville—J. H. Cullen, 425 E. Milwaukee St.; 1-story brick and tile garage, 26x40; $10,000.

Kewanee—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Madison:

H. Hites, care Edward Tough, 24 E. Mifflin St.; 3-story brick public garage, 66x102; $60,000.

Saunders Motor Car Co., 434 W. Gilman Ave.; 2 or 3-story brick and reinforced concrete garage, 60x120; $50,000.

Milwaukee—Jacob Luff, 1502 North Ave.; 1-story garage and accessory shop; 11th and Walnut Sts.; $25,000.

New London—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Oconto—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Portage—United Consumers' Corp.; 1-story concrete filling station, 12x20; $5000.

Princeton—United Consumers Corp.; 1-story concrete filling station, 14x20; $6000.

Rice Lake—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Sawyer—United Consumers' Corp.; 315 Peerless Bldg., Milwaukee; 1-story filling station, 14x20; $6000.

Shawano—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Tomah—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Two Rivers—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Waupaca—United Consumers' Corp.; 1-story concrete filling station, 14x20; $6000.

Wauwatosa—A. W. Hardt, 47th and State Sts.; 1-story concrete block garage and repair shop, 45x60; $10,000.

CONTRACTS AWARDED.

Connecticut.

Bridgeport—March Bros Co., 50 Buckingham St.; 1-story garage, 75x85, 10 Tranistan Pl., for Geo. 2. McCarthy, 581 Fairfield Ave.; $20,000.

Hartford—N. Cowo, 18 Harrison Pl.; 1-story garage, 54x77, rear 31 Park St., for N. J. Champ, 93 Main St.; $10.000.

District of Columbia.

Washington—Washington Auto Co.; 1-story addition, 40x160, at 1319 L St., N. W.; $35,000.

Illinois.

Chicago:

A. Augustin, 20,271 Kedvale Ave.; 1-story frame garage, 16x18.

Max Aurie, 2537 Montrose Ave.; 1-story frame garage, 16x18.

Wm. Bender, 5400 Thomas St.; 1-story frame garage, 22x30.

B. Benson, 4325 N. Sawyer Ave.; 1-story frame garage, 20x21.

W. D. Best, 4221 N. Kedvale Ave.; 1-story frame garage, 16x18.

H. Bishop, 1624 Kenilworth Ave.; 1-story frame garage, 16x18.

Wm. Blohm, 1945 Farragut Ave.; 1-story frame garage, 18x20.

O. C. Brown, 6029 Talman Ave.; 1-story frame garage, 15x20.

J. Callson, 556 N. Laveigne Ave.; 1-story frame garage.

A. E. Cameron, 1146 N. Central Ave.; 1-story frame garage, 16x18.

Louis Conn, 2416 N. Springfield Ave.; 1-story frame garage, 16x18.

Chas. H. Crews, 432 N. Central Ave.; 1-story frame garage, 18x12.

Chas. A. Day, 1215 Fletcher St.; 1-story brick garage, 16x32.

H. F. Du Pont, care Eliott S. Rice, 159 N. State St.; 1-story brick and concrete garage, capacity 8 cars, 22nd W. of Union Ave.

Wm. Elliott, 4139 Henderson St.; 1-story garage, 14x18.

Frank Fialkowski, 3621 George St.; 1-story frame garage, 14x16.

Mrs. Flomerfelt, 4908 Ohio St.; 1-story frame garage, 10x16.

S. Frank, 7539 Perry Ave.; 1-story frame garage.

Wm. Georges, 6307 Central Ave.; 1-story frame garage, 15x17.

O. E. Goldsworthy, 5261 Gladys Ave.; 1-story frame garage, 16x18.

N. Grossman, 1759 W. 13th St.; rear addition, 42x68, to public garage, S. W. corner Roosevelt Rd. and Komensky Ave.; $20,000.

L. Gyure, 9355 S. Park Ave.; 1-story frame garage, 15x17.

Hanson Bros. Co., 127 N. Dearborn St.; 1-story public garage, 48x150, 3265-67 Fulton St., for N. Johnson, 2324 N. Sawyer Ave.; $20,000.

Wm. Hart, 2626 Union Ave.; 1-story frame garage, 16x18.

Aug. Henrich, 6720 Dakin St.; 1-story frame garage.

M. H. Herman, 3505 Lemoyne Ave.; 1-story frame garage, 15x20.

A. L. Himelblay, 179 W. Washington St.; 1-story brick and stone trim garage, 100x125; $75,000.

K. H. Himricks, 2074 Greenleaf Ave.; 1-story frame garage, 16x18.

L. F. Hollis, 4060 Warwick Ave.; 1-story frame garage, 16x18.

J. P. Karl, 354 W. 116th St.; 1-story frame garage, 17x17.

F. Klausch Co., 622 Belden Ave.; 1-story brick garage, 18x27.

B. Koeneu, 2343 N. Talman Ave.; 1-story frame garage, 12x15.

B. Kout, 3831 Van Buren St.; 1-story frame garage, 20x12.

J. W. Kroll, 2210 Cortez St.; 1-story frame garage, 18x14.

John R. Leonard, 2949 Milwaukee Ave.; 1-story garage and accessory shop, 14x100, 2974 Milwaukee Ave.; $7000.

E. J. Maass, 2721 N. Clark St.; 1-story frame garage, 10x16.

M. Marten Koveck, 4725 Western Blvd.; 1-story frame garage, 18x18.

Oscar Mayer & Co., 1241 Sedgwick St.; 1-story brick garage, 110x73; Goethe and Sheffield Sts.; $40,000.

Herman Meyer, 3151 Schubert Ave.; 1-story garage, 17x40.

F. H. Meyers, 2132 Summerdale Ave.; 1-story frame garage, 12x18.

M. Heinert, 4822 Paulina St.; 1-story frame garage, 16x18.

J. Miller, 4207 Greenview Ave.; 1-story frame garage, 16x18.

N. B. Miller, 2616 N. Ballou St.; 1-story garage, 18x20.

J. J. Murphy & Son, 6652 Minerva Ave.; 1-story public garage, 100x160, 1747 E. 71st St., for J. F. O'Brien & Co., 235 E. 61st St.; $40,000.

H. Nelson, 3015 Sheffield Ave.; 1-story frame garage, 16x18.

Chas. Newgreen, 7730 Constance Ave.; 1-story frame garage, 16x18.

J. J. Novy, 2434 S. Ridgeway Ave.; 1-story sales room and repair shop; $40,000.

F. Von N. Nyss, 854 Oakdale Ave.; 1-story frame garage, 16x18.

W. J. Rinehart, 4807 Paulina St.; 1-story frame garage, 16x16.

A. Roggenbuck, 4034 N. Western Ave.; 1-story frame garage, 16x18.

P. S. Rosengren, 3114 N. Clifton Ave.; 1-story frame garage, 15x20.

C. Schleyer, 7816 S. Morgan St.; 1-story brick garage, 22x22.

Henry Schrick Co., 6121 S. Sangamon St.; 1-story frame garage, 16x18.

S. E. Seaton, 7123 Merrill Ave.; 1-story brick garage, 19x10.

J. Sensor, 7874 St. Lawrence Ave.; 1-story frame garage, 12x18.

C. Stevens, 6927 Oberdeen St.; 1-story frame garage, 16x12.

Walter Thompson, 1345 N. Keller Ave.; 1-story public garage, 78x125, 3813 W. Grand Ave., for Leonard Thompson, 3813 W. Grand Ave.; $30,000.

J. Wartman, 5153 N. St. Louis Ave.; 1-story frame garage, 12x18.

G. E. Watson, 6249 Winthrop Ave.; 1-story brick garage, 20x24.

W. H. Watson, 6100 Bishop St.; 1-story frame garage, 16x10.

R. Weber, 2540 Moffatt St.; 1-story brick garage, 22x12.

F. A. Wells, 1214 Glenlake Ave.; 1-story brick garage, 30x20.

E. W. Wendt, 2039 Kenilworth Ave.; 1-story brick garage, 14x18.

F. O. Whiting, 1713 E. 83rd St.; 1-story frame garage, 16x18.

Ed Williams, 7406 S. Green St.; 1-story frame garage, 16x18.

Irving Wilson, 3420 Lexington St.; 1-story frame garage, 15x20.

L. Zwart, 10721 Wabash Ave.; 1-story frame garage, 18x12.

Lucas J. Zwiers, 8016 S. Loomis St.; 1-story public garage, 50x125, 1250-52 W. 59th St., for A. H. Lindvall & Co., 1246 W. 59th St.; $40,000.

E. Moline—E. Moline Auto Supply Co.; 1-story garage and repair shop, 15th Ave. and 11th St.; $16,000.

Maywood—Chas. Peckat; 2-story public garage, 49x82; $12,000.

Murphysboro—J. A. Barth; 1-story side addition, 52x80, to public garage; $20,000.

Indiana.

Indianapolis—O. T. Draper, 2925 E. 17th St.; 2-story public garage, 22x72, 1201 Cornell St., for Kueg Koffe Co., 1201 Cornell St.; $5500.

Larwill—Rich. Mathias; addition for garage and service station.

Iowa.

Davenport—Chas. Schick; remodel garage and accessory shop, 518-20 Harrison St.; $10,000.

Kansas.

Rosedale—L. Breitag & Son Const. Co., 3701 W. Prospect Pl., Kansas City, Mo.; 2-story garage, 50x112; S. W. Blvd. and Hill St., for E. R. Slater Motor Co., 1912 McGee St., Kansas City, Mo.; $40,000.

Maryland.

Baltimore:

Chesapeake & Potomac Telephone Co., 118 E. Lexington St.; convert building, 100x110, for garage; install machine shop; $10,000.

Hicks, Tase & Norris, 106 W. Madison St.; 1-story brick garage and blacksmith shop, 100x10x30 and 57.3x30; $11,000.

Massachusetts.

Indian Orchard—King & Stebbins, 40 Washington St.; 1-story public garage, 51x66, for Elzear J. Laperle, 169 Worcester St.; $10,000.

Pittsfield—E. F. Roscoe, 5 Rostone Pl.; 1-story sales room and service station, 45x76; $50,000.

Springfield—King & Stebbins, 46 Washington St.; 1-story garage, 50x66, for E. J. Baperle, 130 Worcester St.; $10,000.

Michigan.

Battle Creek—C. B. Judd, 1040 La Fayette, N. E.; remodel 3-story garage and storage station, 53 Division, N. W.

Detroit—J. C. Ward, 5166 14th St.; 1-story garage, 30x150, for Kessler & Sons, 462 Dix Ave.; $10,000.

Grand Rapids—Vander Veen Construction Co.; 2-story garage, 25x94, for S. Wessellius, 253 Houseman Bldg.; $10,000.

Missouri.

Kansas City:

E. J. Kennaley, 3412 Washington Ave.; 2-story garage 26x52, for C. A. Kelly, 2916 E. 40th St.

Frederick Tevelbaugh, 121 N. Topping Ave.; 1-story garage, 50x110, for H. E. Barker, 301 E. 15th St.

Marshall—Mrs. Minnie Barnett; 1-story garage, 16x22.

St. Louis:

Arthur T. Morey, 5565 Bartner Ave.; 1-story garage, 100x140 and 50x80, Delmar and Lake Sts.; $75,000.

Vesper-Buick Auto Co., 3550 Lindell Ave.; 1-story sales room, garage and repair shop, 100x120, Vandeventer and Pine Sts.; $75,000.

New Jersey.

Atlantic City:

Chas. Henkleman, care I. R. Barber Guarantee Trust Bldg.; addition, 43x65, for garage and sales room, 2205 Pacific Ave.; $20,000.

Maryland Garage, care Bertram Ireland, Guarantee Trust Bldg.; addition, 50x175, to public garage, 21 N. Maryland Ave.; $25,000.

Canton—New Jersey Cement Products & Construction Co., Hilltop, N. J.; 2-story public garage, 60x100.

Chelsea—H. G. Scull, Guarantee Trust Bldg., Atlantic City; 2-story sales room, 50x95, for Frank Chambers Auto Accessories Shop, 2722 Atlantic Ave., Atlantic City; $35,000.

Elizabeth—H. Williams & Co., Inc., 803 E. Jersey St.; 3-story garage, 40x80, for J. W. K. Boehn, 1085 Magnolia Ave.; $50,000.

Irvington—Wm. H. A. Weber, 140 Ellis Ave.; front addition, 50x61, to commercial garage, Ellis Ave.; $7000.

Jersey City:

Frank Crahay, 2572 Blvd.; top addition to 1-story brick garage, S. E. corner Graham St. and Blvd.; $10,000.

Delia contracting Co., 574 Newark Ave.; 1-story garage, 25x100, 221 Mercer St., for P. Anabile, 244 Waune St.; $9000.

Oakland Sales Corp.; 1 or 2-story addition, 30x80, for sales room, 81-83 Bergen Ave.; $50,000.

Ocean City—Eugene Lever, 229 N. 59th St., Philadelphia; 1-story public garage, 92x120, 9th and Ocean Ave., for John F. Sweeney, 5929 Chestnut St., Philadelphia.

New York.

Brooklyn—Caye Construction Co., 356 Fulton St.; 1-story garage, 100x105, 9th St. and 2nd Ave., for Thos. Roulston, 100 9th St.

Buffalo:

Geo. Butler Co., Inc.; 1-story sales room and service station, 40x100, Triangle and Alamo Sts., for Buffalo Nash Co., 1525 Genesee St.; $15,000.

Geo. Halbicht, 218 Guilford St.; 1-story service station, 20x104, 25 W. Tupper St., for H. Adler, 1000 Broadway. Lessee, Ray Service Corp.

Elmira—M. Langson, 263 Baldwin St.; convert 3-story residence, 265 Baldwin St., into electric garage.

New York City:

John J. Conway, 557 W. 169th St., enlarge garage, 1453 Plimpton Ave.

Schalrin Bros., 238 E. 20th St.; 4-story concrete garage, 52x98, 149-50 E. 24th St.; $100,000.

Frank Trocchis; alterations to public garage, 276-80 E. 148th St.; $8000.

North Carolina.

Charlotte—Republic Truck Co.; 1-story factory, 87x93; $60,000.

Ohio.

Cincinnati—Leo Nook, 1535 Central Ave.; 1-story addition, 50x149, to public garage, 1422 John St.; $20,000.

Middletown—I. D. Mohler, 14 Lexington Ave.; 1-story garage, 125x40, for J. Edwards, 202 S. Diamond St.; $25,000.

Toledo—H. J. Spieker Co., Elm and Utica Sts.; 2-story sales room and service station, 100x130, Adams and Warren Sts., for Landman Griffith Co., 1402 Madison Ave.; $150,000.

Pennsylvania.

Brookville—L. A. Leather; 1-story brick addition to garage, 100x100; $12,000.

Jenkintown—F. W Carman, 413 West St.; 1-story public garage, 70x132, for Earl Emmerick & Co.

Lancaster:

Ranks Garage; 1-story side addition to public garage, 40x100, E. King and Shippen Sts.

Walter C. Zook, 24 S. West End Ave.; 2-story public garage and machine shop, 52x86, 36 W. Chestnut St., for Batdorf Sales & Service Co.

Newton—John La Rue, Wrightstown, N. J.; 2-story garage and service station, 80x80, for Bond Bros., 201 S. South St.; $50,000.

Philadelphia:

B. Abramovitz, 1-story garage, 16x40, 1145 Kater St.; $500.

W. F. Andrews; 1-story garage, 14x20, 2043 Rodman St.; $600.

Frank J. Arndt; 1-story garage, 13.6x13.6x18x25; $350.

F. C. Batwright; 1-story garage, 21.6x24, 2003 N. Carlisle St.; $1000.

G. S. Byrne; 1-story garage, 50x60, 6327 Musgrave St.; $3500.

Chas. R. Colgan; 1-story garage, 12x16, 2101 S. 60th St.; $600.

J. P. Collins; 1-story garage, 8x16.4, N. W. corner Pine and Frazier Sts.; $750.

Martin F. Connor; 1-story garage, 96.6x631; $2500.

M. Cutter; 1-story garage, 10x18, 1301 N. 7th St.; $700.

Lewis Dietrich; 1-story garage, 19.6x24; $1800.

Louis Di Giacomo; 1-story garage, 18x55, rear 3343 Frankford Ave.; $2000.

M. V. Dieks; 1-story garage, 12x20, 1140 Foulkrod St.; $600.

I. A. Dunkelberger; 1-story garage, 17x20.2, 162 W. School Lane; $1500.

Charles Dunmore; 1-story garage, 12.6x20, 5722 Appletree St.; $400.

M. Duva; 1-story garage, 14x16, rear 3829-31 Manayunk Ave.; $600.

John P. Fallon; 1-story garage, 41x18.6, rear 6109 Noble St.; $1000.

J. D. Fisher; 1-story garage, 8.6x61, 4729 Ludlow St.; $3000. Also 1-story garage, 57x114.6, 4716-14 Market St.; $8000.

W. M. Franklin; 1-story garage, 15x16, 4804 Chester Ave.; $400.

Erwin A. Fricke; 1-story garage, 19x20, with wing 15x77, 3427 N. 16th St.; $3200.

Meyer Goldberg; 1-story garage, 12.5x16.1, 5453 Master St.; $1000.

Geo. T. Gravenstone; 1-story garage, 36x98, South Side Ray St., E. Germantown Ave.; $4000.

M. Gussman; 1-story garage, 20x9, 4120 Parkside Ave.; $500.

John P. Harberle; 1-story garage, 9x16, 1840 S. Vogdes St.; $1000.

Sam. Harting & Son; 1-story garage, 29.6x53.6; $7500.

Geo. E. Hawk; 1-story garage, 17.8x15.6, 4051 Baring St.; $955.

Frederick G. Hoerley; 1-story garage, 10x14, 5136 Fairhill St.; $500.

Edward V. Holland; 1-story garage, 51.6x18, north side Samson, east 51st St.; $7000. Also 1-story garage, 36x18; $4000.

E. E. Hollenback; 2-story garage and sales room, 55.6x177.10, N. W. corner Broad St. and Hunting Park Ave.

H. Kaiwetzsky; 1-story garage, 15x20, rear 913 Spruce St.; $1200.

H. Katz; 1-story garage, 14.9x23, 217 De Lancey St.; $400.

Ralph J. Kirk; 1-story garage, 16x20, 5006-8 Willows Ave.; $700.

Wm. Klaus; 1-story garage, 16x100, west side 57th St., below Baltimore Ave.; $8500.

H. H. Kratz; 1-story garage, 11x18; $400.

Kulling & Zimmerman; 1-story garage, 15.4x16, N. E. corner 60th and Chester Ave.; $950.

Chas. D. Land; 1-story garage, 66x17, E. side Chalmers Ave., below Cambria St.; $2000.

J. Y. Loux; 1-story garage, 34x16, 3840 N. 15th St.; $1200. Also 1-story repair shop, 23x70, W. side Nice, below Kerbaugh St., $4500. Also 1-story garage, 20x50, 3938 Dell St.; $2500.

Geo. Luby, 1-story garage, 28.2x21, 5535 Haverford Ave.; $1200.

John Marsolino; 1-story garage, 12x18, S. W. corner 61st St. and Haverford Ave.; $700. Also 1-story garage, 10x20, N. E. corner 64th St. and Girard Ave.; $660. Also 1-story garage, 10x20, rear 215 Felton St.; $600.

E. B. Miller; 1-story garage, 10x15, rear 717 Lycoming St.; $750.

S. B. Miller; 1-story garage, 16x15, 4101 N. 8th St.; $900. Also 1-story garage, 16x16, N. W. corner 8th and Cayuga Sts.; $950.

Jas N. Mitchell; 1-story garage, 12x16.6, S. E. corner 16th and Jefferson Sts.; $500.

Louis Mohr; 1-story garage, ,25x14.6 2801 N. Lambert St.; $1000.

M. Moister Co.; 1-story garage, 16x20, 5121 Wayne Ave.; $550. Also 1-story garage, 20x24, 6381 Woodbine Ave.; $800. Also 1-story sheet iron on iron frame garage, 9x16, 617 Spruce St.; $300. Also 1-story sheet iron on iron frame garage, 8x15, 1401 Sellers St.; $245. Also 1-story sheet iron on iron frame garage, 16x24, 2128 Ridge Ave.; $575.

Tony Oliviens; 1-story garage, 17.10x60, 1688 Foulkrod St.; $1800.

Fred. Peccari; 1-story garage, 30x68, 3825-37 N. 5th St.; $3500.

Penn Bldg. Co.; 1-story garage, 19.6x48, S. W. corner Morton and Maryland Sts.; $3000.

Don Peters; 1-story garage, 22x19, 605-13 W. Cliveden Ave.; $2730.

R. H. Pugh; 2-story garage, 20x30, 6398 Drexel Rd.; $4500.

A. Raymond Raff Co.; 1-story garage, 22x28, 6392 Overbrook Ave.; $1000.

John Schnabel; 1-story sales room and storage station, 21.6x13.6, 660-62 N. Broad St.; $4400.

Schulte & Co.; 1-story garage, 20x46, rear 165-67 W. Logan St.; $1000.

T. Sciavillo; 1-story garage, 30x62, 4674 Canton St.; $2800.

Chas. F. Sellsman; 1-story garage, 17.11x83.6, rear Emerald St.

E. Irving Shuttleworth; 1-story garage, 19x17.6, 950 Fillmore St.; $750.

Slater & Rhodes; 1-story garage, 16x16, 2100 65th Ave.; $900.

John M. Speller; 1-story garage, 8.6x16, rear 3861 N. 17th St.; $625.

Frank K. Stahl; 1-story garage, 27.6x21.6, 6638 Greene St.; $3000.

L. D. Stites; 1-story garage, 14x20, 325 W. Hortter St.; $930.

Geo. W. Vaughan; 1-story garage, 21.8x 25.10; 4185 N. Mascher St.; $1400.

Chas. Weidmann; 1-story garage, 25x18, 6643 Marsden St.; $1000.

Wyndmoor Garage Willow Garage and Germantown Ave.; enlarge building.

Agnes J. MacCorkell; 1-story garage, 17x49.6, 4911 Aspen St.; $1500.

August Magnatti; 1-story garage, 100x132; $25,000.

R. C. Maxwell & Co.; 1-story garage, 12x55; 4235 N. Broad St.; $1000.

Edward C. Meacham; 1-story garage, 50x100; N. W. Cor. Haines St. and Stenton Ave.; $8000.

A. Metz; 1-story garage, 14x20, at 3442 N. Reach St.; $800.

M. Moister & Co.; 1-story garage, 16x18; 3144 Weikel St.; $400; 1-story garage, 16x24, for W. F. Kohler; $775; 1-story garage, 14x14, 4543 N. 5th St., for John H. Bauer; $325.

Vincent D. Olivet; 1-story garage, 56x140; $5000.

W. H. Phillips; 1-story garage, 18x16; rear 1237 Fletcher St.; $1500.

H. & J. Probinsky; 2-story garage, 34.1x258; at 2535-37 Ridge Ave.; $20,000.

C. W. Rachou; two garages, 10x20, 939 E. Herbert St.; for H. E. Strathman; $1250.

A. Raymond Raff Co.; 1-story garage, 28.6x35.6, with wing 23.6x13; 6625 Lincoln Drive; for John R. Goehring; $6000.

Joseph Richart, Jr.; 1-story garage, 12x16; 462 Conarroe St.; $300.

Jos. Rocco; 1-story garage, 16x7.6; at 1813 S. 8th St.; $350.

H. P. Schneider; 1-story garage, 60x100; at 1928-30 E. Danphin St., extending to 2222-24 Emerald St.; for Andrew C. Kelly; $12,000.

A. C. Schoen; 1-story garage, 25x20; $700.

J. S. Schreiber; 1-story garage, 19.8x201; rear 7101-07 Old Yirk Road; $10,000.

W. C. Scull; 1-story garage, 14x26 and 16x36; at 4617 Kingsessing Ave.; $3000.

William Skolinck; 1-story garage, 6.6x20; at 2103 Chelten Ave.; $300.

Harry Slosk; 1-story garage, 18x22; at 1226 Columbia Ave.; $1400.

Stenton Private Garage Co.; 1-story garage, 50x10, with wing 36x190, N. W. Cor. 66th and Wyncote Aves.; $16,000.

John H. Sutton; 1-story garage, 19x28; at 6422 N. 13th St.; $700.

H. E. Sweger; 1-story garage, 24x83; at 3811 N. 15th St.; $4500.

Louis Swerdloff; 1-story garage, 12x16; rear 739 Counthian Ave.; $1000.

Harry N. Tracey; 1-story garage, 95x100; N. E. Cor. 34th and Wallace Sts.; $20,000.

Chas. P. Travis; 1-story garage, 28x18, with wing 18x32; $3000, and additions, 28.2x12, with wing, 46.6x10.16; at 2154-56 E. Chelten Ave.; $3000.

Truscon Steel Co.; 1-story garage, 12x20; $500.

Harry C. Weller; 1-story garage, at 321 N. Rockland St.; $3500.

W. J. White; 1-story garage, 45x100; at 2035 S. 60th St.; $4250.

H. Wicken; 1-story garage, 7.6x14; at 3620 Fairmount Ave.; $250.

Frank I. Wintz; 1-story garage, 17x144; 2937-41 N. 23rd St.; $7000.

Henry R. Wood; 1-story garage, 16x18; N. E. Cor. 22nd and Clay Sts.; $300.

Pittsburgh—Toupet, Bell & Conley, 5814 Ellsworth Ave.; 2-story brick sales garage and storage station, 120x80, for West Co., 4017 Liberty Ave.; $80,000.

Tyrone—A. O. Hutchinson; interior alterations to public garage, E. 10th St.; $5000.

Rhode Island.

Providence—J. F. Cole & Son, 1046 Cranston St.; 1-story public garage and service station, 83x57x66; at Lockwood and Haskins Sts.

Texas.

Weatherford—Oscar Jones; 1-story show room and service repair shop.

Virginia.

Alexandria—Hugo Herfurth, Jr., 606 Queens St.; 1-story public garage, 45x115; $12,000.

Richmond—John T. Wilson Co.; 3-story garage for Advance Realty Corp.; $75,000.

West Virginia.

Dunbar—Auto Mfg. Co.; additions to shop and install new machinery.

Wisconsin.

Beaver Dam—Kotch & Opitz; 1-story garage and repair shop, 54x120, for Bernard Krueger; $15,000.

Kaukauna—Appleton Construction Co., Appleton, Wis.; 1-story public garage; for Faul Pagel Auto Co.; $40,000.

Milwaukee—Meredith Bros., 1043 Kinnickinnick Ave.; 1-story garage, 39x21, Park and Reed Sts.; $6000.

Oshkosh—C. R. Meyer Sons & Co., 52 State St.; 1-story garage, 60x120, for A. Bigson; $15,000.

Two Rivers—A. M. Krause, 2600 Washington St.; 1-story garage and repair shop, 50x90, for Lange Bros.; $12,000.

COMING EVENTS

April 21-23—Lincoln, Ill., Automobile Show.

April 25—New York City, Eastern Automotive Equipment Association Meeting; R. A. Picard, Secretary, A. J. Picard & Co., New York City.

April 27-29—Atlantic City, N. J., Ninth Annual Meeting, Chamber of Commerce of the United States.

May 4-7—Cleveland, O., Eighth Annual Convention, National Foreign Trade Council, Hotel Hollenden; J. G. Hammond, Secretary of Committee, 207 Chamber of Commerce, Cleveland.

May 9-10—Amarillo, Tex., Convention, Panhandle Hardware & Implement Association. Troy Thompson, Secretary-Treasurer, Delhart, Tex.

May 12-17—Prague, Bohemia, Agricultural Fair, Bohemian Agrcultural Societies.

May 17-19—Buffalo, N. Y., Spring Meeting, Service Managers of the National Automobile Chamber of Commerce, Iroquois Hotel; H. R. Cobleigh, Secretary.

May 24-28—West Baden, Ind., Semi-Annual Meeting, Society of Automotive Engineers, West Baden Springs Hotel.

May 28-June 8—Basle, Switzerland, International Automobile Exhibition.

May 30—Indianapolis, Ind., 500-Mile Race, Speedway.

June—London, England, International Rubber Exhibition.

June 13-16—Detroit, Mich., Annual Convention, National Team & Motor Truck Owners, Inc., to Be Held Aboard Ship During Cruise on the Steamship Naronic; F. L. Henk, Secretary, 92 Fort Street, West Detroit.

June 18—Uniontown Speedway Races.

July-October—Lima, Peru, Peruvian Centennial.

July 4—Tacoma, Wash., Speedway Race.

July 4-9—Mackinac Island, Mich., Summer Meeting, Automotive Equipment Association.

July 4-15—London, England, London Fair and Market, Royal Agricultural Hall. International Trade Exhibitions, Ltd., Broad Street House, New Broad Street, London, E. C., England.

July 23—Strasbourg, France, French Grand Prix.

Aug. 13—Belgium Grand Prix.

September—Bandoeng, Java, Dutch East India, Second Industrial Fair, Automobiles and Trucks, Netherlands-India Industrial Fair Association.

Sept. 4—Italian Grand Prix.

Sept. 5—Pike's Peak Hill Climb.

Sept. 5—Uniontown Speedway, Annual Autumn Classic.

Sept. 6-16—Utrecht, Holland, International Industrial Fair; American Representative, New York Chamber of Commerce for The Netherlands and Netherlands East and West Indies, Inc., 44 Beaver Street, New York City.

Oct. 5-16—Paris, France, Automobile Show, Grand Palais.

Oct. 12-14—Chicago, Ill., Annual Convention National Implement and Vehicle Association. H. J. Sameit, Secretary, 72 West Adams Street.

Nov. 14-19—Chicago, Ill., Annual Convention and Business Exhibit, Automotive Equipment Association, Coliseum.

Nov. 24—Los Angeles, Cal., Speedway Race.

AUTOMOTIVE CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN AUTOMOBILES, TRUCKS, TRACTORS, ETC.

Arkansas.

Eureka Springs—Ozark Motor Co.; $10,000; F. L. Mattocks, H. C. Hussey, C. A. Ricketts.

California.

Los Angeles—Elgin Motor Sales Co.; $250,000; Ford and G. M. Rieman, R. G. Rowland, L. E. Jerome, W. F. Hans.

Colorado.

Pueblo—Garrett Motor Co.; $20,000; D. T. Garrett, MacH. Hendrix, A. A. Ambrose.

Connecticut.

Hartford—Barnard Motor Co., MacFarland cars; A. C. Barnard, Henry Brugglestrait, L. P. Schumm.

Delaware.

Dover:

- Morningside Motor Sales Corp., autos; $100,000; Wilber A. McCoy, W. I. N. Lofland, Frank Jackson.
- Prior-Weideman Co., trucks, autos, etc.; $100,000; Louis H. Gunther, L. B. Phillips, A. E. Silver, Wilmington.
- Richelieu Motor Car Corp., trucks; $200,000; L. B. Phillips, A. E. Silver.
- Western Sales Corp., autos; $50,000; S. E. Dill, Wilmington.

Wilmington:

- Broomalls Garages, autos, tires, tubes, etc.; $200,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.
- Fimo Finance Co., finance, sell or deal in autos; $500,000; C. T. Cohee, C. B. Outten, S. L. Mackey.

Georgia.

Atlanta—Currie Bros. Co., autos, trucks and tractors; $250,000; J. W., Edward and J. S. Currie.

Windner—Mott-King Motor Co., Ford agency, to succeed Flanigan & Flanigan; $25,000; Dr. C. B. Mott, Troy, Ala.; Dr. Guy King, Atlanta.

Illinois.

Gillespie—Brubaker & Bridges, Ford cars and parts and Fordson tractors, to succeed Brubaker & Herron; mgr., Alvin Bridges.

Peoria—Velie Motor Car Co., autos; $100,000; A. C. and Henry L. Thede, John S. Randall.

Springfield—Jennings Auto Sales Co., trucks, passenger cars and tractors; $250,000.

Indiana.

Indianapolis—Dickey Motor Sales Co., autos and accessories; $200,000; Wilson C. Allen, Geo. W. Dickey, W. B. Stearns.

S. Bend—Oakland Motor Sales Co., autos and accessories; $10,000; Burton W. Oliver, Ray Kuhl, Elmer Rodgers.

Iowa.

Cedar Rapids—Oldsmobile Sales Co.; H. W. Little, Manchester; H. J. Fox, Fairfax.

Fonda—Jacobson & Martin Auto Co., to succeed Jacobson Bros. Auto Co.; Roy Martin.

Knoxville—East Side Motor Co., E. Main St., formerly the Scott Motor Co.; Arthur Watson, Paul Rhodes, Clarence Harmon.

Le Mars—L. H. Hartliep Auto Co.; $50,000; L. H. and Violet Hartliep, Cecil McCruder.

Sioux City:

- Braley-Graham Motor Co., to succeed Thompson-Graham Co.; Geo. W. Braley, Sioux Falls.
- Salyers-Walters Motor Co., to succeed J. T. Stewart Motor Co., 505 Pearl St.; E. B. Salyers, R. B. Walters.

Waterloo—York Tire & Service Co., buy and sell motor and muscularly propelled vehicles, tires, batteries and other accessories and to do a general vulcanizing business; $50,000; W. W. Yor, J. F. Entz, F. W. Andres.

Kentucky.

Grenup—Leslie Motor Co.; $30,000; Chas. Schmutz, John L. Sowards, P. J. Leslie.

Louisville:

- Consolidated Motors Co., Pilot cars in Kentucky and southern Indiana.
- Motor Shop, Inc.; $3000; C. H. Hefter, Herbert Raynor, G. O. Fredericks.

Maine.

Bangor—L. S. Bean Co., vehicles of all kinds and parts; $200,000; Lewis S. Bean, Ada C. Brown, Clyde P. Johnson.

Portland—Spear Motor Co., 32 Preble St., Grant Six cars; pres., Geo. T. Spear; treas. and mgr., Robt. J. Spear; salesman, Chas. O. Spear, Jr., Geo. O. Spear.

Presque Isle—L. S. Bean Co., farm machinery, implements, harness, hardware, fertilizers, paints, oils, real estate, etc., and to carry on a general garage and auto business; $200,000.

Springvale—Traffic Motor Sales Co., moor vehicles; $100,000; Wilbur H. Taylor, Carl T. Plummer, Saml. A. Jordan.

Maryland.

Baltimore—Croner Motorcar Co., Sheridan cars; pres., Louis Croner; sales mgr., H. H. Ambach.

Massachusetts.

Worcester, Mass.—Walker-Travers Corp., autos; $10,000; Robt. C. Travers, Oakley C. Walker, Francis W. Hutchins, Saml. Johnson, Jr

Michigan.

Detroit—Viking Motors Co., autos; $100,000.

Grand Rapids—Messner Peters Auto Sales Co.; $10,000.

Grass Lake—Haselschwerdt Motor Sales Co.; $20,000; Haselschwerdt & Haselschwerdt.

Kalamazoo—Eaton-Smith Co., autos, supplies and accessories; $25,000.

Olivet—Krieg Auto Co.; $15,000.

Plymouth—Plymouth-Buick Sales Co., motor cars, accessories and parts; $30,000.

Saginaw—Birse Auto Co.; $15,000.

Vicksburg—Paine & Jenkinson, trucks, tractors, accessories, etc.; $50,000.

Minnesota.

Blooming Prairie—Sander Bros., Ford agency.

Evansville—Melby Implements Co., implement business and garage; Jos. H. and Hans Johnson, Victor Osterlund.

Long Prairie—Farmers' Implement & Power Co., Handy Bldg.; pres., Bernard Brever, Browersville; cashier, Henry Koester, Sebeka; M. L. Reichert, Long Prairie.

Minneapolis:

- Allen Motor Corp.; $50,000; pres., J. E. Walker; vice pres. and treas., W. G. Garber; sec., Jordan Blake.
- Schafer-Graves, autos; $50,000.

St. Paul:

- Clements Implement Co., implement and hardware business; $25,000; pres., E. R. Clemens, St. Paul; 1st vice pres., J. G. Biederbick, Minneapolis; 2nd vice pres., Raymond D. Hill; sec., W. L. Stimple, Minneapolis; treas., Bert Stimple, Minneapolis.
- J. W. Hutchins, to succeed Schmelzel Co., Fordson tractor distributor; $225,000; pres., J. W. Hutchins; treas., W. E. French; sec., W. S. Williams.

Sleepy Eye—Farmers' Elevator Co., implements, hardware, building material, etc.; $100,000.

So. St. Paul—J. C. Van Roo Co., Ford agency.

Twin Valley—Service Machine & Motor Co., autos, implements and repairs; $25,000; Benj. Syverson, Henry Brevik, H. A. Blair.

Villard—Otto Bros., hardware and implement business.

Missouri.

Jefferson City:

- Cole County Buick Co., Buick dealer of Cole County, Mo.; Gov. A. M. Hyde; gen. mgr., Brown Glenn.
- T. & G. Motor Co., South Side, Overland autos and parts and repair work.

Kansas City:

- Gridley Motors, Inc.; $50,000; B. E. Gridley, McGee and 18th Sts., Lilley Motor Co.; $25,000.

Liberty—Fritzlen & Hards, E. Kansas St., to succeed Parker & Hards; Buick, Hupmobile and Chevrolet cars and trucks; Clarence Fritzlen.

St. Louis:

- Apperson-St. Louis Motor Co., Apperson car branch.
- Westcott Auto Co.; $50,000.

Nebraska.

Omaha—Catherwood-Mattson Motor Co., 2203 Farnum St., to distribute Velies in Nebraska and southwestern Iowa.

New Jersey.

Camden—Motor Sales Co.; $100,000.

Newark—Standard Auto Service Co. of America, general auto and garage business; $100,000.

New Mexico.

Albuquerque—Lauderbaugh Motor Co., Harrington Bldg., Gold and 5th Sts., distribute Hudson and Essex cars; Harry Harrington, Guy Lauderbaugh.

New York.

Amityville—Lyon Motor Car Co.; $10,000; R. W. Kerbs, E. W. and A. W. Lyon.

Brooklyn:

- Minkoff, autos; $10,000; M. Milkowsky, H. and M. Minkoff.
- Seldenberg Bros., autos; $10,000; A. Rosoff, A. Silver, A. Oboler, 392 Kosciusko St.
- Spa Motor Co.; $50,000; F. D. Williams, N. A. Catenaro, M. Lanna.
- Syers & Boyle Corp., vehicles; $10,000; G. J. Syers, V. R. and T. A. Boyle.

Buffalo—J. Roy Stains, autos; $35,000; G. H. Dowson, Jr., E. M. and J. R. Stains.

Esopus—L-M-S Motor; $10,000.

Geneva—Dependable Auto Co.; $25,000; L. Redway, J. B. Owen, J. A. Jeffrey.

Lockport—John Young Flour, Feed & Implement Co.; $10,000; F. E. Doherty, R. M. and J. Young.

New York City:

- Albion Auto & Supply Co., Manhattan; $10,000; E. W. Griffith, G. Lawrence, G. Buhler, 3198 Webster Ave.
- Bendave Auto Sales Co.; $25,000; A. A., B. and D. S. Feinberg.
- Century Auto Supply Co., Manhattan; $5000; W. H. Middleton, M. J. and J. J. Kleinnenz; atty., Glanz & Weissman, 350 Broadway.
- Clinton Truck Sales Corp., Manhattan; autos; $150,000; H. H. Waller, 36 Vesey St.
- Fenner, Grant & Flanagan, Manhattan; autos; $13,200; F. M. Feuner, S. B. Grant, J. R. Flanagan; atty., H. Sheldon, 149 Broadway.
- Johnson-Walton Motor Sales Corp., Manhattan; $100,000; M. E. Graef, E. C. Strauss, C. A. True, 27 Cedar St.
- New York-Kelly-Springfield Motor Corp., to succeed Enterprise Motor Corp., to handle Kelly-Springfield trucks in N. Y. City, Brooklyn, Westchester, Long Island and N. J. north of Trenton; pres., Alfred G. Hare; vice pres. and gen. mgr., E. Hunn, Jr.; sec., Geo. S. Hauck; service manager, E. H. Bowman.
- Rippeth Motor Car Co., Manhattan; $5000; M. S. Tully, R. R. Davidson, C. S. Rippeth, 630 W. 141st St.
- A. Seymour & Co., Manhattan; autos; $50,000; F. L. King, C. E. Palmer, A. M. Seymour, 44 W. 93rd St.

Pelham Manor—Nelson S. Rundlett; autos; $30,000; T. M. Hill, B. Randall, N. S. Rundlett.

Schenectady—Nicholson Motors Sales Co.; $10,000; J. G. and M. E. Kehoe, J. C. Nicholson.

Syracuse—H. C. S. Motor Sales Corp.; $25,000; E. S. Doolittle, L. L. Owston, E. M. Willis.

Watertown—Jefferson Motor Sales Co., agricultural implements; $30,000; L. E. Hagan, G. W. Waldo, J. W. Damm.

North Carolina.

Charlotte—Monarch Auto Supply Co.; autos and automotive accessories; $100,000.

Greensboro—Kimbrough-Sheek Motor Co., general auto and garage business; $125,000.

North Dakota.

Beach—Beach Motor Co. to succeed Morris & Matthison; C. J. N. Nelson.

Grand Forks—Valley Motor Co.; $50,000; H. O'Keefe, G. H. Lamb, David G. Kelley.

Lidgerwood—Donehower & Livingood; $25,000; Stanley J. and Made Livingood, Ross R. Donehower.

Mercer—Hedahl & Co., implements and hardware; $50,000; E. N. and A. E. Hedahl, Theo Knutson.

Ohio.

Canton—Pyramid Truck Co.; $100,000; E. W. Markling, H. F. and E. W. Shea, J. A. Skaggs, J. C. Harmony.

Cincinnati:

- Bishop Motor Co., to succeed Holmes-Bishop, Holmes and Liberty cars; Chas. E. Bishop.
- Sparger & Johnson Motor Co.; $30,000; E. A. Sparger, C. H. Johnson.

Cleveland—Westcott-Cleveland Co., 1022-24 Euclid Ave.; Westcott cars.

Columbus—Ohio Hart-Parr Co., 43 S. 4th St., to distribute Hart-Parr tractors in Ohio; T. W. Van Doran, H. T. Fravel.

Dayton—Montgomery Motor Car Co., 226 W. 3rd St.; Jackson cars.

Piqua—Hemm Bros. Co. to succeed Hemm Bros.; Buick cars.

Steubenville—H. A. Miller Motor Car Co $25,000; M. B. Morgan, R. H. Radcliffe, H. A. and J. M. Miller, H. A. Vance.

Oklahoma.

Claremont—Neal Motor Co. to succeed Bell Motor Co., Chevrolet and Nash lines.

Oklahoma City:

Geo. W. Corlett Sales Co.; $15,000; Geo. W. Corlett, Harry L. Sweeney, V. Myers.

Myers Motor Co.; $125,000; C. J. and B. P. Myers, H. A. Barnard.

Sand Springs—Sand Springs Motor Co.; $10,000; J. M. Burke, A. F. Antle, F. J. Bryon.

Woodward—Williams Motor Co.; $10,000; G. M. Williams, H. R. Caldwell, W. E. Lewis.

Texas.

Bastrop—Bastrop Motor Co. to succeed Robertson Motor Co.; mgr., Gus Schaetfer.

Dallas:

Counselman Auto Co.; $4000; W. A. Counselman, Mrs. H. S. and R. B. Allard.

Dallas Used Car Exchange; $15,000; J. E. Harris, Curtis Washburn, T. A. Rose.

El Paso—Paulin Motor Co.; $25,000; A. E. Britain, C. D. Paulin, Carrie Finlay.

Ft. Stocktotn—Smythe-Freer Motor Co. to succeed Smythe Motor Co.; autos and auto accessories; Arthur Freer.

Houston:

Drexel Motors Co.; $80,000; agt., W. R. Drexel.

Morrow Co., Inc.; $10,000; J. D. and T. C. Morrow, A. M. Armand.

Sheler-Barnes Co.; $100,000; W. P. Barnes, Mrs. M. Carroll, J. W. Sheler.

Marlin—McClain-Farrell Motor Co. to succeed Primm Auto Co., Winter St.; J. B. Earle, R. V. McClain, Waco; Curtis McClain, Earl Farrell.

Mexia—Welch Motor Co.; $100,000; F. W. and G. W. Welch, J. H. Sweatt.

Virginia.

Cape Charles—Eastern Shore Motor Co., general auto business; $50,000; R. N. Nottingham, Nathan Sternberg.

Norfolk—Marmon-Hayes Corp.; autos and accessories; $50,000.

Richmond:

Martinsburg Sales Corp.; general auto, garage and accessory business; $75,000; Lacy D. and Jas. A. Kirkmyer.

Stewart Truck Corp.; general auto and accessory business; $10,000; R. G. Leftwich, John R. Williams, Jr.

H. E. Willingham Co., Inc.; autos and accessories; $50,000; pres., H. E. Willingham, Norfolk; sec.; H. L. Flippen, Richmond.

West Virginia.

Charleston—Motor Car Supply Co.; $150,000; jobbing business; pres., H. F. Shepherd; vice pres., W. D. Harold; sec.-treas., Geo. D. Cochrane.

Clarksburg—Camden Motor Sales Co.; garage; Cherry St.

Wisconsin.

Eau Claire—Hephner-Daul Motor Co., to distribute H. C. S. cars in western Wisconsin; pres. and gen. mgr., G. J. Hephner, La Crosse; sec. and treas., J. M. Daul, Eau Claire.

Grafton—Riebe Mueller Motor Co.; autos; Albert F. Riebe, Walter L. Mueller.

Green Bay—Murphy-Buth Co.; autos and accessories; $30,000; F. C. Buth, Frank E. and E. N. Murphy.

Manitowoc—Majoe Auto Co.; $40,000; Thos. A. Thompson, Frank Sheblaske, Arthur J Wyseman.

Milwaukee—Milwaukee Oldsmobile Sales Co., 211 Wisconsin St., to distribute Oldsmobile line in Milwaukee county; pres., C. L. Goersch; vice pres., A. G. Steinbach; sec. and treas., E. F. Berry.

Sheboygan—W. A. Knaack Motor Co.; autos, tractors, implements, etc.; $75,000.

Sullivan—Hix Bros.; implement business.

Superior—Olson Bros. Auto Co.; $60,000; G. A. and J. L. Olson, Walter J. Carlson.

Wausau—Donald Murray Tractor Co.: Holt tractors; $25,000.

W. Bend—Central Auto Co.; $25,000.

MANUFACTURERS OF CARS, TRUCKS, TRACTORS, ETC.

Dover, Del.:

A. R. Corporation; air craft; $2,000,000; T. L. Croteau, A. M. Hooven, S. E. Dill, Wilmington.

Combined Tractor-Truck Corp.; $1,000,000; F. T. Parker, L. G. Lincecum, Jas. R. Kearnet, Kansas City, Mo.

Geo. K. Culp. autos; $2,500,000; Geo. K. Culp, W. M. Sperry, 2nd., Clayton C. Dobbs.

Durant Motors, Inc., make and sell motors; $100,000,000; Corporation Trust Co. of America.

Harry S. French, Inc.; autos, trucks, etc.; $100,000.

H. F. Holbrook; autos and machinery; $20,000,000; T. L. Croteau, A. M. Hooven, S. E. Dill, Wilmington.

Improved Plow & Harvester Co.; $250,000; M. M. Lucey, M. B. Reese, L. S. Dorsey, Wilmington.

Mayer Aircraft Corp.; $100,000; M. M. Lucey, M. B. Reese, L. S. Dorsey, Wilmington.

Reiss Motors; autos, boats, etc.; $3,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Wilmington, Del.:

Arnold-Campbell Motor Co., autos, motor trucks, etc.; $100,000; F. R. Hansell, J. Vernon Pimm, E. M. MacFarland.

Post Whitney Co., make and sell farm tractors; $10,000,000.

Tallant Co.; autos, etc.; $50,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Chicago:

Hendrickson Motor Truck Sales Co.; make and deal in motor vehicles; $30,000; Martin Nelson Magnus, Geo. W., Robt. T. and Carl E. Hendrickson.

Martin Auto Body Corp., make and deal in autos, vehicles, auto parts, etc.; Max Luster, Abe Lomberg, Morris Markins

Master Auto Spring Corp., to make and deal in autos, accessories, etc.; $10,000 and 100 shares no par value; Grover H. Dupuy, Fred. E. Kipp, Thos. F. Owens, Wm. H. Temme, Jr.

Partland & Co., make and deal in autos, accessories, parts, etc.; $100,000; J. H. McFarland, Edward L. Savarez, Frank J. Partland.

L. C. Pederson Motor Car Co., make and deal in motorcycles, attachments, accessories and light autos; $30,000; Carl F. and Leo O. Anderson, Lars C. Pederson.

Slavin Garage Co., to make and deal in motor vehicles, accessories, etc.; $5000; Albert, Philips and Sam Slavin.

Winona Garage Co., to make and deal in motor vehicles, supplies and accessories; $10,000; Alex M. Golman, A. H. Rudell, Saml. Sherman, Benj. Katz.

Winther Automotive Sales Co., to make and deal in trucks, autos, machinery, etc.; $100,000 and 3500 shares no par value; Roy St Leger, C. I. Backus, R. G. Wine.

Greenville, Ill.—Duty Motor Co., 2-ton truck to sell at $1490; $500,000; pres., W. H. Ruther; vice pres., W. J. Gubser; sec.-treas., J. P. Snowden; sales mgr., P. Harnetiaux.

Detroit, Mich.—Gray Motors Co., 4-cylinder car to sell at about $1500; F. L. Klingensmith, F. F. Beall.

Lansing, Mich.—Lansing Union Truck Co.; $25,000.

Duluth, Minn.—Roller Harrow & Mfg. Co.; harrow and other farm implements; $50,000; Fred Cole, John A. Forsman, Carl I. Salversten.

Minneapolis, Minn.—Power Farming Machinery Co.; $3,000,000; R. N. and M. C. Hicks, Gordon Tucker.

St. Louis, Mo.—Bollstrom Motors, Inc.; truck manufacturer.

Miles City, Mont.—Park View Garage Co.; make, sell and distribute autos, motor cars, trucks, wagons, buggies, etc.; $50,000; W. M. and A. C. Jacobs, A. B. Middleton.

Albany, N. Y.—Brooks; air planes and machinery; $30,000; E. L. and F. G. Brooks, E. A. Cachpole; atty., M. V. Ryan.

New York, N. Y.:

A. A. A. Mfg. Corp., Manhattan; autos and air planes; $10,000; E. A. Bates, L. S. Middlebrook, M. N. Gates, 49 Wall St.

N. Y. Auto Works; $5000; C. and P. Lambrose, J. Ryan.

Philadelphia, Pa.—Hudson Motor Truck Co.; new Hudson 3-ton truck; pres., Wm. F. Hudson; pres. Mudson Motor Specialties Co.; vice pres., J. H. Malone, vice pres. Hudson Motor Specialties Co.

MAKERS OF PARTS, ACCESSORIES AND EQUIPMENT.

Delaware.

Dover:

Andrews Crane Corp.; $2,500,000; Harold T. Clark, Paul J. Rickel, Cleveland Heights, O.; Ernest C. Dempson.

Auto Battery Service Co.; motors, batteries, etc.; $50,000; C. T., T. R. and H. S. Kelly, Pittsburgh, Pa.

Community Gasoline Co.; gasoline; $5,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Eastern Engineering Corp.; machines for castellating, finishing or making nuts; $500,000; Corporation Service Co.

General Motors Lock Corp.; $1,000,000.

Hercules Mfg. Co., Inc.; aluminum, metals, alloys; $10,000; A. Berton Brede, Lloyd B. Kanter, Frank E. Varriale, Brooklyn, N. Y.

Johnson Motor Wheel Co.; $1,550,000; C. T. Cohee, C. B. Outten, S. L. Mackey, Wilmington.

Lighting Sales Corp.; auto parts; $2,000,000; T. L. Croteau, A. M. Hooven, S. E. Dill, Wilmington.

Lubrication Products Corp.; lubricating oils; $5,200,000; C. T. Cohee, C. B. Outten, S. L. Mackey, Wilmington.

Magno Storage Battery Corp.; $650,000; A. E. Cushing, Geo. G. Pierronnet, Arthur W. Blackmore, New York City.

Multiple Storage Battery Corp.; $1,000,000; Arthur W. Britton, Geo. V. Reilly, Austin H. Smith, New York City.

Reliance Rubber Corp.; tires; $500,000; Corporation Trust Co. of America.

Wilmington:

Blackstone Motors Corp.; auto parts, etc.; $1,000,000.

Cotter Tire & Rubber Co.; make and sell rubber tires; $500,000.

Evans-Cooke Mfg. Corp.; auto springs; $100,000.

Lackawanna Seamless Tube Corp.; $125,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

V. Oliver, Inc.; make and sell auto parts and supplies; $300,000.

Georgia.

Atlanta—Martin-Parry Corp. of Ga.; auto bodies, cabs, tops, wheels, etc.; $100,000.

Illinois.

Chicago:

Ray Puncture Proof Tire Co.; make and deal in puncture proof pneumatics, tire casings, tubes and accessories; Harry C. Rowe, Geo. H. Bryant, Jos. C. Leduca, Francis J. Howen, Herman E. Henke, Wm. F. Ray.

Standard Auto Remodelling Co., to make and deal in auto bodies, parts, etc.; $5000; Esther and Ernst Fantanner, Conrad Larsen.

Kansas.

Rosedale—I-no-da Fender Brace Mfg. Co., rear 524 Southwest Blvd.; mgr., M. E. Stucker.

Michigan.

Detroit:

Curran Motor Products Co.; auto accessories; $100,000; pres., Dr. E. T. Curran; vice pres., W. N. Nahikian; sec.-treas., P. M. McCay; sales mgr., P. T. Quinn.

Davis Steam Motors; steam engines for use in passenger cars and trucks; $100,000; Merrill Davis, E. M. Bliss, F. D. Siebert, A. B. Eggert.

Green Bay—Gold Seal Battery Co.; Gold Seal batteries; $300,000.

Minnesota.

Minneapolis:

Everlite Co., make and market Everlite farm lighting plants.

Lambright Cushion Tire Co.; $300,000; Grant Lambright, F. S. Daneburg, Ira P. Good.

Liberty Mfg. Co.; make and sell auto accessories; $1,500,000; C. P. Smith, P. H. Hanson.

National Triple Tread Co.; $50,000; A. M. and C. R. Boxrud, S. V. Gangestad.

Ruben Tire Co.; $50,000; A. G. and I. H. Ruben, J. M. Glasby, Jr., R. A. Post.

Swanlite Co.; make and sell Swanlite farm electric plants formerly made by Black Swan Co.

St. Paul—Blekre Tire & Rubber Co.; tires; to succeed Auto Owners' Tire Corp. of Sioux City, Ia.

Tower—Fay Float Corp.; auto accessories; $50,000; Clarence C. Fay, Virginia; C. C. Winchell, Wm. E. Fay.

Missouri.

Joplin—Missouri Battery Works; $15,000; F. A. Liggett, C. R. Turnidge, Julius Becker.

Kansas City:

Carbon Proof Motor Co.; $100,000.

C. C. T. Sectional Tire & Rubber Co.; $1,000,000.

New Jersey.

Jersey City:

Gamady Electric Co.; supplies; $200,000; A. F. McCabe, H. A. Black, John R. Turner.

International Auto Accessory Co., 243 Washington St.; auto accessories, supplies, etc.; $150,000.

Newark:

A. H. W. Carburetor Co.; $200,000; Erid T. Franzen, Arthur W. Webber, Leroy St. James.

Modern Steel Wheel Corp.; steel wheels and accessories; $125,000.

Newark Thermostat Co.; electrical devices; $100,000; Harry H. Picking, Chas. O. Geyer, Gordon Grand.

Trenton:

Atlantic Rubber Co., New Brunswick, rubber articles; $100,000; Clarence M. Haight, New Market; Louis J. and Edward Belloffi, New Brunswick.

Ibex Rubber Corp. of Newark; mechanical rubber products; $125,000; Harry J. Lindsey, Geo. O. Smalley, Wm. F. Jennings.

New York.

Brooklyn:

A. M. Co.; motor and air planes; $45,000; L. Hill. W. H. Black, S. I. Muller, 196 Monitor St.

Fuel Oil Corp.; motors; $2,000,000; C. A. Kursel, I. Gordon, J. J. Dobson, 291 Adams St.

Buffalo:

Hugh Co., 163 Adams St.; make and sell metal products for the automotive trade; Ewart C. Hugh.

Lockwood Tire & Mfg. Corp.; tires; $2,500,000; Ora M. Lockwood, Harold J. Clay, Rudolph Becker.

Corning—Crystal Timers; timers for gasoline engines; $25,000; C. E. Manning, T. A. McNamara, G. W. Cheney.

Elmira—Townley Lock Corp.; auto locks; $100,000; C. J. Carroll, G. W. and J. D. Ryan.

New York City:

All Klean Mfg. Co.; Queens; polish and valve grinding compounds; $10,000; C. Cunningham, C. Cunningham, Jr., R. Lee, 111 Young St., Brooklyn.

Auto Water Heater Corp.; Manhattan: auto parts, etc.; $200,000; E. C. and W. H. Hawley, J. R. Delafield, 17 E. 79th St.

Clearview Windshield Cleaner Corp.: auto windshield cleaners; $100,000; H. L. Rothenberg.

Cornell Utilities Co.; Manhattan; oil burning heating accessories; $600,000; H. G. Davis, E. Slosson, G. W. Epson, Kew Gardens.

Cross Laboratories, Manhattan; rubber cement and tires; $50,000; S. H. Sears, F. H. Butehorn, J. L. Watson, 37 Wall St.

Dual Ignition & Mfg. Co.; spark plugs; $30,000; C. H. Hammond, S. C. and B. S. Henney.

Empire Auto Body Co., Manhattan; $10,000; I. Hymowitz, P. R. Debracke, M. Smolowitz, 1708 Webster Ave.

Gold Medal Rubber Co., Manhattan; $25.000; S. and A. Newman, G. J. Bates, 1934 Broadway.

Hansen Windshield Cleaner Co., Manhattan; windshield cleaners; $300,000; H. P. Hansen, 360 Main St., Orange, N. J.

H. M. N. Auto Radiator & Sheet Metal Works, Manhattan; $5000; J. F. Hayes, W. S. Miller, H. Newman, 2700 Albebarle Rd., Brooklyn.

Miniature Breaker Co., Manhattan; electric breakers; $5000; H. Darroch, Jr., F. A. Cole, C. H. Aborn, 45 John St.

Perfection Windshield Mfg. Corp., Manhattan; $50,000; A. Papp, S. Marian, J. Gabriel, 421 E. 64th St.

Rex Radiator Corp., Manhattan; $7000; T. Slattery, P. Fisher, F. W. Keegan, 250 W. 54th St.

Rubber Fusing Co. of New England, Manhattan; tires; $10,000; M. Ade, M. A. Newman, M. A. Newman, Jr., 870 E. 170th St.

Triaitch Auto Motive Specialties Co.; Queens; machinery appliances; $100,000; A. Lemlein, E. A. Gersbach, P. Lewinson, 2059 Davidson Ave.

Rochester:

Rochester Rubber Cement Corp.; $10,000; G. A. Veomett, J. T. Voll, F. E. Frey.

Seneca Metal Corp.; tools and cutlery; $60,000; G. Szozehowlak, C. Locscher, C. F. Bierbach.

Ohio.

Cleveland—Marvel Shock Absorber Co.; shock absorbers; $100,000; S. L. and E. C. Savidge, A. W. and Minta Rener, Carl H. Cook.

Mansfield—No-Glare Auto Lamp & Mfg. Co.; $100,000.

Oregon.

Portland—Efficient Appliance Mfg. Co.; make and distribute automotive products; Arthur C. Burgess, Arthur F. Erickson.

Pennsylvania.

Pittsburgh—Motor Body Co.; $210,000.

South Dakota.

Rapid City—Rapid City Radiator Co.; $25,000; J. Hal, Frank L. Fetrow, Elda Sellars.

Texas.

Austin—Lawrence Process, Dallas; auto supplies; $50,000; Pierre Sohon, D. C. Kelly, L. L. Henderson.

Dallas—U. S. Tire Co. of New York City; $500,000.

Washington.

Centralia—Southwest Sound Tire Co.; $100,000; G. W., V. W. and A. W. Ninemire, Thos. and May Morgan.

Wisconsin.

Beaver Dam—Duplex Storage Battery Co., reorganized; pres., J. W. Deniger, Beaver Dam; vice pres., Herman L. Scnickel, Milwaukee; sec.-treas., M. A. Jacobs, Beaver Dam; gen. mgr., Peter M. Kettenhofen; factory supt., Jos. Mollerus; directors, John V. Zweck, Beaver Dam; A. H. Luckenbach.

Milwaukee:

Precision Stud & Bolt Co.; studs, bolts, screws, nuts and other similar mechanical specialties and supplies.

Schoeffler-Graham Mfg. Co. to take over machine shop business of Shoeffler & Graham; will concentrate on horizontal hoists for dump body motor trucks; $50,000.

Oshkosh—Oshkosh Radiator Co.; $25,000; John Termaat, B. H. Huessner, Thos. McKelsey.

Watertown—Bickett Rubber Corp.; rubber products of all kinds; $100,000.

Waupan—Safety Fender Co.; bumper device for front of passenger cars and trucks; A. H. Luebke, C. Lemmenes, Gerret Hull.

Wyoming.

Wheatland—Air Cooled Spark Pug Co.; $100,000.

GARAGES, REPAIR SHOPS AND SERVICE STATIONS.

Arizona.

Nogales—International Service Garage, Grand and Walnut Sts.; mgr., Wm. F. Hayes.

Arkansas.

Bentonville—O. T. Garage Co.; $8000.

Little Rock—Owen-Beavers Co.; City Garage, 811-817 Spring St.; Wm. B. Owen, John Beavers.

California.

Bell—Bear Garage, to succeed Triangle Garage; owner, Bjerke & Hansen.

Burbank:

Burbank Ignition Works, 254 E. 2nd St.; Exide batteries; H. O. Hartley, R. E. Vail.

Harmon & Burch; auto tops; 400 W. 2nd St.

Monrovia—J. A. Lamb & Son; battery and ignition service station, 113 E. Lemon St.; Westinghouse batteries.

Pasadena:

Loughran & Bilharg; auto tops; 2386 E. Colorado St.

Moser's Garage & Auto Machine Works. to succeed Robt. J. McNabb, Inc., 2526 E. Colorado St.; garage.

Pittsburgh—De Rosa & Seeley Garage, to succeed Pittsburgh Garage; Chas. Seeley.

San Diego—Diamond Garage, 13th St.; repairs, etc.; A. L. and W. B. Conwell, Amarillo, Tex.; H. R. Brooks, Detroit, Mich.

Santa Ana—Sycamore Garage, 104 Sycamore Ave.; Jos. Doxey, N. A. Thompson.

Delaware.

Dover:

Delaware Auto Service Co.; garages; $50,000; Harrison M. and Mabel A. Whitten, Chas. W. Strahorn, Newark, Del.

Standard Garages Corp.; stocks, bonds, etc.; $5,000,000; T. L. Croteau, A. M. Hooven, S. E. Dill, Wilmington.

Illinois.

Abington—Central Garage; John Famulener.

Cambridge—Bolt & Bergquist, P. A. Johnson Bldg.; repair shop and vulcanizing plant.

Chicago:

American Auto Painting Co.; general auto painting and storage; $2500; Fred Wahl, Frank Knourek, Gaston C. Parker, Chas. R. Casler.

Somerset Garage Co.; garage; $25,000; Emmett E. Bain, Leonard H. and M. G. Wolf.

Whiteway Garage Co.; general garage business; $10,000; Frank T. Jordan, Harry A. Gano, Michael J. Sullivan.

Clinton—T. R. B. Service Co.; battery service station, Beatty Bldg., 214 N. Center St.; Martin Mercer, Arthur Spellbring.

E. Peoria—Walmsley & Rayner, garage and repair shop, 130 W. Washington St.

Galesburg—Mulvaney & Johnson; garage; Davenport Bldg., 123-125 S. Prairie St.

Harvard—D. J. Welch Motor Co.; garage and auto repairs; Joe Brickley Bldg.; David Welch.

Hillsboro—Service Garage; L. A. McHugh.

Jacksonville—Pickell & Richardson, 222 N. East St.; general auto repair business and to deal in tires, tubes and accessories; W. W. Pickell.

Lincoln—Lincoln Tire & Repair Shop, 120 S. Chicago St., to succeed Waters & Putnam Tire Repair Shop; Chas. H. Wheeler.

Litchfield—Thresher & Tilley, 211 Monroe St.; auto paint shop.

Morrisonville—Morrisonville Tire Repair Shop, McCauley's Bldg.; Lowel L. Herbert.

Olney—Midland Trail Garage, W. Main St., to succeed Lincoln Trail Garage; Everett. Floyd and Clark Shipley.

Pekin—Central Illinois Motor Co.; general garage and auto repair business; $10,000; Merle G. Smith, Bruce Rutherford, Howard Kinsey.

Riverside—Riverside Garage & Motor Co.; general garage and motor sales and auto repair business; $15,000; Katherine Houy, Carries Behensky, John V. Morse.

Rockford—Savage & Duel; garage, tire and jobbing business; $20,000; Kenneth M. and Estelle Savage, Ernest J. Duel.

Springfield—Travis-Smith Motor & Supply Co.; general garage business; $20,000; Emma M. and Leonard Travis, Chas. B. Smith.

Woodstock—Square Dealing Garage, Throop St.; Wm. F. O'Connor.

Indiana.

Anderson—Anderson-Overand Co., to succeed Hill-Stage Garage, 6th and Jackson Sts.; Chas. Jackson.

Earl Park—Stuart Garage, 5th St.; T. Walter Stuart; Frank Larno.

Evansville—Fischer & Wright, 144 Madison Ave.; garage.

Friendship—Garson & Westmeyer; garage and repair shop.

Lake—Swallow Garage to succeed Squier Garage; F. M. Swallow.

S. Bend—Lafayette Garage, 924 S. Lafayette Blvd.; L. J. Seifert.

Valparaiso—Lincoln Highway Garage, general garage business; $50,000; J. L. Spooner, T. H. Benton, H. H. Smith.

Iowa.

Dunlap—Culivan & Smith, garage; R. Culivan, Cecil Smith.

Grinnell—A. & T. Auto Shop to succeed Easy Fit Mfg. Co.; C. E. Thrasher, H. T. Anderson.

Kansas.

Atchison:

J. T. Berridge & Sons Garage Co., garage; $75,200; J. T., Earl and Guy H. Berridge.

Kelly & Grippen; garage and radiator shop, 112 S. 8th St.

Belpre—West Side Garage, Beckwith Bldg.

Concordia—J. G. Goldman Auto Radiator Works, 12 E. 6th St.; John Goldman, Davenport, Ia.

McCracken—Shafver & Forgy, Yawger Garage; motor car repairing and battery service.

Wichita—Central Garage, 114-116 N. Topeka Ave.; C. E. Anderson, Dodge City.

Wilson:

W. W. Kelma Garage.

Frank Olds Garage.

Kentucky.

Carlisle—Harper Garage.

Louisville—Gray Motor Car Service; $10,000; Thos. J. and M. K. McCann, Will P. Gray.

Louisiana.

New Orleans—Standard Motor Accessories & Garage Corp.; garage and service station.

Bad Axe—Bad Axe-Buick Co., to succeed Dunlap Garage Co., N. Heisterman St., John G. Clark & Son.

Calumet—Baraga Garage; general garage business; Superior Ave.; agency for autos and general repairing; Robt. E. Martin, Hugh Nesbitt.

Detroit—Auto Appraisal & Sales Co., 2885 E. Grand Blvd.; rebuilding and repairing Ford cars.

Grand Rapids—Wyoming Park Garage; general auto repairs; L. J. Van Hammen, R. D. Van Tassal.

Lansing—Robson Graves Auto Co.; garage; $30,000.

Manitowoc—Rhode & Co.; repairs and storage garage; Behnke Bros. Bdlg., Commercial St.; Schiller and Bernard Rhode, Wm. Benes.

Watertown—Kuntz & Zabel, Jefferson St.; auto repair shop.

Minnesota.

Albert Lea—Albert Lea Auto Top Co.; auto tops and repairs; J. Neighbors, Waterloo.

Medord—Papke & Krippner, Owatonna garage.

Redwood Falls—Ginty & Flathers, Ford garage; Harry Flathers.

St. Paul—Goodrich Tire Service Station, 368 Main Ave.; F. P. O'Dea.

Underwood—Lund Bros. & Ronning, Lund Garage; W. P. Ronning.

Virginia—Queen City Upholstering Shop.

Missouri.

Cabool—Elkhorn Garage; accessories, tires and general repairs; Frank Brown, Chas. Fitzgerald, M. J. Vellmar.

Cameron—Welsh-McFarland Motor Co.; consolidation of Welsh Bros. and Wesley Todd, Todd Garage, W. 3rd St.

Eldon—Ross Battery Station.

Kansas City—R. & L. Tire & Repair Co., 2301 Grand St.; Goodrich tires; E. N. Ripley, W. G. Luedke.

Mountainview—Reush Bros.; garage; W. End Front St.

St. Louis:
- Gates Auto Laundry & Supply Co., Goodfellow and Delmar Aves.; $30,000; atty., Chas. Fonsky, 901-4 Times Bldg.
- Metz Battery Service Co., 5076 W. Florissant Ave.; $4000; director, R. B. Waite, 3607 N. Broadway.

Montana.

Anaconda—McKay & Snow; repair shop, 3rd and Cherry Sts.

Miles City—Park View Garage Co.; $50,000; W. M. and A. C. Jacobs, A. B. Middleton.

Nebraska.

Central City—Geo. L. Mills & Son to succeed McDonald Garage; Geo. L. Mills.

Columbus—Service Garage, to succeed Picking Motor Co.; garage; Livoni Investment Co.

Loup City—Lorchick & Skibunski, Cox Garage; Bruno Lorchick.

Mullen—Pearson Motor Co.; Ford Garage; Otto Pearson.

Norfolk—Dodge Service Garage, Kayl Bldg., N. 3rd St.; Elmer Hills, Raymond Duel.

Oakland—Hanneman Bros.; general garage business; Mossberg Bros. machine shop.

Ord:
- Lincoln & Washburn, Siler Bldg., auto repairs.
- Ord Garage & Repair Shop, Guy Burrows' shop; Wilford Williams, A. J. Mastonka.

New Jersey.

Mercerville—Nottingham Garage; $30,000; E. L. Riley, Wm. Winkle, Geo. Brownhead.

Newark—DeWitt Garage; $125,000; DeWitt Miller, Jacob Samuels, Irving Silver.

New York.

Albany—Independent Motor Service; $50,000; R. D. Huntley, B. G. Worden, J. C. Watson.

Brooklyn:
- Bergen Auto Service; $12,000; J. H. Smith, C. H. and J. H. Gimpel, Jr.
- Borough Park Auto Service; $10,000; J. Schwartz, M. Schwager, L. J. Murray; atty., Furst, Schwartz & Schwager, 215 Montague St.
- Duplex Garage Corp.; $20,000; J. H., W. and H. Myers; atty., Woolman & Woolman, 20 Broad St.
- Glenmore Garage; $6000; A. Barchoff, M. Berk, S. Garkinfel, 47 Christopher Ave.
- Harway Garage; $5000; J. Jacarino, A. Abate; atty., J. I. Schweitzer, 5 Beekman St.
- Majestic Auto Repair & Rebuilding Co., Bronx; $6000; C. Jannielo, P. Babrionne, J. Roffa.
- Pitkin Service Garage; $5000; L. M. Janowitz, L. Goldbauer, J. Gallanter.
- Walowitz & Loitz; garage; $20,000; M. J. Walowitz, A. Kutler, A. Loitz, 33 Market St.

Jamestown—Jamestown Tire Service Co.; $25,000; M. H. and N. L. Kemp, H. W. Burgeson.

Long Island City—Jewett Machine Co., Inc., general auto machinist, 25 S. Washington Pl.

Lynbrook, L. I.—Schratwieser's Garage; $10,000; M. Grady, M. Pollini, C. Schratwieser.

New York City:
- Aireo Motor Service Corp.; $5000; J. F. Krelsa, J. J. Jones, R. L. Godby.
- Auto Apartments, Inc. of Greater New York; operate garages; $20,000.
- Chambers & Pearl Garage, Manhattan; $25,000; H. and S. Koch, K. Finkelman, 646 Willoughby Ave., Brooklyn.
- Eagle Ave. Garage Co., Bronx; $25,000; J. Forman, N. A. Goldenhal, M. F. Levine, 140 E. 92nd St.
- 506 E. 80th St. Garage, Manhattan; $20,000; F. R. Vitoo, F. Angelilli, M. Rothbart, 141 Marcy Pl., Bronx.
- Ganz & Zimmerman, Bronx; auto repairing; $5000; W. T. Mulcahy, A. J. Ganz, A. Zimmerman.
- Great Northern Garage; $25,000; J. L. Janover, E. Strudel, I. Estersohn.
- G. S. G. Corp., Manhattan; garage; $200,000; A. Geiger, B. and J. Goldman; atty., A. M. Pariser, 51 Chambers St.
- Mar-Non Garage; $15,000; I. Freeman, W. Whitehorn, J. G. Friedman.
- Mercurio & Pepe Garage, Manhattan; $5000; D. Crocetta, A. Mercurio, L. Pepe, O. Relia, 63 Park Row.
- Schumacher's Garage Co.; $50,000; H. C. Harris, P. T. Winslow, W. J. Schumacher.
- Star Gas Station & Garage Co.; $10,000; A. J. Farquhar, H. and S. D. Sink.
- Studio Garage, Manhattan; $25,000; C. Landow, H. and Y. Cohen, 2028 Lexington Ave.
- 23rd St. and Ave. A Garage, Manhattan; $10,000; M. Schiff, A. and B. Block, 175 Henry St.
- W. H. Young Garage Co., Manhattan; $5250; I. C. Ramsburg, P. H. Smart, J. Paull, 120 Broadway.

Rochester—Glenwood Garage; $5000; E. L. and H. Ashton, F. E. Smith.

Syracuse—Bissell Garage; $125,000; G. A. Smith, P. Manheim, W. H. Bissell.

Troy—Independent Motor Service Co.; $5000; B. H. Richards, B. G. Worden, Raymond D. Huntlye, John C. Watson, Fred P. Gutelius.

North Carolina.

Dunn—City Garage; Moses Martin, Harvey Strickland.

Greensboro—Carolina Garage, Oridge-Weathers Bldg., service station and auto storage; P. V. Humphries, C. L. Wall.

Ohio.

Canton—Pyramid Truck Co.; store, wash and repair autos; $100,000.

Cleveland—Economy Garage Co.; $1000; C. A. and E. A. Warren, R. S. Austin, G. E. Olenberg, M. L. Dilley.

Oklahoma.

Arnett:
- Arnett Garage, Moser-McNelly Bldg.; Lupher & Burr, Wichita, Kan.
- Barker's Garage & Electrical Shop, to succeed Barker Bros.' Garage.

Chickasha—B. & D. Garage, 615 Kansas Ave.; Jas. Brown, Chas. Dwyer.

Mangum—Auto Paint Shop, rear Rutter Garage Bldg.; R. M. Blassingame.

Walters—Palace Garage; storage and mechanical work; owner, L. R. McPherson.

Wanette—Gentrys & Williamson, Wallace Garage, Main St.; C. R. and C. V. Gentry, J. D. Williamson.

Oregon.

Portland:
- Quality Auto Top & Painting Co., Auto Inn Bldg., Broadway; Nick Ryan.
- Vista Garage, 172 21st St.; garage and repair shop; W. H. Holden, Wm. Smith.

Pennsylvania.

Lewistown—Lewistown Tire Allen Co., Valley St.; vulcanizing plant; Russell Breininger.

South Carolina.

Columbia—Glenn Auto Co.; auto repair business; $125,000.

Gaffney—Gaffney Auto Paint Shop; W. B. Miller, A. B. Dobbins.

South Dakota.

Onida—Onida Tire Repair Shop; mgr., J. N. McQuire.

Watertown—Public Service Station, 205 S. Broadway; J. W. Fanset.

Tennessee.

Columbia—Columbia Motor Service Co.; Geo. P. Tulles, Frank Brigance.

Texas.

Abilene—Ben's Place, Inc.; garage; Ben G., Lucile B. and J. B. Holmes.

Ft. Worth—Ed Rau Garage & Filling Station; $10,000; Ed Rau, E. M. Kane, W. R. Gorham.

Kerrville—Dixie Garage to succeed A. C. Bernhard; Kiefer & Zumwald.

San Antonio—Keystone Service Station, 223 Main Ave.; branch of Texas Tire & Rubber Co.

Washington.

Olympia—Olympic Auto Machine Shop, 5th and Columbia Sts.; Albert L. Miller, L. W. Hollingsworth.

Selah—Selah Motor Co.; general garage business; $10,000; Horace R. Pinkerton, Walter P. Lindsey, S. J. Nagley, N. G. Schatz, J. E. Wilson.

Spokane—Hill's Garage; $6000; Colored Men's Business League.

Winlock—Liberty Garage, Woodman Bldg.; Edward Moe.

Wisconsin.

Appleton—Valley Motor Car Co.; garage and sales room.

Burlington—Ruetor & Son, Jas. Booth Garage; Ben H. and Bernard H. Ruetor.

Fond du Lac—Yellowstone Sales & Service Co., merger of Yellowstone Co., Jos. Sager's vulcanizing business and H. F. Bixby's auto painting and upholstering shop.

Fredonia—Keitel & Meyer, garage.

Green Bay—Triangle Garage Co.; $10,000; Jos. G. DeClerc, Bloomer.

Kaukauna—Nash Garage & Repair Shop; Paul Pagel.

Kewaskum—Kewaskum Auto Service Co.; garage and repair shop; Carl and Harry Schaefer.

La Crosse—La Crosse Automotive Service Co.; specialize in passenger car, truck and tractor service from electrical angle; L. J. Stellpflug, F. W. Humrich.

Manitowoc—Rhode & Co.; garage and repair shop; Commercial St.

Ogema—Ogema Cooperative Station; $20,000; John Lundberg, F. C. Rosenow, P. A. Carlson.

Stevens Point—C. & W. Tire Co.; tire repair shop; Jacob Skibba Bldg.

Webster—Babcock Bros.; garage and accessory shop; Main St.

W. Allis—J. Barnekow & Son; garage and accessory shop, 87h and Greenfield Aves.

Wisconsin Rapids—Badger Tire & Vulcanizing Co.; A. Menier.

DEALERS IN ACCESSORIES, PARTS AND EQUIPMENT.

Arkansas.

Pine Bluff:
- Murphy Tire Co., 202 W. Barraque St., owner, J. J. Murphy.
- Pine Bluff Auto Parts Co.; $25,000; pres., F. W. Bormann; vice pres., N. L. Bormann; sec. and treas., M. D. Bormann.
- Stephens Tire Store, 311 W. 2nd Ave.; mgr., E. P. Nilson.

Connecticut.

Hartford—Lindley Thompson Co.; representative in northern Conn. for Federal tires; C. W. Lindley, C. I. Thompson; service mgr., John L. Richards.

Delaware.

Dover:
- Garage Equipment Co.; gasoline, oil and air pumps; $50,000; Harry K. and Chas. I. Hoch, John J. Jolls, Wilmington.
- Hastings Cooperative Oil Co.; motor fuels; $25,000; Robt. K. Thistle, E. Orange, N. J.; A. E. Silver, New York City; L. B. Phillips, Dover.

Wilmington:
- East End Tire Co.; $25,000; T. L. Croteau, M. A. Bruce, S. E. Dill.
- National Auto Gas & Oil Service Co.; $100,000; C. R. Cohee, C. B. Outten, S. L. Mackey.

Florida.

Sanford—Frank Akers Tire Co., 105 Palmetto Ave.; tires, tubes and accessories.

Georgia.

Atlanta—Motor Tire Co., 90-92 W. Peachtree St.; Kelly-Springfield tires (retail).

Indiana.

S. Bend—Goodlin Automotive Equipment Co.; automotive equipment (wholesale).

Kansas.

Kansas City—Storms Auto Supply Co., 718 Minn. Ave.; auto supplies and accessories.

Manhattan—Manhattan Tire & Accessory Co., Fisk and Diamond tires; owner, Dean Rogers, Topeka; mgr., H. B. Miller.

St. Mary's—Sinco Filling Station, Right Way Garage; owner, A. E. Kerns; mgr., S. S. Shannon.

Topeka—Shelton Tire Co.; $15,000; John R. and Harriet H. Shelton, J. G. Leopold.

Louisiana.

New Orleans—O'Keefe-Daly Supply Co., 507 St. Charles St.; auto accessories and Brunswick tires.

Massachusetts.

Boston:
- Alemite Lubricator Co. of Boston, 35 Cambria St., to handle Alemite products in New England; sales mgr., H. L. Sondermann.
- Fracto Lite Co., 161 Mass. Ave.; pres., Gardner C. Bullard; vice pres., Wayne M. Griffin; treas., Jos W. Worthen.

Michigan.

Adrian—Adrian Cut Rate Tire Shop, 126 W. Maumee St.; tire store.

Bad Axe—East End Garage Co.; auto accessories and parts and garage; $1000.

Detroit:
- S. J. Hoexter, Inc.; machines, tools, auto and truck accessories; $10,000.
- V.-S Sales o., 856 Penobscot Bldg.; direct manufacturers' representative in Detroit and Mich.; T. W. Van Sickle.

Grand Rapids—Dey Battery Service, 352 S. Division Ave., Philadelphia Diamond Grid batteries and sales and service rooms.

Plymouth—Badger Auto Sales Co.; Emmet Miller, E. H. Walters.

Minnesota.

Buffalo—Maxo Tire Shop; G. A. Linier.

Cloverton—Cloverton Hardware Co.

Minneapolis—Hamilton Products Co.; auto accessories; pres., G. A. Wolfe; vice pres., J. P. Henry; sec. and treas., A. G. Furber.

North Branch—Oleson-Bergwell Hardware Co.; hardware, farm implements, etc.; $25,000; Jonas E. and John E. Bergwell, J. O. Oleson.

Waconia—Waconia Tire Shop; L. W. Schwalbe.

Missouri.

Kansas City:
- Baumgardner & Campbell, 1802 Grand St.; Lee tires; mgr., R. Meyer.
- R. & L. Tire & Repair Co., 2301 Grand; Goodrich tires; E. N. Ripley, W. G. Luedke.

St. Louis—St. Louis Battery Sales & Service Co., Advertising Bldg., Locust and 17th Sts., to distribute Westinghouse batteries in southern and eastern Missouri and local service; pres., Gus Blair; sec., T. B. Outhouse; both of Murphysville, Ill.

Nebraska.

York—Lon Edwards Battery Co. to succeed Western Storage Battery Co.; Lon Edwards.

New Jersey.

Arlington—Lincoln T. Kauffmann Co.; selling representative for manufacturers of automotive equipment; Lincoln T. Kauffmann, Arlington; Lewis M. Schwartz, Brooklyn, N. Y.

Bayonne—Hudson County Hardware Co.; $25,000; Irving Gollin, Anthony A. Gottko, Denis W. Maloney.

Newark:

Motor Signal & Accessory Co.; auto accessories, parts, etc.; $150,000.

White Mfg. Co.; auto accessories; $50,000; Benj. F. White, Michael and Wm. L. Greenbaum.

Ridgewood—Houck Mfg. Co.; auto tires, rims, etc.; $1,000,000; Wm. G. Houck, Edward I. Cullen, Jas P. Callender.

New York.

Binghamton:

Baxter-Murray Motor Sales Co.; $30,000; T. I. Russell, E. S. Murray, E. H. Baxter.

P. & H. Sales Co.; auto accessories; $10,000; F. L. Brooks, A. M. Buckley, R. A. Thompson.

Brooklyn:

Eblin Weaver Auto Supply Corp.; $50,000; R. H. Weaver, E. L. Blackman, R. W. Ebling, 509 W. 110th St.

Greenfield Electric Supply Corp.; $25,000; S. Dampf, A. L. Rusn, A. S. Greenfield, 995 Eastern Parkway.

Home Chest Hardware & Paint Co., $20,000; E., A. and F. Eckhouse; atty., A. Levine, 1328 Broadway.

Buffalo—Ellicott Auto Accessory Corp.; $20,000; L. K. Drzewiecki, E. and R. E. Hauck.

Canastota—Geo. E. Fisher Hardware Co.; $50,000; F. U. Frosa, G. S. Andrus, G. E. Fisher.

New York City:

Butterly & Hall, 1291 Bedford Ave., Brooklyn; used car and accessory business and general repair shop for autos, 7 Herkimer St.; T. V. Butterly, W. A. Hall.

Carlton Auto Supplies Co., Manhattan; $25,000; S. Lichtenstein, W. Lee; atty., S. H. Eisler, 261 Broadway.

Columbia Lamp Works, Manhattan; auto supplies; $5000; A. Maibaum, C. Grosshandler, L. J. Brodsky, 211 E. 104th St.

Eugene E. Geoffrey Sales Corp., Manhattan; motors and machinery; $10,000; E. E., R. H. and A. Geoffrey, atty., Singerman & Siegel, 299 Broadway.

Gotham Tire Co.; $10,000; M. Hillman, L. and J. Weiss.

Houston Wheel Sales Corp.; $10,000; J. MacG. Grant, C. A. Holstein, H. S. Gay.

Libby Auto Products Co.; $5000; L. L. Libby, T. J. Ward, G. V. Vanburen.

New York Kelly-Springfield Motor Corporation; motors, tires, engines, etc.; $200,000; E. S. Merrill.

Peerless Automotive Equipment Co.; $50,000; L. Schiavone, S. A. Burgio, J. F. O'Neil.

Perfection Tire Distributors, Manhattan; $25,000; B. Levy, C. and M. Haas; atty., L. Soll, 291 Broadway.

Risler Hornung Corporation, Manhattan; electrical supplies; $1.000; E. A. Risler, Jr., H. Hornung; atty., R. W. Maloney, 307 Broadway.

Scott & Holliday (N. Y.), Ltd., Manhattan; auto accessories; $100,000; A. B. Scott, I. D. Phillips, R. A. Young; atty., Baldwin & Hutchins, 120 Broadway.

Sollimine Sales Corp., Manhattan; rubber goods; $10,000; R. Blanco, F. Vitale, D. Silverman; atty., J. A. Wolf, 160 Broadway.

Standard Carbide Sales Co., Manhattan; coal and tar products; $50,000; S. Null, W. B. Ragatz, R. M. Smith, Plattsburg.

Mel Stringer Sales Corp.; motors, engines, autos, air planes, etc.; $150,000; E. D. Boyer.

Rochester—Teats Oil & Gasoline Co.; motors, engines; $5000; F. H. Falls, E. H. Smith, E. N. Teats.

Schenectady—Sterling Storage Battery Co.; $55,000 and 500 shares preferred stock, $100 each, and 1000 common, no par value.

Syracuse—Stewart Oil & Service Corp.; $100,000; E. A. Kaye, G. C. Stewart, M. T. Frisbi; atty., A. C. Mead.

White Plains—Nash-Pope Co.; motors; $15,000; W. W. Fors, N. Mazzilli, L. Pope.

North Carolina.

Charlotte—Monarch Auto Supply Co.; automobile and automotive accessories; $100,000.

North Dakota.

Grand Forks—General Tire & Rubber Co.; $20,000; W. Bennett, W. Fouse, W. Cahill.

Ohio.

Canton—Stark Tire & Rubber Supply Co.; $10,000; R. E. Shook, J. E. Kinnison, E. E. Wertz.

Columbus—Mutual Auto Supply Co.; $50,000.

Pennsylvania.

Harrisburg—Penn Motor Accessory Co., Inc., 316 N. 2nd St.; Wm. F. Mower, D. P. Young.

Philadelphia—Mac Sales Corp. of Philadelphia, auto parts; $25,000; Jos. H. Skelley, Geo. B. Loughery, John MacArthur.

South Dakota.

Aberdeen—Mitchell Co., Hoisington Dry Goods Co. Bldg., hardware store.

Tennessee.

Columbia—Consumers' Tire & Supply Co., east side of square, auto tires and accessories, gasoline and oils, sales and service depot for U. S. tires and tubes; Chas. Albert, Montreal, Can.; Leon Sternberg, Nashville.

Texas.

Abilene—Giant Motor Supply Co., Radford-Oldham Bldg., 932 N. 2nd St.; accessories.

Amarillo—Auto Store; $23,000; D. W. Mays, Frank Adkisson, B. S. Stone.

Claude—Magnolia Battery & Electrical Co., Magnolia Garage Bldg.; mgr., R. M. Aleander.

Dallas:

Motor Products Co.; $500; J. W. Davis, Geo. Soutter, Jr., A. E. Soutter.

Uneeda Tire Co., 2006 Commerce St.; branch of Great Northern Auto Supply Co., Goodyear seconds; H. Alexander, San Antonio.

Union Auto Supply Co.; $16,000; Sam Reback, Jos. Kurtz, A. M. Warner.

Ft. Worth—Globe Auto Supply Co.; $5000; S. B. Franklin, H. F. Lynn, J. S. Shell.

Houston:

Lundell Parts Co.; $7000; A. E. Lundell, J. A. Myers, O. F. Yeary.

Morrow Co., Inc.; $10,000; J. D. and T. C. Morrow, A. M. Armand.

Vistol Sales Co.; $5000; W. W., Mrs. O. A. and Clarence Johnston.

Virginia.

Richmond—Elba Supply Co.; auto accessory business; $15,000; E. L. Jones, H. Deitrick.

Washington.

Spokane—Frank R. Nelson Tire Co. to succede Brennan Tire Co., W. 1112 1st Ave.; Miller and Firestone tires; Frank R. Nelson.

Wiscons'n.

Fond du Lac—Fond du Lac Tire Shop; Rudolph Grebe, Sylvester Shorr.

Marshfield—Brooks Tire Shop; A. L. Brooks.

Mt. Clements—Hart & Cooklin, Fountain Hotel Bldk.; auto accessories.

MISCELLANEOUS.

Dover, Del.:

California Rapid Transit Co.; motor transporation in Los Angeles, Cal.; $1,000,000.

Montgomery Bus. Co.; $100,000; F. H. Moran, F. H. Dugan, Wm. Clark, Oliver Dyson, Bryn Mawr, Pa.

Beardstown, Ill.—Beardstown Rushville Motor Bus & Truck Co., operate line for carrying passengers and freight.

Benld, Ill.—Benld-Wilsonville Motor Transportation Co., operate motor busses.

Chicago, Ill.—Arrow Line, Inc.; general motor express; $3000; Edgar C. and Ernest A. Stowell, Fred D. Gardner, Harold H. Hepple.

Gillespie, Ill.—Gillespie-Wilsonville Motor Bus Co.; operate motor busses.

Roanoke, Ill.—Woodford County Automotive Trade Assn.; pres., J. R. Gray; 1st vice pres., T. E. Boyd; 2nd vice pres., H. Waldschmidt; 3rd vice pres., B. Goodwin; treas., D. C. Diers; sec., F. J. Darnell; director at large, V. F. Bower.

Staunton, Ill.—Staunton-Livingston Motor Transportation Co.; operate motor vehicles.

Anderson, Ind.—Ryan Mutual Motor Co.; $115,000; John H. Ryan, E. B. Newhouse, Robt. E. Brown.

Kansas City, Kan.—Kansas City, Kan., Auto club, Chamber of Commerce Bldg., 727 Minn. Ave.

Strong City, Kan.—Chase County Auto Machine Co.; $40,000; Clyde and W. J. Wilson, John Hanson.

Springfield, Mass. — Boston-Philadelphia Dispatch Corp.; trucking; $1,000,000; G. M. Burke.

Duluth, Minn.:

Duluth-Virginia White Bus Line; general bus and transfer business; $50,000; pres. and treas., H. A. Spearin; vice pres., Z. C. Hinkley; sec., L. A. Spearin.

North Shore White Bus Line; general transfer and bus business; $50,000; pres., Grace Olon; vice pres., Borghild Dahl; sec. and treas., Wm. E. Tracy.

Spearin Transfer Line; general transfer and bus business; $50,000; pres. and treas., L. A. Spearin; vice pres., H. A. Spearin; sec., Wm. E. Tracy.

Motordale, Minn.—New Germany Hardware Co., Mielke and Daily Bldg.; retail business; vice pres., Alfred Anderson.

Kansas City, Mo.; Westport Auto Livery Co.; $4000.

St. Louis, Mo.:

National Vulcanizing School, Inc.; $15,000; atty., Blodgett & Fisher, 706 Chestnut St.

Universal Auto Title Deed Co.; $100,000; atty., Hugh K. Wagner, 212 Calumet Bldg.

Newark, N. J.—Midmon Bus Co.; auto bus transportation business; $100,000.

Paterson, N. J.—N. Jersey Bus Co.; $50,000; Frank Riley, Donald and Jas. Ross.

Brooklyn, N. Y.:

Long Distance Trucking Co.; $20,000; C. E. Wesslon, C. Spicer; atty., C. H. Ludder, 161 Meserole Ave.

Samson Trucking Co.; $10,000; W. Gollhofer, B. J. Quinn, L. H. Heberlein; atty., E. H. Lockwood, 66 Broadway.

New York, N. Y.:

Air Transport Equipment, Manhattan, $31,000 and 12,000 shares of preferred stock, $25 each, and 300 common, no par value.

Central Park West Motor Co., Manhattan; taxicabs; $10,000; C. Ennis, C. Simmons, H. Parker; atty., C. M. Norden, 274 W. 125th St.

Delancey Concrete Buildings Corp., Manhattan; storage houses and garages; $10,000; H. Aghamalian, S. and M. Thompson, 189 Montague St., Brooklyn.

G. D. T. Auto Renting Co., Manhattan; $6000; H. Golden, C. R. Dann, H. Taffer, 94 Montrose Ave., Brooklyn.

Mutual Motor Freight Corp., Manhattan; $50,000; S. Pincus, E. F. Duby, M. H. Israel; atty., Israel & Schuhmann, 51 Chambers St.

Parkway Used Car Co., Manhattan; $12,000; J. S. Nathanson, C. J. Gilbaun, Bert C. Rudy; atty., M. Monfried, 299 Broadway.

Rebuilt Motor Car Export Corp.; $30,000; M. and D. Paris, R. Coughlan.

Renton Auto Recovery Service; $100,000; W. C. Ackley, J. H. Phontez, W. B. Renton.

Syracuse, N. Y.—United Used Car Corp. of Del.; representative, S. W. Roberts, Syracuse.

Cincinnati, O.:

Checkered Cab Co.; $5000; W. Hodge, B. E. Pace, F. C. Busching, J. W. Matthews, E. R. Donogue.

Commercial Aviation Co.; erect hanger, construct flying field and furnish instructions in operating machines, as well as for commercial purposes; $100,000.

Motors Investment Co.; $100,000.

Surety Motor Bonding Co.; $10,000; W. R. McEuen, A. Miller, M. C. Ripple, W. Coale, F. Milley.

Toledo, O.—Black & White Cab Co.; $10,000; B. J. Ford, R. J. Moorehead, E. J. Lynch, J. W. Hackett, S. A. Crzezinski.

Ardmore, Okla.—Auto Dealers' Assn., Inc.; $1000; Tom Cooper, R. L. Beede, J. P. Brawley.

Lansdale, Pa.—Bucks-Montgomery Motor Trade Assn., auto dealers.

Providence, R. I.—Rhode Island Motor club; Henry Salomon, Jerome B. Farnum, Danl. McIver, Walter P. Pierce, Edward L. Singsen.

El Paso, Tex.—Auto Mortgage Co.; $100,000; I. D. Walters, O. C. Youngblood, R. G. Martin.

San Antonio, Tex.—American Motorist Protective League; $500; W. A. Hogan, M. D. Crawford, D. E. Wolfe.

Waco, Tex.—Waco Auto Wrecking Co., 713 Franklin St.; W. N. Rose, J. T. Luther.

Alexandria, Va.—Colonial Auto Bus Line, Inc., operate trucks and autos for transportation of freight and passengers; $25,000; Leonard E. Sheads, Wm. M. Garman.

Spokane, Wash.—Okanogan County Auto Dealers' Assn.; pres., Maurice Bowen, Tonasket; vice pres., R. J. Frank, Oroville; sec.-treas., B. A. Thayer, Okanogan

Specifications and Prices of Pneumatic Tires and Tubes

(These data have been compiled from reports received from manufacturers within the last 30 days, and while care has been taken as to their reliability, the publisher assumes no responsibility for any error. Prices do not include government excise tax unless so stated.)

EXPLANATION OF ABBREVIATIONS—AT—Angle Tread; Blk—Black; BT—Brown Tube; Cd—Cord; Cl—Clincher; Clt—Cleated Tread; Coml—Commercial Car; Comp— Compression; DA—Double-Anchored; DW—Double Wall; ExH—Extra Heavy; Ex-Ply—Extra Ply; Fab—Fabric; Fr—Front Wheels Only; GrT—Green Tube; GT—Gray Tube—HB—Herring-Bone Tread; HS—Heavy Service; IT—Inner Tube; Kam—Kam Tread; Lam—Laminated; NS—Non-Skid; Pl—Plain Tread; QD—Quick Detachable; Rb—Ribbed Tread; Reg—Regular; RT—Red Tube; RW—Rear Wheel; SS—Straight Side; Stg—Staggered Tread; Tr—Tread—Tri—Triple Tread; Univ—Universal Tread; WS—With Service; WS—Without Service.

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Achilles Rubber & Tire Co., Binghamton, N. Y.																		
Super-Grip N S Cd	....	35.25	49.20	....	58.75	59.75	60.80	69.30	72.30	75.90	77.20	80.80	85.20	92.80	97.65	140.00	....	....
Rb Cd	29.00	33.25	47.20	....	54.75	55.75	56.80	65.30	68.60	71.90	73.20	....	81.20	88.80	93.65	....	....	....
Steadfast N S Fab	19.70	23.50	28.00	32.80	37.40	39.25	40.10	....	....	53.25	55.65	....	....	65.35	69.25	....	....	....
Heavy R & G T	3.35	4.15	4.35	5.30	5.55	5.70	5.85	7.05	7.29	7.35	7.40	7.55	8.75	8.85	9.25	14.00	....	....
Steadfast G T	3.15	3.75	4.25	5.05	5.25	5.45	5.75	....	....	7.40	7.60	7.80	....	8.40	8.90	....	....	....
Acme Rubber Mfg. Co., Trenton, N. J.																		
Acme Pl	15.00	18.00	22.00	25.00	26.00	27.00	28.00	36.00	37.00	38.00	40.00	41.00	....	46.00	50.00	....	....	....
Kam	16.00	20.00	23.00	28.00	29.00	30.00	31.00	39.00	40.00	41.00	42.00	44.00	....	49.00	53.00	....	....	....
Hemisphere	19.00	23.00	26.00	32.00	33.00	34.00	35.00	44.00	....	47.00	48.00	50.00	....	57.00	60.00	....	....	....
Supersize Cd Rb	....	....	....	....	43.00	44.00	46.00	50.00	....	53.00	54.00	....	....	64.00	68.00	96.00	....	....
Cd Kam	....	....	....	....	43.00	44.00	46.00	50.00	....	53.00	54.00	....	....	64.00	68.00	96.00	....	....
R T	3.00	3.40	3.70	4.40	4.60	4.70	4.90	5.70	5.80	5.90	6.00	6.30	....	7.50	7.80	13.00	....	....
Advance Rubber Co., Brooklyn, N. Y.																		
Top Notch	17.15	21.05	25.25	32.30	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	57.10	58.60	62.35	....	....	....
N S	19.10	23.20	28.05	33.90	36.80	38.60	39.60	49.90	51.40	51.36	55.45	56.50	61.65	65.35	69.25	....	....	....
R T	3.95	4.70	5.40	6.35	6.55	6.70	6.95	8.40	8.55	8.70	9.00	9.15	....	10.25	10.80	....	....	....
Ajax Rubber Co., Inc., 220 W. 57th St., New York City.																		
Ajax Fab. Pl	15.55	18.50	22.75	25.80	30.30	31.80	32.50	....	....	43.15	45.10	47.20	....	52.90	....	....	....	....
Road King Fab N S.	17.20	20.30	24.30	28.30	33.65	34.95	35.75	45.00	46.45	47.95	50.10	50.65	55.70	58.80	62.35	....	....	....
Special Fab N S S S.	....	....	25.95	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ajax Cd Rd S S	....	....	39.90	....	50.75	52.30	53.65	57.40	58.70	60.20	61.95	63.25	71.45	75.05	78.90	....	....	....
Cd Clt N S	....	34.30	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.05	6.30	7.00	7.30	7.55	....	....	....
R T	3.45	4.00	4.30	4.85	5.25	5.40	5.60	6.50	6.70	6.90	7.10	7.45	7.95	8.40	8.80	....	....	....
Allen Tire & Rubber Co., Allentown, Pa.																		
Fab Rb	15.80	19.00	24.00	27.50	31.10	32.30	33.40	41.20	42.50	43.80	45.80	46.50	50.50	53.80	57.20	....	....	....
Fab N S	16.60	19.80	24.80	28.30	31.90	33.00	34.10	41.80	43.00	44.40	46.60	47.20	51.20	54.40	58.00	....	....	....
Cd Rb	....	28.40	36.40	42.50	47.20	48.00	49.00	54.50	56.00	57.40	58.80	60.00	67.50	71.30	74.60	....	....	....
Cd N S	....	29.00	37.00	43.40	47.90	48.50	49.80	55.20	56.70	58.20	59.40	60.80	68.60	72.00	75.40	....	....	....
G T	2.20	2.70	3.10	3.50	3.80	4.00	4.20	4.50	4.90	5.00	5.20	5.30	6.50	6.90	7.20	....	....	....
R T	3.00	3.50	3.70	4.50	4.70	5.00	5.10	6.00	6.20	6.30	6.50	6.70	7.20	7.60	7.80	....	....	....
Amazon Rubber Co., Akron, O.																		
Amazon Cd Rb N S	....	34.15	43.30	....	55.05	56.60	58.05	62.05	63.65	65.30	66.95	68.55	77.45	81.20	85.10	....	....	....
Fab N S	18.90	22.55	28.95	33.25	37.85	40.05	40.75	....	....	....	....	....	....	....	....	....	....	....
Cd R T	....	4.05	4.75	....	5.55	5.80	6.00	7.50	7.70	7.80	7.95	8.15	8.85	9.15	9.60	....	....	....
Fab G T	2.95	3.55	4.10	....	4.85	5.05	5.25	....	....	....	....	....	....	....	....	....	....	....
***American Rubber Co., Chicago, Ill.**																		
Masterbilt Fab Rd	19.55	23.25	27.70	32.45	37.00	38.90	39.70	....	....	....	....	....	....	....	....	....	....	....
Fab N S	21.70	25.55	30.80	36.10	41.15	43.20	44.10	55.00	56.75	58.60	....	....	....	71.90	....	....	....	....
Cd Rb	....	32.50	45.50	....	59.15	60.50	62.00	....	....	....	71.50	....	....	87.20	....	....	....	....
Cd N S	....	34.00	48.95	....	62.00	63.50	65.00	70.00	71.50	73.50	75.50	....	87.00	91.50	....	....	....	....
G T	3.15	3.75	4.25	5.05	5.25	5.45	5.70	6.65	6.85	7.00	7.05	....	8.20	8.55	....	....	....	....
American Rubber & Tire Co., Akron, O.																		
Amer.-Ak. Rb or N S.	17.60	20.50	26.50	29.40	35.30	37.00	38.00	47.20	48.80	50.30	52.60	53.40	....	61.70	65.50	....	....	....
Americord Rb or N S	....	30.50	43.20	....	54.90	56.60	58.00	62.10	63.50	65.10	67.00	68.50	77.30	81.20	85.40	117.65	166.00	213.85
Americord Tubes	....	5.50	5.80	....	6.80	7.10	7.50	8.50	8.70	8.90	9.10	9.30	10.40	10.50	10.70	16.50	21.70	27.80
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	....	7.25	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
***American Tire & Rubber Co., Mansfield, O.**																		
America Pl Cl	15.52	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S Cl	16.90	20.10	....	28.01	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S S S	....	....	24.70	....	32.86	34.52	35.24	43.91	45.36	46.81	48.93	50.10	53.79	57.40	60.83	....	....	....
G T	2.77	3.28	3.71	4.42	4.58	4.78	4.99	5.81	5.96	6.12	6.17	6.48	7.20	7.45	7.76	....	....	....
R T	3.38	3.96	4.27	4.83	5.09	5.29	5.50	6.42	6.63	6.83	7.04	7.40	7.91	8.37	8.78	....	....	....
Andrews & Burton Co., Kansas City, Mo.																		
Blue Seal N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	48.15	49.45	51.65	53.40	....	59.50	63.00	....	....	....
Cd Univ	....	....	42.85	....	54.45	55.85	57.40	61.25	62.95	64.55	66.15	67.75	....	80.30	84.15	....	....	....
Burton-Bilt N S	12.00	13.95	15.55	17.80	18.20	18.70	19.10	21.70	22.00	22.75	23.45	24.60	....	28.15	29.20	....	....	....
G T	2.70	3.20	3.65	4.30	4.40	4.65	4.85	5.35	5.45	5.60	5.75	5.90	....	6.95	7.55	....	....	....
R T	3.90	4.45	4.80	5.35	5.65	5.85	6.05	7.00	7.20	7.40	7.65	8.00	....	9.05	9.25	....	....	....
Apollo Tire & Rubber Co., Cleveland, O.																		
Apollo Cd N S, A S	....	39.75	46.70	....	57.75	60.90	64.50	67.80	69.50	71.60	75.50	....	....	88.60	93.50	148.00	196.00	244.00
Fab N S, A S	....	31.90	38.75	43.50	49.75	52.90	56.60	59.90	61.70	63.65	67.50	....	....	80.00	85.60	....	....	....
Comp R T	....	6.00	6.35	7.35	7.50	7.75	8.50	9.25	9.50	9.75	10.80	10.30	....	11.80	12.45	19.50	27.00	35.00
Comp G T	....	5.50	5.85	6.85	7.00	7.25	8.25	8.75	9.00	9.25	10.80	9.80	....	11.30	11.95	19.00	26.50	34.50
Heavy R T	....	6.50	6.85	7.85	8.00	8.25	9.00	9.75	10.00	10.25	11.25	10.80	....	12.30	12.95	20.00	27.50	35.50
Heavy G T	....	6.00	6.35	7.35	7.50	7.75	8.50	9.25	9.50	9.75	10.80	10.30	....	11.80	12.45	19.50	27.00	35.00
Comp Cd Web R T	....	10.00	11.25	11.60	12.00	12.50	12.75	13.00	13.75	14.50	15.90	15.75	....	16.00	17.50	28.00	32.00	38.50
Comp Cd Web G T	....	9.00	10.50	10.25	11.00	11.75	12.00	12.25	12.75	13.25	14.90	14.75	....	15.25	16.75	27.00	31.00	37.75

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*These prices include government excise tax.

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Archer Tire & Rubber Co., Minneapolis, Minn.																		
Archer Fab Pl	15.00	18.50	22.75	25.80	30.30	31.50	32.50	....	....	....	....	....	....	....	....	....	....	....
Fab Highway	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.80	58.80	62.35	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.75	3.20	3.70	4.30	4.50	4.70	4.90	5.80	5.95	6.00	6.10	6.40	7.10	7.40	7.70	....	....	....
R T	3.10	3.50	4.10	4.75	4.90	5.15	5.35	6.25	6.45	6.60	6.75	7.10	7.70	8.15	8.50	....	....	....
Ardmore-Akron Tire Co., Oklahoma City, Okla.																		
Ardmore Rb	16.15	20.80	24.20	26.95	31.00	32.55	33.60	42.15	43.10	45.50	46.45	47.05	51.45	54.70	58.00	....	....	....
Ardmore N S	17.40	23.95	26.45	29.50	33.55	35.40	36.00	44.85	45.85	47.15	49.15	50.10	54.60	57.75	61.00	....	....	....
Armstrong Rubber Co., New York City.																		
Armstrong Cd Rb	....	28.80	41.15	50.42	....	53.90	....	....	....	62.05	....	....	....	77.35	....	....	....	....
Cd N S	....	28.80	41.55	50.42	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	110.40	156.15	201.15
Fab Rb 4	20.50	24.00	30.60	30.95	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	20.50	24.00	30.65	30.95	....	....	....	....	....	....	....	....	....	....	....	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	12.40	17.90	21.25
Ashland Tire & Rubber Co., Ashland, O.																		
Ashland Cd Rb	....	29.80	40.00	....	52.80	53.95	55.35	58.85	60.35	61.85	....	64.80	....	76.55	80.00	....	....	....
Cd N S	....	31.35	41.50	....	54.40	55.55	56.95	60.85	62.60	64.25	....	67.40	....	79.55	83.80	....	....	....
Fab Rb	19.40	22.10	27.30	31.85	35.10	36.85	37.60	44.40	46.50	47.80	49.55	....	58.15	61.00	64.85	....	....	....
Fab N S	20.20	23.90	29.25	34.10	37.45	38.65	39.95	47.25	49.35	50.55	52.40	....	60.35	64.00	67.90	....	....	....
Ashland G T	3.25	3.50	4.10	4.60	4.70	4.85	5.10	5.85	6.00	6.20	6.30	6.55	6.90	7.20	7.55	....	....	....
R T	3.70	3.90	4.25	5.00	5.20	5.30	5.40	6.38	6.45	6.70	6.80	6.95	7.50	7.80	8.25	....	....	....
Batavia Rubber Co., Batavia, N. Y.																		
Batavia Red Seal Pl	18.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S	19.70	23.50	28.00	32.80	37.40	39.25	40.10	50.00	51.60	53.25	55.65	56.50	....	65.35	69.25	....	....	....
Beacon Tire Co., Inc., Beacon, N. Y.																		
Beacon Fab Rd Skid	17.25	20.85	25.30	28.70	33.65	35.35	36.10	....	....	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Red Seal Cd Rb Skid	....	34.25	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	....	....	77.35	81.35	110.40	156.15	201.15
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	....	....	5.95	6.00	6.30	....	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	....	....	6.65	6.85	7.20	....	8.15	8.55	....	....	....
Over Size G T	....	4.30	4.65	....	5.80	5.95	6.00	6.90	7.10	7.30	7.50	....	....	8.90	9.65	11.50	16.50	20.50
Over Size R T	....	4.70	5.15	....	6.50	6.65	6.85	7.75	7.95	8.15	8.35	....	....	9.75	10.50	12.40	17.90	21.25
Bergen Rubber Co., Rutherford, N. J.																		
Bergen R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Red Cd Type	....	4.35	4.65	....	6.00	6.15	6.30	7.30	7.50	7.65	7.85	8.10	9.50	9.95	10.40	....	....	....
Bergougnan Tire Corp., Trenton, N. J.																		
Bergougnan Fab N S	24.00	27.00	33.75	39.00	43.75	45.75	47.50	51.75	53.75	55.25	58.75	63.75	67.45	70.75	75.25	....	....	....
Cd Rb	....	33.85	42.75	....	53.75	54.75	56.25	62.75	65.25	66.00	67.75	69.50	77.50	81.00	85.50	....	....	....
Cd N S	....	35.65	45.75	....	57.50	59.50	61.75	66.25	68.75	69.25	71.00	72.75	81.75	85.00	89.75	133.00	179.00	225.00
Tubes	3.90	4.45	5.00	6.05	6.25	6.50	6.75	7.85	8.10	8.30	8.55	8.80	....	9.85	10.30	....	....	....
Cd Tubes	....	5.75	6.55	....	7.85	8.10	8.30	9.30	9.45	9.65	9.85	10.05	....	11.25	11.85	....	....	....
Black Hawk Tire & Rubber Co., Des Moines, Ia.																		
Moccasin Fab N S	18.70	22.20	28.10	31.10	37.35	39.30	40.15	50.00	51.60	53.25	55.70	56.50	....	65.35	69.30	....	....	....
Fab Rb	....	22.20	28.10	31.10	....	39.30	40.15	....	....	53.25	55.70	56.50	....	....	....	....	....	....
Fab Pl	16.65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Moccasin Chief Cd	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.55	2.85	3.40	4.10	4.15	4.45	4.60	5.40	5.55	5.70	5.75	6.05	6.75	6.90	7.30	....	....	....
R T	3.00	3.45	3.75	4.40	4.60	4.80	4.95	5.75	6.00	6.10	6.40	6.65	7.10	7.55	7.85	....	....	....
Bicker Tire & Rubber Co., St. Paul, Minn.																		
Oversize Fab Rb	19.35	23.15	28.50	32.45	38.20	40.25	41.05	51.40	52.95	54.65	57.25	58.25	63.45	67.25	71.50	....	....	....
Fab N S	20.15	24.00	29.40	33.45	39.15	41.20	42.05	52.45	54.00	55.80	58.35	59.40	64.60	68.45	72.75	....	....	....
Oversize Cd N S	....	35.05	46.45	....	57.85	59.45	61.15	65.20	67.00	68.75	70.40	72.05	81.40	85.50	89.30	....	....	....
G T	3.00	3.50	4.20	4.80	5.00	5.20	5.50	6.50	6.90	7.00	7.20	7.50	8.00	8.35	8.65	....	....	....
R T	3.35	4.00	4.45	5.10	5.50	5.70	5.85	6.85	7.10	7.40	7.60	7.80	8.45	9.10	9.65	....	....	....
Braender Rubber & Tire Co., Rutherford, N. J.																		
Braender Pl	15.00	18.50	22.75	25.80	30.30	31.50	32.50	40.50	41.80	43.15	45.10	45.85	52.20	53.80	56.35	....	....	....
N S	17.25	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	57.20	58.80	62.35	....	....	....
Cd N S 4-ply	....	33.00	41.15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Giant Spec Fab N S	17.25	20.50	25.30	26.75	33.65	35.35	36.10	45.00	....	....	....	....	....	....	....	....	....	....
Oversize Fab 5-ply	....	26.75	31.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	37.00	....	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	110.40	156.50	201.15
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
Brictson Manufacuring Co,, Omaha, Neb.																		
Brictson	35.10	42.85	50.10	63.10	65.15	67.00	69.45	77.85	81.60	85.40	89.00	93.95	....	106.50	113.30	225.50	....	....
Tubes	4.40	5.25	5.45	6.50	6.60	6.75	6.90	8.45	8.60	8.75	8.95	9.20	....	10.40	10.75	16.50	....	....
Brunswick Balke Collender Co., Chicago, Ill.																		
Brunswick B B C	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Swastika	....	32.50	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	110.40	156.15	201.15
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	....	7.30	7.55	12.40	17.90	21.25
***Burdick Tire & Rubber Co., Noblesville, Ind.**																		
Wrapped N S Fab	....	25.50	30.25	33.50	37.50	40.00	41.75	48.25	49.75	52.25	54.00	....	....	63.75	....	....	....	....
Wrapped N S Cd	....	36.50	44.75	50.00	57.25	58.75	59.00	64.75	65.25	67.50	69.50	....	....	79.75	....	....	....	....
Air Bag Rb Fab	....	28.50	34.50	41.75	44.85	45.75	47.25	57.50	58.75	59.75	61.00	63.75	64.25	66.50	70.25	....	....	....
Air Bag Rb Cd	....	35.25	45.50	....	58.50	59.25	60.25	64.25	65.25	68.50	70.50	71.75	77.75	81.50	85.50	138.00	....	230.00
Air Bag N S Fab	....	28.75	34.50	42.25	45.00	47.25	48.75	58.75	59.75	60.25	61.75	63.75	64.75	69.75	72.75	....	....	....
Air Bag N S Cd	....	39.50	46.75	53.25	58.75	61.00	62.25	67.25	68.50	70.50	72.50	73.75	80.00	83.00	89.75	143.00	....	238.00
R T	....	4.50	4.95	5.50	5.90	6.15	6.40	7.40	8.00	8.20	8.40	8.65	9.00	9.50	10.05	15.50	....	30.00
G T	....	3.75	4.25	4.75	5.30	5.70	5.95	6.90	7.00	7.20	7.35	7.60	8.10	8.60	8.90	....	....	....
Canton-Blackstone Co., Youngstown, O.																		
Blackstone Rb	16.00	19.25	24.05	26.90	31.95	33.60	....	....	....	....	....	....	....	....	....	....	....	....
N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.25	....	....	....
Canton Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
Canton tubes	....	3.85	4.15	....	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
***Canton Rubber Works, Canton, Mass.**																		
G T	2.85	3.35	3.80	4.50	4.65	4.90	5.10	5.95	6.10	6.25	6.30	6.60	7.30	7.60	7.95	11.50	17.00	20.0
R T	3.45	4.05	4.35	4.95	5.15	5.40	5.60	6.55	6.75	7.00	7.20	7.55	8.10	8.55	9.00	13.00	19.00	22.
Carlisle Tire Corp., Stamford, Conn.																		
Carlisle Lighting Cd	....	....	40.20	....	50.90	52.35	53.75	57.50	59.25	60.50	62.00	63.50	71.25	75.25	78.75	....	....	....
Carlisle Tire & Rubber Co., Carlisle, Pa.																		
Carmojon G T	2.75	3.15	3.45	3.85	4.00	4.15	4.30	4.80	4.95	5.10	5.25	5.45	5.75	6.05	6.40	....	....	....
R T	2.90	3.35	3.65	4.10	4.25	4.40	4.55	5.10	5.25	5.40	5.55	5.80	....	6.40	6.75	....	....	....
G T unit	3.15	3.15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
R T unit	3.35	3.35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

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*These prices include government excise tax.

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
De Luxe R T	3.30	3.80	4.15	4.65	4.80	4.90	5.05	5.65	5.80	5.95	6.15	6.35	....	6.95	7.20	....	....	....
R T	3.45	4.00	4.35	4.90	5.05	5.15	5.30	5.90	6.15	6.30	6.50	6.70	....	7.30	7.55	....	....	....
Gr T	3.60	4.20	4.55	5.15	5.30	5.40	5.55	6.35	6.50	6.65	6.85	7.05	....	7.65	7.90	....	....	....
B T Univ	3.60	3.60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
R T Univ	3.80	3.80	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Gr T Univ	4.00	4.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
H. Channon Co., Chicago, Ill.																		
Gripwell Fab Rb	15.40	18.35	22.60	25.65	30.15	31.65	32.35	....	....	43.00	44.95	....	....	52.75	....	....	....	....
Fab N S	17.10	20.35	25.15	28.55	33.50	35.20	35.95	....	....	47.80	49.95	....	....	58.65	....	....	....	....
Cd N S	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	....	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	....	....	6.65	6.85	....	....	8.15	....	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	....	....	5.95	6.00	....	....	7.30	....	....	....	....
***Cleveland Rubber Corporation Co., Cleveland, O.**																		
Cleveland Fab	18.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cd	....	33.04	44.50	....	56.50	58.50	60.00	65.00	67.00	69.00	70.00	72.00	80.00	84.00	89.00	....	....	....
R T	3.75	4.25	4.75	....	5.50	5.75	6.00	6.75	7.25	7.50	7.75	8.00	8.75	9.50	10.00	....	....	....
Columbia Tire & Rubber Co., Mansfield, O.																		
Columbia Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	....	77.35	81.35	....	....	....
Fab N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	....	....	....	....	....	....	....	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	....	7.30	7.55	....	....	....
Columbus Tire & Rubber Co., Columbus, O.																		
Cd N S	....	....	41.05	....	52.20	53.80	55.20	59.00	....	61.90	63.70	65.05	78.50	77.20	....	....	....	....
Fab N S	18.00	26.10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
G T	2.85	3.35	3.80	4.45	4.60	4.80	5.00	5.65	5.85	6.05	6.25	6.45	....	7.50	8.00	....	....	....
R T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	....	8.65	9.05	....	....	....
Combination Rubber Manufacturing Co., Bloomfield, N. J.																		
Viking Fab N S	20.15	24.35	32.35	36.90	38.60	40.30	41.05	47.35	50.60	52.85	56.00	59.30	63.00	66.35	72.30	....	....	....
Cd Rb	....	....	43.55	....	55.35	57.15	59.40	63.30	65.10	66.90	68.40	....	79.50	82.80	....	....	....	....
Cd N S	....	35.85	44.90	52.20	56.70	58.50	60.75	65.10	66.90	68.75	70.20	....	81.30	84.60	88.90	....	....	....
G T	2.90	3.30	3.60	4.70	4.85	5.00	5.10	6.10	6.20	6.35	6.40	6.60	....	7.50	7.80	....	....	....
R T	3.20	3.70	3.95	5.20	5.40	5.55	5.70	6.80	6.90	7.00	7.05	7.30	....	8.35	8.65	....	....	....
Consumers Tire & Rubber Corporation, New York City.																		
Gray Tread Pl	15.80	20.05	23.50	31.30	31.95	33.50	34.30	42.75	....	45.50	47.65	48.35	....	55.80	60.15	....	....	....
N S	18.50	23.50	27.45	36.65	37.40	39.25	40.10	50.00	....	52.25	55.65	56.50	....	65.35	69.25	....	....	....
White Tread Pl	22.05	26.75	31.50	37.75	43.65	44.85	45.50	51.35	....	55.75	58.25	61.85	....	71.25	76.65	....	....	....
N S	24.95	31.60	36.25	44.80	46.85	48.05	49.90	57.50	....	61.35	64.00	67.75	....	76.45	81.50	....	....	....
Cd N S	....	40.65	44.85	53.35	64.95	66.55	68.45	....	....	77.05	78.90	80.80	....	94.00	100.35	....	....	....
R T	4.00	4.80	5.00	6.20	6.40	6.50	6.60	8.40	....	8.80	9.10	9.20	....	10.65	11.30	....	....	....
Continental Rubber Works, Erie, Pa.																		
Vitalic N S	18.45	22.35	27.10	31.35	35.60	37.25	38.25	....	....	51.30	53.50	55.65	....	63.05	69.35	....	....	....
Reg G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
Reg R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Ex Heavy G T	3.25	3.85	4.40	5.15	5.35	5.60	5.80	6.80	6.95	7.15	7.20	7.55	8.35	8.75	9.05	....	....	....
Ex Heavy R T	3.95	4.60	5.00	5.65	6.00	6.20	6.40	7.50	7.75	8.00	8.25	8.65	9.25	9.80	10.25	....	....	....
Cord Tire Corporation, Chester, W. Va.																		
Cord N S	....	35.75	44.50	35.75	55 50	57.25	59.25	63.00	64.35	67.05	68.00	....	....	82.50	....	....	....	....
Corona Cord Tire Co., Butler, Pa.																		
N S	28.00	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	....	73.65	77.35	....	....	....	....
Pure gum tubes	2.70	3.20	3.65	....	4.45	4.65	4.85	5.65	5.80	5.95	6.10	....	6.95	7.30	....	....	....	....
R T	3.30	3.85	4.15	....	5.00	5.15	5.35	6.25	6.45	6.65	6.85	....	7.30	8.15	....	....	....	....
Corona Rubber Manufacturing Co., Philadelphia, Pa.																		
Tubes R T	3.90	4.50	4.90	5.50	5.85	6.05	6.30	7.35	7.60	7.80	8.05	8.45	9.05	9.60	10.05	....	....	....
G T	3.15	3.75	4.25	5.05	5.25	5.45	5.70	6.65	6.85	7.00	7.20	7.40	8.20	8.55	8.90	....	....	....
Cupples Co., St. Louis, Mo.																		
Cupples Fab Pl Cl	15.00	18.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Rough Tr	17.25	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.65	....	58.80	62.35	....	....	....
Cd Rough Tr	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	....	73.65	77.35	81.35	....	....	....
Heavy Lam R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Curtis Tire & Rubber Co., Rochester, N. Y.																		
Curtis Fab Pl	17.55	20.90	23.15	....	30.30	31.80	32.50	....	41.80	43.15	45.10	46.65	52.90	56.10	....	....	....	....
Spec Road Type	18.60	22.65	25.85	30.25	34.40	36.20	36.90	....	47.60	49.00	51.30	52.10	60.25	63.85	....	....	....	....
Cd Rb	....	....	38.90	....	49.45	50.70	52.05	55.65	57.15	58.60	60.10	61.50	69.55	72.90	76.40	....	....	....
Cd Spec Road Type	....	....	40.95	....	52.05	53.35	54.85	58.60	60.15	61.60	63.25	64.75	73.20	76.75	80.40	109.80	....	....
Fab G T	2.85	3.50	3.85	4.55	4.75	4.90	5.15	....	6.15	6.30	6.55	6.75	7.80	8.00	....	....	....	....
Fab R T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	....	6.85	7.00	7.25	7.60	8.65	9.05	....	....	....	....
Cd G T	....	....	3.85	....	4.75	4.90	5.15	6.00	6.15	6.30	6.55	6.75	7.40	7.80	8.00	11.80	....	....
Cd R T	....	....	4.40	....	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	13.15	....	....
Dayton Airless Tire Co., Dayton, O.																		
Dayton Pl or Rb Fb	28.75	33.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S Fb	29.95	34.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tour Pl or Rb R W	....	37.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S R W	....	38.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Dayton Rubber Manufacturing Co., Dayton, O.																		
Dayton Fab Pl	16.05	19.65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	18.00	21.25	26.05	30.85	35.25	37.00	37.90	46.85	48.60	50.35	52.70	53.45	58.40	62.70	65.50	....	....	....
Thorobred Cd N S	....	33.60	42.95	....	54.90	56.50	57.75	62.00	63.40	66.20	66.50	68.30	77.30	81.00	85.55	....	....	....
G T	2.45	3.20	3.85	4.55	4.70	4.90	5.15	6.05	6.20	6.40	6.50	6.80	7.50	7.75	8.10	....	....	....
R T	3.30	3.90	4.20	4.90	5.15	5.40	5.50	6.50	6.65	6.85	7.10	7.45	8.00	8.50	8.80	....	....	....
The Delion Tire & Rubber Co., Baltimore, Md.																		
Delion Fab N S	18.85	22.35	28.30	31.25	38.65	39.65	40.45	46.80	48.30	49.85	52.15	52.90	....	61.15	64.85	....	....	....
Cd N S	....	34.25	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Fab tubes	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
Cd tubes	....	4.75	5.20	....	6.50	6.70	6.90	7.75	7.95	8.20	8.35	8.60	9.50	9.75	10.00	....	....	....
Denman-Myers Cord Tire Co., Cleveland, O.																		
Cd N S	....	32.70	43.20	....	54.90	56.60	58.05	62.10	63.55	65.15	....	....	77.35	81.20	....	....	....	....
Cd Rb	....	32.05	42.35	....	53.80	55.50	56 90	60.85	62.30	63.85	....	....	75.80	79.60	....	....	....	....
Diamond Rubber Co., Inc., Akron, O.																		
Diamond Pl	15.50	19.05	23.45	26.60	31.20	32.75	33.50	....	....	....	....	....	....	....	....	....	....	....
Squeegee	17.30	20.60	26.05	28.85	34.70	36.45	37.20	46.40	47.90	49.45	51.60	52.40	57.20	60.60	64.25	....	....	....
Cd	....	32.10	42.20	....	53.85	55.50	56.95	60.95	62.35	63.95	65.80	67.20	78.85	79.70	83.80	....	....	....
G T	2.75	3.30	3.70	4.40	4.50	4.80	5.00	5.80	5.95	6.10	6.15	6.45	....	7.45	7.75	....	....	....
R T	3.40	3.95	4.25	4.85	5.10	5.30	5.50	6.40	6.60	6.85	7.05	7.40	....	8.35	8.80	....	....	....
Dryden Rubber Co., Chicago, Ill.																		
Tubes G T	3.25	3.90	4.25	5.05	5.25	5.45	5.70	6.65	6.85	7.00	7.05	7.40	8.20	8.55	8.90	....	....	....
R T	3.90	4.50	4.90	5.50	5.85	6.05	6.30	7.35	7.60	7.80	8.05	8.45	9.05	9.60	10.05	....	....	....

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*These prices include government excise tax.

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Dunlop Tire Sales Co., New York City.																		
Dunlop Cd N S	....	31.25	41.55	51.80	52.85	54.45	56.40	59.75	61.70	62.65	64.80	66.95	74.25	78.05	81.35	....	....	....
Tubes	3.30	3.95	4.30	4.85	5.20	5.40	5.55	6.50	6.75	6.85	7.20	7.55	8.05	8.50	8.55	....	....	....
Dural Rubber Corporation, Flemington, N. J.																		
Dural R T	3.45	4.15	4.35	5.40	5.60	5.70	5.90	7.15	7.30	7.45	7.60	7.85	....	8.90	9.20	....	....	....
Eckrode Rubber Co., Inc., Newark, N. J.																		
R T	3.40	4.00	4.25	5.15	5.30	5.45	5.60	6.65	6.85	7.10	7.35	7.60	....	8.50	9.00	....	....	....
G T	2.85	3.35	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	....	7.30	7.55	....	....	....
Economy Rubber Co., Cleveland, O.																		
Economy Fab N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	....	....	50.10	....	....	....	....	....	....	....
Cd	26.35	32.70	43.20	45.70	54.90	56.60	58.05	....	....	....	....	....	....	....	....	....	....	....
G T	2.75	3.25	3.70	4.40	4.55	4.75	4.95	....	5.95	6.10	6.15	6.45	....	7.45	7.75	....	....	....
R T	3.30	3.90	4.35	4.95	5.10	5.35	5.55	6.55	6.70	6.85	6.90	7.25	....	8.40	8.70	....	....	....
Erie Tire & Rubber Co., Sandusky, O.																		
Erie Rb	....	33.75	41.65	51.40	52.90	54.50	55.80	60.95	62.00	63.95	64.25	....	75.00	77.65	82.65	....	....	...
N S	....	33.75	41.65	51.40	52.90	54.50	55.80	60.95	62.00	63.95	64.25	67.50	75.00	77.65	82.65	120.00	169.80	218.75
R T	....	4.00	4.20	5.00	5.15	5.30	5.45	6.40	6.65	6.85	7.00	7.20	8.00	8.20	8.75	14.50	21.65	26.15
G T	....	3.45	3.95	4.45	4.65	4.80	4.95	5.80	6.00	6.15	6.25	6.40	7.25	7.50	7.75	....	....	....
Eureka Tire Co., Inc., Trenton, N. J.																		
Eureka Fab N S	19.50	24.00	28.00	34.00	38.00	39.00	40.00	50.00	52.00	54.00	56.00	58.00	63.00	67.00	71.00	....	....	....
Cd N S	....	36.50	45.40	....	56.00	58.00	60.00	66.00	67.50	70.00	71.50	73.00	83.00	86.50	89.50	....	....	....
Lam R T	3.80	4.40	4.60	5.30	5.70	5.90	6.20	7.00	7.30	7.60	7.90	8.20	8.80	9.20	9.50	....	....	....
Excel Rubber Co., Wadsworth, O.																		
Flint Fab Rb	16.80	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	....	20.00	25.30	28.50	33.65	35.35	36.10	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Excello Tire & Rubber Co., Philadelphia, Pa.																		
Excello Pl	28.70	33.25	36.10	42.50	43.25	44.00	45.40	51.80	53.00	55.75	56.65	57.70	....	65.60	67.75	....	....	....
Multi Grip	30.35	35.85	39.65	47.40	48.40	49.50	50.50	56.00	58.25	60.35	63.50	66.60	....	75.00	82.00	....	....	....
Cd Multi Grip	....	....	....	....	....	73.00	75.00	....	....	83.00	....	....	....	98.00	....	....	....	....
R T	4.00	5.00	5.50	6.40	6.50	6.75	6.90	8.25	8.50	8.75	8.95	9.20	....	10.25	11.00	....	....	....
Federal Rubber Co., Cudahy, Wis.																		
Federal Fab Pl	15.00	18.50	....	25.80	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Traffik	15.55	19.50	24.00	27.25	30.30	31.80	32.50	....	....	....	....	....	....	....	....	....	....	....
Rb	17.50	20.80	25.60	29.05	32.30	33.90	34.65	....	44.65	46.05	48.15	....	....	....	....	....	....	....
Rugged	19.45	26.00	30.35	34.40	37.90	39.75	40.65	50.55	52.25	53.95	56.40	57.20	....	61.70	65.45	....	....	....
Cd Rd	....	....	39.10	....	49.70	51.20	52.55	56.20	57.50	58.95	60.65	61.95	....	73.50	....	....	....	..
Cd N S	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.85	3.25	3.75	4.50	4.65	4.90	5.05	6.05	6.15	6.35	6.45	6.65	7.40	7.65	8.05	....	....	....
R T	3.55	4.05	4.70	5.65	5.80	6.15	6.30	7.55	7.70	7.95	8.05	8.30	9.25	9.55	10.05	....	....	....
Federal Rubber Co. of Illinois, Chicago, Ill.																		
Federal Fab Pl	15.00	18.50	....	25.80	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Traffik	15.55	19.50	24.00	27.25	30.30	31.80	32.50	....	....	....	....	....	....	....	....	....	....	....
Fab Rb	17.50	20.80	25.60	29.05	32.30	33.10	34.65	....	44.65	46.05	48.15	....	....	....	....	....	....	....
Rugged	19.45	26.00	30.35	34.40	37.90	39.75	40.65	50.55	52.25	53.95	56.40	57.20	....	61.70	65.45	....	....	....
Cd N S	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Cd Rb	....	....	39.10	....	49.70	51.20	52.55	56.20	57.50	58.95	60.65	61.95	....	73.50	....	....	....	....
Fellsen Tires, Inc., New York City.																		
Fellsen Pl	17.55	21.65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Rb	19.15	22.75	28.10	31.90	37.40	39.35	40.10	50.00	51.60	53.25	55.65	56.55	....	65.35	69.25	....	....	....
N S	20.15	24.00	29.60	33.55	39.35	41.35	42.20	52.60	54.35	56.10	58.60	59.45	....	68.75	72.95	....	....	....
Tubes	3.65	4.25	4.60	5.20	5.55	5.70	5.95	6.95	7.15	7.40	7.60	8.00	....	9.05	9.50	....	....	....
Fidelity Tire & Rubber Co., Massillon, O.																		
Fidelity Fab	15.90	20.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cd	....	31.15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Firestone Tire & Rubber Co., Akron, O.																		
Firestone Fab W S Pl	14.20	17.50	23.00	26.05	30.60	32.10	32.85	40.90	42.20	43.60	....	....	....	....	....	....	....	....
Fab W S N S	15.70	18.75	25.55	28.30	33.95	35.70	....	36.45	45.45	46.80	48.45	50.60	....	....	....	....	....	....
Fab Wo S Pl	13.50	16.65	21.85	24.75	29.05	30.50	31.20	38.85	40.10	41.40	....	....	....	....	....	....	....	....
Fab Wo S N S	14.95	17.85	24.25	26.90	32.30	33.90	34.65	43.20	44.55	46.05	48.05	....	....	....	....	....	....	....
Cd Tri or N S W S	....	31.45	41.55	....	52.80	54.45	55.85	59.75	61.10	62.65	64.50	65.85	74.40	78.10	82.15	....	....	....
Cd Tri or N S Wo S	....	29.90	39.45	....	50.15	51.70	53.05	56.75	58.05	59.50	61.30	62.55	70.70	74.20	78.05	....	....	....
Lam G T	2.60	3.05	3.50	4.20	4.40	4.55	4.70	5.55	5.70	5.80	5.90	6.20	6.85	7.15	7.30	....	....	....
Lam R T	3.20	3.70	4.00	4.65	4.85	5.10	5.25	6.15	6.40	6.55	6.75	7.10	7.60	8.05	8.45	....	....	....
Fisk Rubber Co., Chicopee Falls, Mass.																		
Fisk Pl	15.00	18.50	22.75	25.80	30.30	31.80	32.50	....	41.60	43.15	45.10	....	....	....	....	....	....	....
N S	17.55	20.80	26.30	29.05	34.95	36.80	37.55	46.80	48.30	49.85	52.15	52.90	....	61.15	64.85	....	....	....
Cd Rb	....	32.60	39.20	42.85	49.80	51.35	52.65	56.35	57.60	59.10	60.80	62.10	70.15	73.65	77.50	....	....	....
Cd N S	....	34.25	41.15	45.00	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	110.50	156.50	201.50
Rod Top Heavy	27.05	27.75	31.60	34.85	42.00	44.15	45.10	....	....	59.80	62.55	....	....	....	....	....	....	....
G T	2.75	3.25	3.60	4.25	4.55	4.55	4.85	5.75	5.75	6.00	6.00	6.30	7.00	7.25	7.60	16.00	21.25	24.75
Fort Wayne Tire & Rubber Co., Fort Wayne, Ind.																		
Wayne Rb	15.20	18.75	23.20	26.15	30.80	32.40	33.10	40.50	41.80	43.15	45.10	....	....	52.90	56.10	....	....	....
Roughshod	....	20.45	25.60	28.60	34.10	35.80	36.60	45.60	47.05	48.55	50.80	....	....	59.60	63.20	....	....	....
G T	2.70	3.20	3.60	4.30	4.50	4.60	4.85	5.70	5.80	5.90	6.00	....	....	7.25	7.55	....	....	....
R T	3.80	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	....	....	8.15	8.55	....	....	....
Gates Rubber Co., Denver, Col.																		
Gates N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	....	....	58.80	62.35	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	....	73.65	77.35	81.35	....	....	....
G T	3.45	4.05	4.35	5.05	5.20	5.40	5.60	6.55	6.75	6.95	7.20	7.55	8.05	8.55	8.95	....	....	....
R T	3.90	4.60	4.90	5.90	6.10	6.25	6.50	8.05	8.30	8.40	8.65	8.75	....	10.20	10.75	....	....	....
General Tire & Rubber Co., Akron, O.																		
General Fab Pl	18.80	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	19.65	21.35	28.20	31.45	36.85	38.85	39.60	....	50.90	52.50	54.90	55.75	64.35	68.40	....	....	....	....
Jumbo Oversize	....	23.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
General Cd Rb	....	....	41.80	....	53.60	54.30	55.70	61.55	63.05	64.60	66.50	67.90	76.40	77.95	84.55	....	....	....
Cd N S	....	32.50	44.00	....	56.40	57.20	58.65	64.75	66.35	67.95	70.00	71.45	80.40	82.05	89.00	....	....	....
Truck Cd N S	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	117.75	162.95	209.65
General Fab G T	2.70	3.45	4.65	4.85	5.00	5.20	6.55	6.65	6.75	6.90	7.10	7.95	8.30	....	....	....	....	....
Cd R T	....	4.95	5.50	....	7.00	7.15	7.30	8.45	8.55	8.75	8.90	9.10	10.45	10.75	11.20	....	....	....
Truck Cd R T	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	15.75	22.75	27.60
Giant Tire & Rubber Co., Findlay, O.																		
Giant N S	11.05	13.75	15.20	17.20	18.05	18.90	19.85	23.16	24.50	25.90	27.25	28.55	....	31.60	33.00	....	....	....
Rb	11.05	13.75	15.20	17.20	18.05	18.90	19.85	....	....	....	....	....	....	31.60	....	....	....	....
G T	2.40	2.85	3.25	3.80	4.00	4.15	4.35	5.05	5.25	5.30	5.45	5.70	6.25	6.50	6.80	....	....	..
R T	2.65	3.15	3.55	4.20	4.40	4.55	4.80	5.55	5.75	5.85	6.00	6.25	6.85	7.15	7.50	....	....	....

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Gibraltar Tire & Rubber Co., New York City.																		
Gibraltar Pl	17.40	19.65	24.10	31.20	31.80	33.90	34.85	....	40.40	42.40	45.20	48.20	....	54.20	57.90	....	....	....
N S	18.70	22.15	27.50	33.50	34.40	36.30	37.35	....	44.00	46.50	49.00	52.00	....	58.60	62.10	....	....	....
Tubes	4.00	4.80	5.20	6.20	6.40	6.75	7.05	....	8.60	8.80	9.10	9.40	....	10.20	10.70	....	....	....
Gillette Rubber Co., Eau Claire, Wis.																		
Gillette Fab Pl	15.00	18.50	22.75	25.80	30.30	31.80	32.50	....	....	....	....	....	....	....	....	....	....	....
Fab Rb	16.20	19.25	24.05	26.90	31.95	33.60	34.30	42.75	44.15	45.55	47.60	48.30	....	55.85	59.25	....	....	....
Sturdy N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Cd Rb	....	31.15	41.50	....	52.30	53.90	55.30	59.15	....	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
H S R T	3.25	3.80	4.10	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.50	....	....	....
G T	2.75	3.10	3.70	4.40	4.50	4.75	4.95	5.60	5.95	6.10	6.15	6.45	7.20	7.40	7.80	....	....	....
G & J Tire Co., New York City.																		
G & J Pl	15.00	18.50	22.75	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	....	....	52.90	....	....	....	....
"G" N S	15.55	18.50	22.75	25.80	30.30	31.80	32.50	....	41.80	43.15	45.10	45.75	....	52.90	56.10	....	....	....
Stalwart	17.25	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.00	62.35	....	....	....
Cd N S	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Globe Rubber Tire Manufacturing Co., Trenton, N. J.																		
Globe Fab H B or Rb	17.65	21.00	26.60	29.40	35.35	37.10	37.90	47.25	48.75	50.35	52.60	53.40	....	61.75	64.45	....	....	....
Cd H B or Rb	....	33.50	43.20	....	54.90	56.60	58.05	62.10	63.55	65.15	67.05	68.45	77.30	81.20	85.40	....	....	....
R T	3.70	4.25	4.60	5.20	5.50	5.70	5.95	6.95	7.20	7.35	7.60	8.00	8.55	9.10	9.50	....	....	....
G T	2.85	3.35	3.85	4.50	4.65	4.90	5.10	....	....	....	....	....	....	....	....	....	....	....
B. F. Goodrich Rubber Co., Akron, O.																		
Goodrich Fab Pl	15.00	18.50	22.75	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	....	....	52.90	56.10	....	....	....
Fab Safety	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Fab Rb	....	19.25	24.05	26.90	31.95	33.60	34.30	....	....	....	....	....	....	....	....	....	....	....
Silvertwn Cd Rb Saf.	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Goodyear Tire & Rubber Co., Akron, O.																		
Goodyear Rb Cl	16.80	20.00	....	28.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pl	....	....	22.75	....	30.30	31.80	32.50	40.50	41.80	43.15	....	....	....	....	....	....	....	....
All-Weather	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Cd	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	119.35	168.80	217.45
Reg Tubes	2.70	3.20	3.65	4.30	4.45	4.65	4.85	....	....	....	....	....	....	....	....	....	....	....
Heavy Tourist	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	14.60	21.05	25.00
Gopher Tire & Rubber Co., Minneapolis, Minn.																		
Gopher Fab N S	17.25	20.55	25.20	29.50	33.65	35.35	36.10	....	46.45	47.95	50.10	....	....	58.80	62.35	....	....	....
Spec Leather D W N S	23.20	28.60	35.60	42.30	47.90	48.75	50.10	....	60.00	61.50	62.10	....	....	77.00	80.25	....	....	....
Cd D W N S	23.20	28.60	35.60	42.30	47.90	48.75	50.10	....	60.00	61.50	62.10	....	....	77.00	80.25	....	....	....
Cd D W Dia Cup	....	....	....	53.20	56.15	57.15	59.40	....	66.40	68.40	71.00	....	....	84.75	....	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	....	5.80	5.95	6.00	....	....	7.30	7.55	....	....	....
Gordon Tire & Rubber Co., Canton, O.																		
Gordon Lotraction	18.50	21.50	27.20	29.60	36.70	38.60	39.60	....	....	51.80	52.50	54.00	....	63.60	67.70	....	....	....
Triangle	19.50	22.70	28.60	31.20	36.70	38.60	39.60	48.70	49.40	51.80	52.50	54.00	....	63.60	67.70	....	....	....
Cd	....	28.40	44.40	....	52.90	53.80	55.10	62.90	63.60	68.30	69.50	72.00	77.30	81.20	87.90	....	....	....
R Cd Tubes	....	....	6.40	....	7.60	7.70	8.25	9.00	9.15	9.25	9.45	9.65	9.80	10.15	10.50	....	....	....
G T	2.90	3.55	3.90	4.60	4.80	4.90	5.20	6.30	6.45	6.50	6.70	6.90	7.50	7.80	8.10	....	....	....
R T	3.50	3.85	4.35	5.20	5.40	5.60	5.75	7.05	7.25	7.30	7.50	7.70	8.40	8.80	9.15	....	....	....
Grand Rapids Tire & Rubber Corporation, Grand Rapids, Mich.																		
Corduroy Univ	....	31.65	45.25	56.05	57.55	59.00	60.65	....	....	68.20	69.95	....	....	84.85	88.95	....	....	....
Tubes	....	4.15	4.55	5.25	5.40	5.60	5.80	....	....	7.20	7.45	....	....	8.90	9.30	....	....	....
Grow Tire Co., Boston, Mass.																		
Grow N S	18.20	21.70	25.90	31.45	34.60	36.30	37.05	....	....	....	51.45	....	....	....	....	....	....	....
Cd N S	....	....	41.15	....	52.40	53.65	55.10	58.90	60.45	62.00	63.55	....	73.55	77.15	80.85	....	....	....
R T	3.50	4.05	4.40	5.15	5.25	5.45	5.65	6.60	6.85	7.00	7.25	....	8.15	8.65	9.05	....	....	....
Great Eastern Rubber Co., Allentown, Pa.																		
Globe Fab Rb or H T	17.65	21.00	26.60	29.40	35.35	37.10	37.90	47.25	48.75	50.35	52.60	53.40	....	61.75	64.45	....	....	....
Cd Rb or H T	....	33.50	43.20	....	54.90	56.60	58.05	62.10	63.55	65.15	67.05	68.45	77.30	81.20	85.40	....	....	....
R T	3.70	4.25	4.60	5.20	5.50	5.70	5.95	6.95	7.20	7.35	7.60	8.00	8.55	9.10	9.50	....	....	....
G T	2.85	3.35	3.85	4.50	4.65	4.90	5.10	....	....	....	....	....	....	....	....	....	....	....
***Hamilton Rubber Manufacturing Co., Trenton, N. J.**																		
Antimony Heavy R T	4.20	4.80	5.25	6.30	6.50	6.80	7.10	8.35	8.55	8.75	9.05	9.30	10.20	10.35	10.90	13.05	....	....
Hanes Rubber Co., Winston Salem, N. C.																		
Hanes Cd N S	....	36.05	43.20	....	54.90	56.60	58.05	62.10	63.55	65.15	67.05	68.45	77.35	81.20	....	....	....	....
Midget Cd Rb	22.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	26.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
R T	3.30	3.85	4.05	5.10	5.25	5.45	5.55	6.80	....	7.20	7.40	7.60	7.95	8.15	....	....	....	....
R Cd	....	5.10	5.45	....	7.00	7.20	7.40	7.70	7.90	8.15	8.40	8.70	10.05	10.25	....	....	....	....
G T	2.75	3.25	3.50	4.45	4.60	4.70	4.75	5.60	....	5.90	6.05	6.25	7.00	7.30	....	....	....	....
Hardwear Tire Corporation, E. Rutherford, N. J.																		
Hardwear Fab	14.75	18.70	....	29.20	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cd	....	....	37.00	....	46.90	48.10	19.56	52.70	54.25	55.80	57.10	58.35	66.15	69.25	72.50	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.15	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Hartford Rubber Works Co., New York City.																		
Hartford, Pl	15.00	18.50	22.75	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	....	....	52.90	....	....	....	....
N S	15.55	18.50	22.75	25.80	30.30	31.80	32.50	....	41.80	43.15	45.10	45.75	....	52.90	56.10	....	....	....
Strongheart	17.25	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Cd N S	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Hawkeye Tire & Rubber Co., Des Moines, Ia.																		
Santa Fe Pl	14.80	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Trail Tread	15.95	19.50	25.30	31.00	33.25	34.70	35.30	44.00	45.50	46.95	48.90	49.80	54.50	57.20	61.50	....	....	....
Hawkeye Rb	19.60	24.30	31.05	35.30	41.20	42.25	43.90	48.80	51.15	52.20	53.60	55.20	59.20	61.70	69.30	....	....	....
Road Hook	20.20	25.40	32.20	36.40	42.40	43.70	45.60	50.10	52.05	53.40	54.80	56.60	60.40	62.85	71.10	....	....	....
Santa Fe R or G T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Hawkeye R or G T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Hendrie Rubber Co., Torrance, Cal.																		
Hendrie Black Pl	16.10	19.45	22.65	30.20	30.80	32.35	33.10	41.25	42.55	43.90	45.95	46.65	....	53.95	57.00	....	....	....
N S	17.90	21.60	25.15	33.55	34.20	35.95	36.80	45.85	47.30	48.80	51.05	51.85	....	59.95	63.35	....	....	....
G T	3.15	3.85	4.15	5.15	5.40	5.50	5.70	6.80	7.00	7.10	7.20	7.45	....	8.65	8.90	....	....	....
R T	3.85	4.45	4.85	6.05	6.20	6.55	6.70	7.90	8.20	8.25	8.45	8.60	....	10.05	10.35	....	....	....

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*These prices include government excise tax.

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Hewitt Rubber Co., Buffalo, N. Y.																		
Hewitt Fab Rb or N S	17.85	21.90	27.90	31.15	37.40	39.25	40.10	49.95	51.55	53.25	55.65	56.50	....	65.30	69.25	....	....	....
Cd Rb or N S	....	35.85	45.70	....	58.10	59.85	61.40	65.70	67.20	68.90	70.90	72.35	81.85	85.90	90.30	122.75	174.00	....
G T	2.70	3.30	3.65	4.45	4.60	4.75	4.95	5.85	6.05	6.15	6.25	6.50	7.05	7.35	7.65	....	....	....
R T	3.25	3.95	4.20	4.90	5.05	5.25	5.45	6.40	6.60	6.75	6.95	7.30	7.85	8.35	8.70	....	....	....
Hood Rubber Products Co., Inc., Watertown, Mass.																		
Wood Arrow or Rb	24.80	30.80	34.40	41.60	44.90	45.40	46.00	58.00	58.80	59.75	60.90	63.40	....	73.30	77.50	....	....	....
Cd N S or Rb	....	....	43.20	....	54.90	56.60	58.10	62.10	63.50	65.20	67.00	68.50	77.40	81.20	85.40	....	....	....
Yellow Arrow N S	....	22.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
R T	3.40	3.90	4.25	4.90	5.05	5.20	5.30	6.50	6.60	6.70	6.90	7.20	7.55	7.95	8.30	....	....	....
Howe Rubber Corporation, New Brunswick, N. J.																		
Howe Ultra Fab N S.	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	....	....	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	119.35	....	....
Cd Rb	....	....	....	....	51.30	52.90	54.30	58.15	59.50	61.05	62.85	64.20	72.65	76.35	80.35	....	....	....
R T	3.65	4.15	4.40	5.65	5.80	5.90	6.00	7.10	7.30	7.50	7.70	7.90	8.50	8.75	9.25	16.20	21.40	27.70
Hydro-United Tire Co., Philadelphia, Pa.																		
Speedway N S	16.80	20.00	25.30	28.00	33.65	35.65	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Special G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
Ideal Tire & Rubber Co., Cleveland, O.																		
Greyhound Rb	21.00	24.00	28.50	37.50	39.00	42.00	43.50	47.50	49.50	51.00	54.50	....	....	66.00	69.00	....	....	....
N S	24.00	26.50	32.50	38.50	42.00	44.50	46.50	50.50	52.50	54.00	57.50	62.00	....	69.00	72.00	....	....	....
Cd Rb	....	....	42.50	....	53.50	55.00	56.50	61.00	64.50	65.00	66.00	68.00	76.00	79.50	83.50	....	....	....
Cd N S	....	33.00	44.50	....	56.00	58.00	59.50	64.50	66.50	67.50	69.00	71.00	79.00	83.00	87.00	....	....	....
Aero Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	3.00	3.50	4.20	4.80	5.00	5.20	5.50	6.50	6.90	7.00	7.20	7.50	....	9.00	9.35	....	....	....
R T	3.35	4.40	4.45	5.10	5.25	5.45	5.70	6.80	7.10	7.40	7.50	7.80	....	9.25	9.60	....	....	....
India Tire & Rubber Co., Akron, O.																		
India Rb	20.50	25.20	....	37.60	40.75	....	....	....	....	....	....	....	....	....	....	....	....	....
N S	22.95	27.15	35.95	39.40	43.10	44.20	45.85	....	54.00	56.45	58.90	61.90	....	70.35	74.95	....	....	....
Cd N S	....	35.95	48.45	....	61.60	63.25	65.00	69.40	71.25	73.15	74.85	76.65	86.65	90.90	95.15	....	....	....
G T	3.15	4.05	4.30	5.05	5.15	5.45	5.55	6.50	6.70	6.95	7.05	7.30	....	8.25	8.80	....	....	....
R T	3.30	4.25	4.55	5.30	5.45	5.70	5.80	6.85	7.10	7.30	7.45	7.65	....	8.65	9.25	....	....	....
Inland Rubber Co., Chicago, Ill.																		
Inland Fab Rb or N S	17.95	21.35	27.00	29.85	35.85	37.75	38.55	....	49.55	51.15	53.45	....	....	....	....	....	....	....
Cd Rb or N S	33.20	43.85	....	54.45	57.45	59.00	63.05	64.55	66.20	68.15	69.55	77.20	82.55	86.80	....	....	....	....
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	....	7.25	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
International India Rubber Corporation, South Bend, Ind.																		
S. Bend Fab N S	16.90	18.95	24.25	26.90	31.50	33.80	34.85	....	42.95	43.80	46.75	48.80	....	53.90	60.15	....	....	....
Rough	17.25	20.55	25.30	28.70	33.65	35.35	36.10	....	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Odell Cd Rough	23.90	28.50	33.20	39.80	40.25	41.50	43.75	51.85	53.90	54.95	56.10	61.20	....	62.95	65.25	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
Iowa Cord Tire Co., Des Moines, Ia.																		
Iowa Fab Pl	16.80	19.45	22.75	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	45.75	50.50	52.90	56.50	....	....	....
Fab N S	....	20.00	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Cd Pl	27.25	30.10	39.90	43.65	50.75	52.30	53.65	57.40	58.70	60.20	61.95	63.25	71.45	75.05	78.90	....	....	....
Cd N S	....	31.15	41.15	45.00	52.30	53.65	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	16.00	21.25	24.75
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Johnstone Tire & Rubber Co., La Porte, Ind.																		
Johnstone N S	19.51	23.27	28.52	32.57	37.38	39.36	40.25	49.37	50.45	52.43	54.50	55.44	....	62.55	66.42	....	....	....
G T	2.98	3.55	3.75	4.64	4.77	4.95	5.05	6.16	6.32	6.51	6.54	6.71	....	7.62	7.99	....	....	....
R T	3.69	4.11	4.46	5.58	5.72	5.94	6.07	7.36	7.48	7.61	8.03	8.21	....	8.59	9.10	....	....	....
Johnstown Automobile Co., Johnstown, Pa.																		
Jaco O Tubes	2.80	3.30	3.75	3.45	4.60	4.80	5.00	5.85	6.00	6.15	6.20	6.50	7.20	7.55	7.80	....	....	....
Keaton Tire & Rubber Co., San Francisco, Cal.																		
Keaton Fab Rb	17.90	20.90	25.30	30.90	33.65	35.35	36.10	....	46.15	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Fab N S	....	22.90	26.55	32.90	35.35	37.10	37.90	....	48.75	50.35	52.60	53.40	....	61.75	65.45	....	....	....
Cd Rb	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Cd N S	....	....	43.20	....	54.90	56.60	57.95	62.10	63.50	65.15	66.95	68.45	77.35	81.20	85.40	....	....	....
Fab R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	....	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
Cd R T	....	....	4.15	....	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Kelly-Springfield Tire Co., New York City.																		
Kelly-Springfield Pl.	21.25	22.25	29.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Grooved	....	....	....	38.25	40.75	42.75	44.25	48.00	50.50	51.25	55.25	60.25	....	67.00	70.25	....	....	....
Kant Slip	24.00	27.00	33.75	39.00	43.75	45.75	47.50	51.75	53.75	55.25	58.75	63.75	....	70.75	75.25	....	....	....
Cd Grooved	....	....	42.75	....	53.75	54.75	56.25	62.75	65.25	66.00	67.75	69.50	77.50	81.00	85.50	....	....	....
Cd B B	....	....	45.75	....	57.50	59.50	61.75	66.25	68.75	69.25	71.00	72.75	81.75	85.00	89.75	....	....	....
R T	3.85	4.80	5.15	6.00	6.15	6.40	6.65	7.80	8.00	8.30	8.45	8.80	9.50	9.95	10.55	....	....	....
C. Kenyon Co., Inc., New York City.																		
Ken. Sup Size Cd N S	25.00	27.00	39.50	41.00	47.00	48.50	50.00	56.00	58.00	60.00	62.00	64.00	70.00	73.00	77.00	110.50	....	....
Quality R T	3.00	3.50	4.00	4.50	4.75	5.00	5.25	5.75	6.00	6.25	6.50	6.75	7.25	7.65	8.00	....	....	....
G Sup Cd H S	3.75	4.50	5.25	5.75	6.00	6.25	6.50	7.50	7.75	8.00	8.25	8.50	9.00	9.40	9.75	14.60	20.50	25.00
Keystone Tire & Rubber Co., New York City.																		
Keystone N S	17.25	20.50	25.20	28.00	33.60	35.25	36.10	....	....	47.75	50.00	50.75	....	58.70	62.25	....	....	....
Cd N S	....	31.10	41.00	....	52.20	53.70	55.10	59.10	60.40	62.00	63.75	65.00	73.50	77.20	....	....	....	....
Tubes	3.60	4.20	4.50	5.40	5.70	5.90	6.20	6.90	7.20	7.80	8.20	8.60	8.80	9.30	9.70	....	....	....
Kokomo Rubber Co., Kokomo, Ind.																		
Kokomo Rb	16.15	19.25	24.05	26.90	31.95	33.60	34.20	....	....	....	....	....	....	....	....	....	....	....
Twin Grip	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	....	....	....	....	....	....	....	....	....	....
Cd Twin	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	....	....	77.35	....	119.35	....	....
Standard G T	2.80	3.25	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
Everlaster R T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	....	....	....
Krohn Co., Inc., New York City.																		
Clipper	....	13.75	18.00	20.50	26.25	27.50	28.25	....	....	37.25	40.00	41.00	....	48.00	50.00	....	....	....
R T	2.95	3.40	3.75	4.35	4.50	4.75	4.95	....	....	6.25	6.30	6.65	....	7.90	8.20	....	....	....
Lambert Tire & Rubber Co., Akron, O.																		
Trublproof Cd Rb	....	30.00	42.50	....	58.00	....	62.00	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	33.50	45.00	....	62.00	....	66.00	....	....	....	....	....	....	....	....	....	....	....
Truck	....	....	....	....	45.00	....	53.00	....	....	....	....	....	....	....	....	....	....	....
Lagonda Rubber Co., E. Palestine, O.																		
Lagonda N S	17.30	20.60	26.05	28.85	34.70	36.45	37.20	....	....	....	....	....	....	....	....	....	....	....
G T	2.75	3.30	3.70	4.40	4.50	4.80	5.00	5.80	5.95	6.10	6.15	6.45	7.15	7.45	7.75	....	....	....
R T	3.40	3.95	4.25	4.85	5.10	5.30	5.50	6.40	6.60	6.85	7.05	7.40	7.90	8.35	8.80	....	....	....
Lancaster Tire & Rubber Co., Columbus, O.																		
Crescent N S	13.70	18.50	22.75	25.80	30.30	31.80	32.50	....	....	43.15	45.10	....	....	....	....	....	....	....
Wiregrip	22.35	27.95	31.90	38.50	39.80	41.00	42.45	47.00	47.95	49.70	52.65	....	....	....	....	....	....	....
Cd Rb	....	....	39.90	....	51.05	52.65	54.05	57.90	59.25	60.80	62.60	....	72.40	76.10	80.10	....	....	....
Cd N S	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	....	73.65	77.35	81.35	....	....	....

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Lancaster Fab N S	17.55	20.80	26.30	29.05	34.95	36.80	....	....	....	....	....	....	....	....	....	....	....	....
Heavy Tubes	3.30	3.55	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	....	8.15	8.55	....	....	....	....
Lancaster Tubes	2.70	3.20	3.60	4.30	4.45	4.65	4.80	5.40	5.65	5.85	6.00	....	7.30	7.50	....	....	....	....
Latex Tire & Rubber Co., Fond Du Lac, Wis.																		
Latex Fab N S	19.20	22.85	28.95	32.00	38.45	40.40	41.30	51.45	53.10	54.80	57.30	....	63.45	67.20	....	....	....	....
Fab Rb	18.30	21.70	27.50	....	36.50	38.45	....	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	37.15	47.00	....	59.80	61.55	63.20	67.55	69.15	70.95	73.00	....	84.15	88.45	....	....	....	....
G T	2.75	3.25	3.70	4.35	4.65	4.65	4.95	5.95	5.95	6.25	6.25	7.25	7.25	7.45	7.90	....	....	....
R T	3.30	3.65	4.20	4.75	4.95	5.20	5.40	6.30	6.55	6.75	6.90	7.20	7.80	8.20	8.65	....	....	....
Lee Tire & Rubber Co., New York City.																		
Lee Rb	15.50	18.50	22.75	25.80	30.30	31.80	32.50	....	....	....	....	....	....	....	....	....	....	....
N S	....	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Puncture Proof Rb	26.50	33.25	37.35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S	....	36.40	40.90	46.35	50.65	52.45	54.20	....	64.80	67.55	70.15	71.55	....	77.45	79.60	....	....	....
Cd Rb	....	....	....	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	....	77.35	81.35	....	....	....
Puncture Proof Cd R B	....	....	....	....	....	....	....	71.00	72.60	74.45	76.60	78.25	....	88.95	93.55	....	....	....
Cd N S	....	....	....	....	....	....	....	71.00	72.60	74.45	76.60	78.25	84.70	88.95	93.55	132.50	187.40	241.40
Standard Tubes	2.75	3.25	4.05	4.95	5.00	5.15	5.35	6.00	6.05	6.15	6.40	6.55	....	7.70	8.00	12.40	17.80	21.25
Lehigh Tire & Rubber Co., New Castle, Pa.																		
Lehigh Rb or N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.50	47.95	50.10	....	55.50	58.80	62.35	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	....	6.95	7.30	....	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	....	7.70	8.15	8.55	....	....	....
Lewis Tire Co., Allentown, Pa.																		
Mack N S	17.20	20.45	24.60	29.50	34.40	35.95	36.70	46.00	47.40	48.90	51.10	52.05	55.70	59.70	63.10	....	....	....
R T	3.15	3.70	4.05	5.10	5.20	5.30	5.60	6.50	6.70	6.95	7.10	7.20	....	8.40	8.56	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.10	6.30	7.70	8.15	8.55	....	....	....
Lion Tire & Rubber Corporation, Lafayette, Ind.																		
Lion Fab Cl	16.00	19.20	....	27.20	....	....	....	....	....	....	....	....	....	....	57.00	....	....	....
Ex H Rb S S	....	....	22.75	....	30.80	32.00	32.80	....	42.40	43.60	45.20	46.80	....	53.85	....	....	....	....
N S Cl	....	19.20	....	27.20	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S 2 D	....	....	22.75	....	....	32.00	32.80	....	....	43.60	45.20	46.80	....	53.95	57.00	....	....	....
N S S S	....	....	22.75	....	30.80	32.00	32.80	....	42.40	43.60	45.20	46.80	....	53.95	57.00	....	....	....
Heavy G T	2.70	3.20	3.60	4.25	4.40	4.60	4.80	....	5.80	5.90	6.00	6.25	....	....	7.50	....	....	....
London Rubber Co., Pittsburgh, Pa.																		
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
McClaren Rubber Co., Charlotte, N. C.																		
Autocrat Cd	....	34.30	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Allroad Fab N S	16.80	20.00	26.50	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	....	....	58.80	62.35	....	....	....
Allroad Fab Rb	16.40	19.50	24.65	27.30	32.80	34.45	35.20	....	....	....	....	....	....	....	....	....	....	....
G T	1.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
McCreary Tire & Rubber Co., Indiana, Pa.																		
McCreary Fab Pl	17.30	23.05	....	34.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	18.65	23.30	31.30	35.00	35.20	37.30	38.85	49.40	50.00	51.45	52.35	55.15	....	65.15	69.35	....	....	....
Cd N S	....	33.25	49.20	....	52.10	54.75	56.20	73.10	75.30	79.00	....	83.85	86.70	91.65	....	....	....	....
R T	3.65	4.45	4.70	5.60	5.70	6.10	6.25	7.10	7.25	7.50	7.70	7.90	8.25	8.85	10.00	....	....	....
McGraw Tire & Rubber Co., Cleveland, O.																		
McGraw Rb	15.55	18.50	22.75	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	45.75	....	52.90	56.10	....	....	....
N S	17.25	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Cd Rb	....	27.35	39.10	....	49.70	51.20	52.55	56.20	57.50	58.95	60.65	61.95	69.95	73.50	77.30	110.40	....	....
Cd N S	....	28.80	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	110.40	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	....	7.30	7.55	....	....	....
McLean Tire & Rubber Co., East Liverpool, O.																		
McLean N S	17.65	22.65	26.95	32.40	36.00	37.80	38.60	....	48.15	49.45	51.65	53.40	....	59.50	63.00	....	....	....
Cd N S	....	31.50	42.85	....	54.45	55.85	57.40	61.25	62.95	64.55	66.15	67.75	....	80.30	84.15	....	....	....
Middleton N S	17.25	20.60	24.50	28.70	32.95	34.35	35.10	....	....	....	....	....	....	....	....	....	....	....
Cd R T	....	....	5.75	....	6.70	6.85	7.20	7.50	7.70	8.00	8.30	8.50	....	9.60	11.50	....	....	....
G T	2.75	3.35	3.50	4.25	4.30	4.50	4.60	5.35	5.45	5.60	5.75	5.90	6.85	6.95	7.20	....	....	....
R T	3.35	4.05	4.20	5.20	5.25	5.45	5.60	6.60	6.70	6.80	7.00	7.25	8.40	8.50	8.75	....	....	....
Madison Tire & Rubber Co., Inc., New York City.																		
Madison Fab Rb	15.90	19.60	24.10	27.35	32.10	33.70	34.45	42.90	44.30	45.70	47.80	48.60	....	56.05	59.85	....	....	....
Fab N S	18.25	21.70	26.80	30.40	35.65	37.45	38.25	47.70	49.20	50.80	53.10	53.90	....	62.30	66.10	....	....	....
Cd Rb	....	35.25	41.15	....	52.45	54.05	56.20	59.25	60.65	62.15	64.00	65.35	....	77.55	81.75	....	....	....
Cd N S	....	37.00	43.60	....	55.45	57.15	58.60	62.70	64.15	65.75	67.70	69.10	....	82.00	86.25	....	....	....
G T	2.85	3.40	3.85	4.55	4.70	4.90	5.15	6.00	6.15	6.30	6.35	6.65	....	7.75	3.00	....	...	....
R T	3.50	4.05	4.40	4.95	5.30	5.45	5.65	6.60	6.85	7.05	7.25	7.60	....	8.65	9.05	....	....	....
Majestic Tire & Rubber Co., Indianapolis, Ind.																		
Majestic Fab Pl	14.25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	15.95	19.00	24.05	26.60	31.95	33.60	34.30	....	....	....	....	....	....	....	....	....	....	....
Cd Rb or N S	....	34.25	39.10	....	49.70	50.20	52.55	56.20	57.50	58.95	60.65	61.95	69.95	73.50	77.30	120.35	168.90	217.50
G T	2.70	3.20	3.65	4.30	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	14.65	21.05	25.00
The Malay Rubber Co., Cleveland, O.																		
Malay Comb Rb & N S	....	32.00	41.20	...	52.50	54.00	55.50	59.25	60.75	62.20	....	....	73.75	77.50	....	119.50	169.00	218.00
Ex H R Cd Tubes	....	4.50	4.90	....	5.70	5.95	6.15	7.10	7.35	7.60	....	....	8.65	9.10	....	14.75	21.25	25.25
Manhattan Tire & Rubber Co., Mansfield, O.																		
Manhattan Fab N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	...
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
***Mansfield Tire & Rubber Co., St. Louis, Mo.**																		
Mansfield Fab Pl	15.52	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	16.90	20.10	24.70	28.01	32.86	34.52	35.24	43.91	45.36	46.81	48.93	50.10	....	57.40	60.83	....	....	....
Cd N S	....	....	42.55	....	54.09	55.74	57.18	61.17	62.56	64.17	66.03	67.42	76.17	79.99	84.13	....	....	....
Fab G T	2.77	3.28	3.71	4.42	4.58	4.78	4.99	5.81	5.96	6.12	6.17	6.48	7.20	7.45	7.76	....	....	....
Fab R T	3.38	3.96	4.27	4.83	5.09	5.29	5.50	6.42	6.63	6.83	7.04	7.40	7.91	8.37	8.78	....	....	....
Cd G T	....	....	3.71	....	4.58	4.78	4.99	5.81	5.96	6.12	6.17	6.48	7.20	7.45	7.76	....	....	....
Cd R T	....	....	4.27	....	5.09	5.29	5.50	6.42	6.63	6.83	7.04	7.40	7.91	8.37	8.78	....	....	....
Marathon Tire & Rubber Co., Cuyahoga Falls, O.																		
Marathon Fab A T	17.25	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Cd A T	....	32.50	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	119.35	....	....
Fab R & G T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Oversize Cd R T	....	4.70	5.15	....	6.45	6.65	6.55	7.70	7.95	8.15	8.35	8.55	9.00	9.55	10.10	14.75	....	....

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*These prices include government excise tax.

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Marion Tire & Rubber Co., Marion, O.																		
Marion Rb	18.00	23.10	27.00	36.50	37.25	39.00	40.00	47.00	48.00	50.50	52.50	55.00	61.00	63.00	67.00	....	....	....
N S	18.90	24.00	28.00	37.50	38.20	40.00	40.90	48.90	49.95	52.15	54.40	57.15	63.00	65.00	69.30	....	....	....
G T	2.75	3.25	3.70	4.40	4.55	4.75	4.95	5.60	5.95	6.10	6.15	6.45	....	7.45	7.75	....	....	....
Martin Tire Corporation, New York City.																		
Martin Fab N S	21.70	25.75	....	35.85	40.45	42.35	44.15	....	....	....	....	....	....	....	....	....	....	....
Cd Rb Block	....	....	....	....	....	....	....	....	....	71.25	....	....	84.20	88.75	....	....	....	....
Cd N S	....	41.65	45.75	....	59.20	61.05	63.40	68.00	70.55	71.25	72.65	73.95	84.20	88.75	92.30	115.65	....	....
G T	3.10	3.85	4.40	5.10	5.25	5.45	5.65	6.65	6.80	7.10	7.20	7.50	8.10	8.50	9.00	....	....	....
R T	3.85	4.80	5.15	6.00	6.15	6.40	6.65	7.80	8.00	8.30	8.45	8.80	9.50	9.95	10.55	16.90	....	....
Mason Tire & Rubber Co., Akron, O.																		
Mason Junior Cd	22.45	26.95	34.85	38.55	43.55	44.90	46.40	....	....	....	....	....	....	....	....	....	....	....
Heavy Duty Cd	....	33.75	41.20	....	52.20	52.55	54.00	58.90	60.45	62.10	63.70	65.10	74.70	77.20	80.70	107.40	151.90	195.70
Maxi Mile Pl	17.95	21.85	26.85	31.65	34.65	36.50	37.10	....	45.50	46.75	48.40	50.50	....	57.00	60.00	....	....	....
Maxi Mile Rb	18.60	22.80	27.60	32.85	35.90	37.95	38.50	45.35	47.30	48.15	50.70	52.65	....	59.95	64.05	....	....	....
Maxi Mile N S	19.45	23.60	28.90	33.30	36.50	38.60	39.30	46.30	48.40	49.55	51.45	52.30	....	62.85	66.60	....	....	....
G T	3.25	3.55	4.15	4.65	4.75	4.95	5.20	5.80	5.95	6.15	6.20	6.45	....	7.10	7.40	....	....	....
R T	3.75	4.05	4.35	5.15	5.25	5.35	5.45	6.25	6.45	6.65	6.75	7.00	....	7.70	8.05	....	....	....
Master Tire & Rubber Co., Dayton, O.																		
Master Oversize Cd	....	31.15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mayer Rubber Co., Columbiana, O.																		
Mayer N S	....	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	....	....	58.80	....	....	....	....
Runner or Driving Td	16.60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mead Rubber Co., Brooklyn, N. Y.																		
Mead N S	15.85	20.65	24.25	31.75	32.30	33.70	34.55	....	....	46.60	48.60	....	....	55.55	58.80	....	....	....
R T	3.25	3.85	4.15	4.70	4.95	5.15	5.35	6.20	6.40	6.60	6.80	7.20	7.70	8.10	8.50	....	....	....
Pure Gum Cd	3.75	4.50	5.25	5.75	6.00	6.25	6.50	7.50	7.75	8.00	8.25	8.50	9.00	9.40	9.75	....	....	....
Mercer Rubber Co., Hamilton Square, N. Y.																		
Mercer G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
R T	3.30	3.85	4.15	4.60	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Michelin Tire Co., Milltown, N. J.																		
Michelin Univ	16.50	20.00	25.00	28.00	33.50	35.15	36.00	....	....	....	....	....	....	....	....	....	....	....
Cd Univ	....	....	40.70	....	51.50	53.00	54.90	58.95	60.15	61.50	63.25	64.50	72.15	75.85	79.55	111.00	....	....
Tubes	3.50	4.05	4.40	4.90	5.20	5.45	5.65	6.60	6.85	7.00	7.25	7.60	....	8.60	9.00	....	....	....
Mid-Continent Tire Mfg. Co., Wichita, Kan.																		
Midco Fab Rb	17.55	20.95	27.70	....	37.00	38.90	39.70	49.50	51.10	52.75	55.10	56.10	60.50	64.70	68.80	....	....	....
Fab N S	19.50	23.25	27.70	32.45	37.00	38.90	39.70	49.50	51.10	52.75	55.10	56.10	60.50	64.70	68.80	....	....	....
Cd Univ	....	....	45.30	....	57.55	59.00	60.65	66.50	68.30	70.00	71.80	73.55	83.15	87.15	91.35	135.00	....	....
Standard Tubes	3.10	3.70	4.25	5.00	5.20	5.40	5.65	6.55	6.80	6.95	7.00	7.35	8.10	8.45	8.80	....	....	....
Heavy Tubes	3.85	4.45	4.85	5.45	5.80	5.90	6.25	7.30	7.55	7.75	7.95	8.35	8.95	9.50	9.95	....	....	....
Midland Tire & Rubber Co., Coshocton, O.																		
Midland Pl	15.00	18.50	22.75	25.80	30.30	31.80	32.50	....	....	....	....	....	....	....	....	....	....	....
N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	46.45	....	....	....	....	....	....	....	....	....
McClurg Pl	21.25	22.25	29.50	38.25	40.75	42.75	44.25	....	....	51.25	55.25	60.25	....	67.00	70.25	....	....	....
Sk	24.00	27.00	33.75	39.00	43.75	45.75	47.50	51.75	53.75	55.25	58.75	63.75	....	70.75	75.25	....	....	....
Rainbow G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Eternal G T	3.25	3.85	4.35	5.15	5.35	5.60	5.85	6.80	6.95	7.15	7.20	7.55	8.35	8.70	9.05	....	....	....
R T	3.95	4.60	5.00	5.65	5.95	6.20	6.45	7.50	7.75	8.00	8.25	8.65	9.25	9.80	10.25	....	....	....
Chas. E. Miller-Anderson Rubber Works, Anderson, Ind.																		
Ex Ply Fab Rb or Cog	15.87	21.20	22.00	26.36	33.20	35.15	36.24	46.36	47.60	47.90	49.93	51.80	52.00	52.90	57.40	....	....	....
D A C. Rb or Cog.	....	28.12	33.42	28.12	46.06	47.93	49.81	54.37	55.93	57.50	59.68	61.87	70.08	72.68	79.08	132.80	146.40	193.55
Pure Gum G T	2.56	2.90	3.45	3.90	4.12	4.25	4.37	5.20	5.45	5.65	5.80	6.25	6.50	6.70	7.00	....	....	....
Heavy Tourist R T.	3.05	3.36	3.72	4.18	4.43	4.56	4.75	5.55	5.68	5.87	6.05	6.37	6.75	7.48	7.60	12.95	17.20	20.45
Miller Rubber Co., Akron, O.																		
Blk Geared-to-Rd	17.00	20.00	25.20	29.50	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Rd Geared-to-Rd	....	32.00	41.10	....	52.35	53 95	55.25	59.20	60.55	61.95	63.50	65.15	73.70	77.40	81.60	....	....	....
Cd Rb	....	30.40	39.05	....	49.75	51.25	52.50	56.25	57.50	58.85	60.35	61.90	70.00	73.55	77.50	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
G T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Mohawk Rubber Co., Akron, O.																		
Mohawk Fab N S	22.25	26.55	33.95	37.10	42.10	43.25	44.90	51.80	52.90	55.20	57.60	60.55	....	68.80	73.35	....	....	....
Fab Rb	20.05	23.90	30.55	33.40	38.80	39.95	41.15	47.05	....	50.60	52.70	55.70	....	63.50	66.95	....	....	....
Cd N S	....	38.85	48.30	....	61.85	63.20	65.05	70.95	72.60	74.30	76.15	78.90	83.95	89.00	92.50	125.80	175.75	222.00
Cd Rb	....	....	47.20	....	60.45	61.80	63.65	69.65	71.15	73.00	74.90	77.05	81.90	86.75	90.40	....	....	....
Mohawk-Keaton	....	27.25	34.80	38.05	43.20	44.35	46.05	53.15	....	56.60	59.10	62.10	....	70.55	75.25	....	....	....
G T	3.30	4.20	4.50	5.30	5.40	5.60	5.80	6.80	7.05	7.20	7.35	7.60	8.10	8.60	9.20	....	....	....
R T	3.30	4.20	4.50	5.30	5.40	5.60	5.80	6.80	7.05	7.20	7.35	7.60	8.10	8.60	9.20	14.40	21.60	27.00
Monarch Rubber Co., Canton, O.																		
Monarch Cd or N S	....	34.25	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Fab Pl	16.10	19.00	24.05	26.60	31.95	33.60	34.30	42.75	44.15	45.60	47.60	48.30	42.75	55.90	59.25	....	....	....
Fab N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
R T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	....	....	....
Montford Rubber Co., Buffalo, N. Y.																		
Montford N S	17.65	21.00	26.55	29.40	35.35	37.10	37.90	47.25	48.75	50.35	52.60	53.40	....	61.75	65.48	....	....	....
G T	2.85	3.35	3.80	4.50	4.65	4.90	5.10	5.95	6.10	6.25	6.30	6.60	....	7.60	7.95	....	....	....
R T	3.45	4.05	4.35	4.95	5.20	5.40	5.60	6.55	6.75	7.00	7.25	7.55	....	8.55	9.00	....	....	....
Na Peer Tire Co., Akron, O.																		
Na Peer N S	....	19.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
National Motor Accessories Corporation, New York City, N. Y.																		
G T	3.15	3.75	3.85	4.75	4.85	5.00	5.15	5.95	6.10	6.30	6.45	6.60	....	7.85	8.05	....	....	....
R T	3.35	3.95	4.20	5.00	5.25	5.50	5.70	6.70	6.90	7.10	7.30	7.50	....	8.30	8.80	....	....	....
National Rubber Products Co., Philadelphia, Pa.																		
Speedway N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	....	7.25	7.55	....	....	....
National Tire Co., Inc., Trenton, N. J.																		
National Fab Pl	15.00	18.50	22.75	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	....	....	52.90	56.10	....	....	....
Fab N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
National Tire & Rubber Co., East Palestine, O.																		
Olympian Fab Rb	16.85	20.10	25.40	28.15	33.85	35.55	36.25	....	46.70	48.20	50.30	....	....	59.10	62.65	....	....	....
Fab N S	17.30	20.60	26.05	28.85	34.70	36.45	37.20	....	47.90	49.45	51.10	....	....	60.60	64.25	....	....	....
Cd N S	....	....	42.20	....	53.85	55.50	....	....	62.35	63.95	....	....	....	79.70	....	....	....	....
Roamer Fab Rb	16.85	20.10	25.40	28.15	33.85	35.55	39.25	....	46.70	48.20	50.30	....	....	59.10	62.65	....	....	....
Fab N S	17.30	20.60	26.05	28.85	34.75	36.45	37.20	....	47.90	49.45	51.60	....	....	60.60	64.25	....	....	....
Cd N S S S	....	....	42.20	....	53.85	55.50	....	....	62.35	63.95	....	....	....	79.70	....	....	....	....
G T	2.75	3.30	3.70	4.40	4.50	4.80	5.00	5.80	5.95	6.10	6.15	6.45	7.15	7.45	7.75	....	....	....
R T	3.40	3.95	4.25	4.85	5.10	5.30	5.50	6.40	6.60	6.85	7.05	7.40	7.90	8.35	8.80	....	....	....

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Nebraska Tire & Rubber Co., Omaha, Neb.																		
Nebraska Supertread	16.80	18.50	24.00	26.50	....	....	34.50	....	....	....	....	47.50	....	....	60.00	....	....	....
N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	....	7.25	7.55	....	....	...
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
New Jersey Car Spring & Rubber Co., Jersey City, N. J.																		
Car Spring Fab Pl Cl	15.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	17.30	20.60	26.05	28.35	34.70	36.45	37.20	46.40	47.90	49.45	51.60	52.40	57.20	60.60	64.25	....	....	....
Cd	....	....	41.15	....	52.30	53.90	55.30	....	....	62.05	....	....	....	77.35	....	....	....	....
Anchor Fab Pl	19.60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	21.15	27.00	30.50	33.25	40.15	42.05	43.00	53.60	55.25	57.15	59.60	60.45	66.05	69.95	74.20	....	....	....
Cd	....	....	41.15	....	52.30	53.90	55.30	....	....	62.05	....	....	....	77.35	....	....	....	....
Anchor G T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	....	....	....
Tan T	3.85	4.45	4.85	5.45	5.85	6.00	6.20	7.25	7.55	7.70	7.95	8.35	8.95	9.50	9.95	....	....	....
Car Spring G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	7.00	7.25	7.55	....	....	...
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Norwalk Tire & Rubber Co., Norwalk, Conn.																		
Norwalk Pl	15.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
N S	18.10	21.50	26.55	30.15	35.35	37.10	37.90	47.25	48.75	50.35	52.60	53.40	....	61.75	65.45	....	....	....
Cd N S	....	32.65	43.20	45.00	54.90	56.60	58.05	62.10	63.55	65.15	67.05	68.45	77.35	81.20	85.40	115.90	....	....
G T	2.85	3.35	3.85	4.50	4.65	4.90	5.10	5.95	6.10	6.25	6.30	6.60	7.30	7.65	7.95	11.80	....	....
R T	3.45	4.00	4.35	4.95	5.25	5.40	5.60	6.55	6.75	7.00	7.20	7.55	8.10	8.55	9.00	13.00	....	....
Oak Tire & Rubber Co., Ltd., Toronto, Ont.																		
Royal Oak Cd	....	33.15	50.20	....	61.20	62.80	64.40	68.85	70.65	72.60	74.25	76.05	....	90.15	94.35	....	....	....
Fab	20.25	25.30	28.15	35.35	39.65	41.90	43.35	52.50	54.15	56.40	59.20	60.50	....	70.25	74.45	....	....	....
Grooved Fab	....	23.60	25.60	32.10	36.00	38.00	39.40	....	....	....	57.50	....	....	....	....	....	....	....
Clover Leaf Fab	....	23.60	25.60	32.10	36.00	38.00	39.40	....	....	....	....	....	....	....	....	....	....	....
Royal Ex H R T	....	3.70	4.90	5.55	6.30	6.50	6.85	7.95	8.25	8.30	8.50	8.80	....	10.00	10.60	....	....	....
Royal G T	3.35	3.40	4.40	5.00	5.70	5.90	6.20	7.20	7.50	7.55	7.75	8.00	....	9.10	9.60	....	....	....
***Ohio Tire Co., Mansfield, O.**																		
Ohio Pl Cl	15.52	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S Cl	16.90	20.10	....	28.01	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S S S	....	....	24.70	....	32.86	34.52	35.24	43.91	45.36	46.81	48.93	50.10	....	57.40	60.83	....	....	....
G T	2.77	3.28	3.71	4.42	4.58	4.78	4.99	5.81	5.96	6.12	6.17	6.48	7.20	7.45	7.76	....	....	....
R T	3.38	3.96	4.27	4.83	5.09	5.29	5.50	6.42	6.63	6.83	7.04	7.40	7.91	8.37	8.78	....	....	....
Oldfield Tire Co., Akron, O.																		
Oldfield Fab Pl	15.65	19.25	23.70	26.85	31.50	32.95	33.85	41.70	42.95	44.45	46.45	....	....	....	54.50	....	....	....
Fab Anti Skid	17.45	20.80	26.30	28.95	34.95	36.80	37.55	46.85	48.40	49.95	51.95	52.90	....	61.20	64.90	....	....	....
Cd Rb or Anti Skid	....	32.40	42.60	....	54.40	55.95	57.50	61.55	62.95	64.66	66.45	67.85	76.60	80.50	84.65	124.45	176.25	227.05
G T	2.80	3.25	3.75	4.45	4.55	4.85	4.95	5.85	5.95	6.15	6.25	6.50	....	7.50	7.85	....	....	....
R T	3.45	3.95	4.30	4.90	5.15	5.35	5.55	6.45	6.65	6.90	7.10	7.45	....	8.45	8.90	15.20	21.95	26.05
Old Hickory Tire Co., New York City.																		
Old Hickory N S	....	31.85	35.45	43.00	46.30	46.80	47.50	60.00	60.80	61.75	62.85	....	....	75.75	79.95	....	....	....
R T	....	4.00	4.30	5.00	5.20	5.30	5.50	6.60	6.80	6.90	7.00	....	....	8.20	8.60	....	....	....
Overland Tire & Rubber Co., Omaha, Neb.																		
Overland F. N S & Rb	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.80	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	...	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Owen Tire & Rubber Co., Cleveland, O.																		
Owen Fab Rb	18.65	23.05	28.50	33.10	36.95	37.85	39.35	....	....	....	....	....	....	....	....	....	....	....
Fab N S	....	24.30	30.00	36.75	40.25	41.65	42.95	....	....	....	....	....	....	....	....	....	....	....
Cd Rb or N S	....	34.25	45.25	....	57.55	59.30	60.85	65.05	66.55	68.25	70.25	71.70	81.00	85.10	89.50	121.55	172.15	221.65
G T	3.00	3.60	4.05	4.75	4.90	5.05	5.20	6.55	6.65	6.75	6.90	7.05	7.80	8.00	8.35	12.95	18.90	22.25
R T	3.45	4.05	4.55	5.35	5.50	5.65	5.75	7.20	7.30	7.40	7.55	7.75	8.55	8.80	9.20	14.40	21.00	24.75
Para-Belle Rubber Co., Mansfield, O.																		
Para Belle Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	50.15	60.50	62 05	63.85	65.20	....	77.35	81.35	....	....	....
Fab N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	....	....	....	....	....	....	....	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	....	8.15	8.55	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	....	7.30	7.35	....	....	....
The Para Tire Co., New York City, N. Y.																		
Para Fab	26.70	32.85	35.00	44.80	46.60	48.50	49.40	....	....	....	....	....	....	....	....	....	....	....
Cd	....	....	....	....	63.90	64.95	65.70	74.80	75.15	78.75	79.80	80.50	88.75	89.90	92.90	....	....	....
Cd Tubes	4.75	5.95	6.20	7.65	8.10	8.55	9.10	11.10	11.30	11.50	11.70	12.50	11.70	11.90	12.10	....	....	....
Parker Tire & Rubber Co., Indianapolis, Ind.																		
Parker Cd	....	38.00	44.00	52.00	54.60	56.00	58.00	66.00	....	68.00	69.60	....	....	81.00	....	....	....	....
Tubes	....	5.00	5.20	6.80	7.00	7.20	7.40	8.60	....	9.00	9.40	....	....	10.60	....	....	....	....
Pennsylvania Rubber Co., Jeannette, Pa.																		
Vacuum Cup Fab	17.95	21.85	26.90	30.95	35.80	37.25	37.90	47.50	48.95	50.60	52.85	53.65	58.65	61.75	65.45	....	....	....
Vacuum Cup Cd	....	37.05	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	106.90	157.40	199.90
Channel Cd	....	35.20	39.10	....	49.70	51.20	52.55	56.20	57.50	58.95	60.65	61.95	69.95	73.50	77.30	....	....	....
G T Tr Tested	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
Ex H G T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	12.40	17.90	21.25
Perfection Tire & Rubber Co., Fort Madison, Ia.																		
Standard Fab N S	16.80	20.00	25.20	28.00	33.65	35 35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Perfection Spec N S S	20.15	24.00	30.25	33.60	40.40	42.40	43.30	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	....	42.05	....	53.30	54.90	56.25	60.10	61.75	63.35	65.00	66.40	75.75	78.75	82.45	....	....	....
G T	2.85	3.40	3.85	4.55	4.75	4.90	5.15	6.00	6.15	6.30	6.35	6.65	....	7.70	8.00	....	....	....
R T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	....	8.65	9.05	....	....	....
Pharis Tire & Rubber Co., Newark, O.																		
Pharis Paramoid Pl	15.00	18.50	22.75	25.80	30.30	31.80	32 50	....	41.80	43.15	45.10	....	....	52.90	....	....	....	....
N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Cd N S	....	27.35	41.15	....	52.30	53.90	55.30	....	....	62.05	63.85	....	73.65	77.35	81.35	....	....	....
G or R T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.65	8.65	9.05	....	....	....
Plexus Tire & Rubber Co., Tacony, Pa.																		
"Tuf" R G or G T	4.30	4.95	5.40	6.05	6.45	6.65	6.95	8.10	8.35	8.60	8.85	9.30	9.95	10.55	11.05	12.15	15.05	18.30
Portage Rubber Co., Barberton, O.																		
Portage Pl	15.00	18.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	....	....	58.80	....	....	....	....
Cd N S and Rb	....	31.15	41.15	....	52.30	53.90	56.30	59.15	60.50	62.05	63.85	....	73.65	77.35	81.35	119.35	168.80	217.45
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	6.60	6.85	7.00	7.25	....	8.15	8.65	9.05	14.60	21.05	25.00
Powertown Tire Corporation, Rochester, N. Y.																		
Powertown Cd Rb	....	35.75	43.05	....	54.95	56.35	58.70	63.40	64.00	67.00	68.80	70.00	79.10	81.45	83.05	....	....	....
N S	....	36.50	45.95	....	57.60	60.35	63.05	67.00	67.85	70.15	71.95	73.40	83.72	86.00	87.40	....	....	....
Tubes	....	4.90	5.25	....	6.70	6.80	6.90	8.40	8.70	8.85	9.00	9.10	10.05	10.65	11.10	....	....	....

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*These prices include government excise tax.

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x
Quaker City Rubber Co., Philadelphia, Pa.																		
Quaker Fab Pl	18.25	21.35	27.35	28.30	30.80	32.70	34.45	41.85	43.15	44.50	45.85	47.30	....	58.35	57.45	....	....	....
Fab T T T N S	18.50	22.00	29.20	29.50	36.45	38.25	38.95	47.80	49.40	50.85	53.30	54.10	57.60	64.60	68.50	....	....	....
Cd T T T N S	....	35.70	45.35	49.85	57.65	59.45	60.95	65.20	66.70	68.40	70.40	71.85	81.20	85.25	89.65	121.80	172.55	....
G T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	....	....	....
Quality Tire & Rubber Co., Anderson, Ind.																		
Long Wear Fab Rb	18.60	23.85	27.15	34.00	34.20	36.40	36.50	45.80	46.75	47.50	50.40	51.60	....	59.10	63.15	....	....	....
Fab N S	....	24.50	27.60	34.30	34.75	36.90	37.15	46.35	47.30	48.00	51.00	52.35	....	59.60	63.85	....	....	....
Cd Rb	....	....	42.30	....	53.40	53.60	55.20	59.10	61.60	63.00	64.60	65.65	....	78.20	81.25	....	....	....
Cd N S	....	....	43.15	....	55.00	55.20	56.10	60.50	62.15	64.10	65.70	74.75	....	79.55	83.20	....	....	....
R T	3.40	3.95	4.35	5.20	5.25	5.45	5.55	6.30	6.50	6.80	7.05	7.30	....	8.70	9.05	....	....	....
G T	3.30	3.85	4.10	4.75	4.95	5.05	5.30	6.05	6.30	6.60	6.85	7.00	....	8.35	8.50	....	....	....
Special R T	....	....	6.15	....	7.15	7.30	7.65	8.00	8.20	8.55	8.85	9.10	....	10.25	12.30	....	....	....
Racine Auto Tire Co., Racine, Wis.																		
Horse Shoe Fab Pl	15.75	19.45	23.90	27.10	31.80	33.40	34.15	42.55	43.90	45.30	47.30	48.80	....	56.30	....	....	....	....
Fab Anti Skid	17.65	21.00	26.60	29.40	35.35	37.15	37.90	47.25	48.80	50.35	52.60	53.40	58.30	61.75	65.50	....	....	....
Cd Rb	....	....	....	....	54.90	56.60	58.05	....	....	65.15	67.05	68.45	....	81.20	85.40	....	....	....
Horse Shoe Cd	....	32.70	43.20	....	54.90	56.60	58.05	62.10	63.50	65.15	67.05	68.45	77.35	81.20	85.40	117.00	165.00	213.00
Truck Fab	....	24.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
G T	2.85	3.35	3.80	4.55	4.70	4.90	5.10	5.95	6.10	6.25	6.35	6.65	7.35	7.65	8.00	....	....	....
Re-Cord Tubes	3.70	4.25	4.60	5.20	5.50	5.70	5.95	6.95	7.20	7.35	7.60	8.00	8.55	9.10	9.50	14.25	20.75	24.75
Racine Rubber Co., Racine, Wis.																		
Racine Fab Pl	15.55	18.95	22.75	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	45.75	....	52.90	56.50	....	....	....
Country Road	17.70	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Rb Cd	....	33.25	39.90	43.65	50.75	52.30	53.65	57.40	58.70	60.20	61.95	63.25	71.45	75.05	78.90	....	....	....
N S Cd	....	34.30	41.15	45.00	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	110.40	156.15	201.15
G T	2.80	3.10	3.70	4.45	4.60	4.80	4.95	5.85	6.00	6.25	6.30	6.55	7.30	7.50	7.90	11.15	16.10	19.00
R T	3.25	3.75	4.05	4.75	4.95	5.20	5.35	6.25	6.45	6.60	6.90	7.20	7.65	8.20	8.50	12.40	17.90	21.25
Republic Rubber Co., Philadelphia, Pa.																		
Republic Rb & Stg	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Cd Rb & Stg	....	34.70	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Republic G T	3.00	3.45	3.75	4.25	4.50	4.65	4.85	....	....	....	....	....	....	....	....	....	....	....
Black Line R T	3.25	3.75	4.05	4.60	4.85	5.05	5.25	6.10	6.35	6.50	6.70	7.05	7.55	8.00	8.35	....	....	....
Cd T Tube	....	4.05	4.40	....	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	....	....	...
Republic Rubber Co., Youngstown, O.																		
Fab Rb & Stg	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Cd Rb & Stg	....	34.70	41.15	....	52.30	53.90	55.30	59.10	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Cd Tubes	....	4.05	4.40	....	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	....	....	....
G T	3.00	3.45	4.25	4.50	4.65	4.85	....	....	....	....	....	....	....	....	....	....	....	...
Blk Line R T	3.25	3.75	4.05	4.60	4.85	5.05	5.25	6.10	6.35	6.50	6.70	7.05	7.55	8.00	8.35	....	....	....
Revere Rubber Co., New York City.																		
Revere Pl	15.00	18.50	22.75	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	....	....	52.90	....	....	....	....
"R" Anti Skid	15.55	18.50	22.75	25.80	30.30	31.80	32.50	....	41.80	43.15	45.10	45.75	....	52.90	56.10	....	....	...
Granite	17.25	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Cd N S	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	...
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	...
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	...
Reynolds, W. C., New York City.																		
Para Cd	....	....	....	....	63.90	64.95	65.70	74.80	75.75	78.75	79.80	80.50	....	89.90	92.90	....	....	....
Fab	26.70	32.85	35.40	44.80	46.60	48.50	49.40	....	....	....	....	....	....	....	....	....	....	....
Tubes	4.75	5.95	6.20	7.65	8.10	8.55	9.10	11.10	11.30	11.50	11.70	12.50	....	11.90	12.10	....	....	...
Rotary Tire & Rubber Co., Zanesville, O.																		
Rotary Fab N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	32.00	43.10	53.30	54.70	56.15	57.70	61.40	63.20	64.90	66.60	68.15	....	80.80	84.60	....	....	....
R T	3.10	3.60	3.90	4.40	4.65	4.95	5.10	5.95	6.15	6.35	6.60	6.80	7.20	7.65	8.05	....	....	....
Rubber City Clearing House Co. Akron O.																		
Fab N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Cd	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
Rubber Corporation of America, New York City.																		
Empire Fab N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	119.35	168.80	217.4
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.15	6.30	6.95	7.30	7.55	....	....	..
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.85	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	14.60	21.05	25.
Rubber Products Co., Barberton, O.																		
Stronghold Pl	15.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
Td	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	....	....	....	....	....	....	....	....	....	....
Cd	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	....	....	77.35	81.35	....	....	.
G T	2.75	3.25	3.75	4.30	4.50	4.70	4.95	5.30	5.55	5.90	6.15	6.45	....	6.90	7.40	....	....	....
R T	3.90	4.50	4.85	5.80	6.30	6.80	7.20	8.20	8.80	9.50	9.90	10.40	....	10.95	11.30	....	....	...
Rubber Products Corporation, Shelton, Conn.																		
Blk St Pl G or R T.	3.50	4.05	4.40	4.90	5.20	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.60	9.00	13.05	....	
Samson Tire & Rubber Corporation, Los Angeles, Cal.																		
Samson Fab Pl	17.95	21.50	25.50	29.90	34.05	36.15	36.55	46.35	47.05	49.55	50.70	52.85	....	59.75	67.90	....	....	....
Fab W S	19.95	23.80	28.35	33.20	37.90	39.75	40.60	49.40	52.25	53.90	56.35	57.20	....	66.15	70.10	....	....	...
Cd Super Size N S	....	33.20	43.25	....	54.90	56.60	58.10	62.50	63.60	65.40	67.15	....	....	81.25	85.75	118.85	....	
Super Quality R T.	3.60	4.50	4.90	5.80	6.00	6.20	6.40	7.30	7.50	7.70	7.90	8.10	9.00	9.25	10.00	15.25	....	....
Schavoir Rubber Co., Stamford, Conn.																		
Schavoir R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	12.50	18 00	23.
Semple Rubber Co., Trenton, N. J.																		
Seneca R T.	3.25	3.75	4.05	4.75	4.95	5.20	5.35	6.25	6.45	6.60	6.95	7.25	7.65	8.20	8.50	13.60	19.60	23.3
S. H. Rubber Manufacturing Co., New York.																		
R T	3.30	3.75	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
G T	2.70	3.10	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	11.25	....	....
Sioux City Tire & Manufacturing Co., Sioux City, Ia.																		
Sioux City Pl	17.25	20.50	26.40	29.85	33.10	35.00	35.60	44.45	45.45	45.90	47.70	48.20	52.55	55.75	59.05	....	....	....
N S	18.00	22.00	27.80	31.50	34.80	36.85	37.50	46.80	47.80	48.30	50.20	50.75	55.35	57.75	62.15	....	....	....
G T	3.00	3.60	4.00	4.85	5.05	5.25	5.45	6.40	6.60	6.75	6.85	7.15	7.85	8.20	8.55	....	....	....
R T	3.65	4.15	4.35	5.35	5.55	5.75	6.00	7.05	7.25	7.40	7.55	7.85	8.65	9.05	9.45	....	....	....
Smith Rubber & Tire Co., Inc., Garfield, N. J.																		
Smith Cd	....	35.75	44.50	....	56.55	58.00	59.60	66.25	68.00	69.75	71.45	73.10	81.50	85.50	89.60	....	....	...
Southern Tire & Rubber Co., Augusta, Ga.																		
Southern Fab Pl	15.45	18.85	23.30	26.15	30.85	32.15	32.35	....	....	....	45.35	46.20	....	....	70.20	....	....	..
Fab Skid	17.70	20.75	25.85	29.05	34.15	35.70	36.40	45.50	46.85	48.05	50.35	51.45	....	57.15	74.55	....	....	..
Cd Rb S S	....	....	40.20	....	50.75	51.90	53.25	56.00	57.35	59.45	61.35	....	70.00	73.20	....	....	....	...
Cd Skid S S	....	....	42.70	....	52.90	54.95	56.45	59.95	61.40	62.90	64.65	....	73.65	78.80	....	....	....	....
Fab Tubes	3.85	4.15	4.25	4.75	5.00	5.25	5.50	6.15	6.40	6.75	6.90	7.00	7.75	7.95	8.85	....	....	..
Double Duty Cd	....	....	4.85	....	5.75	5.95	6.20	7.50	7.60	7.75	7.95	....	8.85	9.25	....	....	....	...

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Sprague Tire & Rubber Co., Omaha, Neb.																		
Sprague Fab Pl	17.75	21.15	25.20	29.50	....	....	36.10	....	....	....	....	....	....	....	....	....	....	....
Fab N S or Rb	19.70	23.50	28.00	32.80	37.40	39.25	40.10	50.00	51.60	53.25	55.65	56.50	....	65.35	69.25	....	....	....
Cd N S or Rb	....	....	41.15	....	52.30	53.90	55.30	59.15	....	62.05	....	....	....	77.35	81.35	....	....	....
Tubes	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	....	8.65	9.05	15.00	....	....
Spreckles "Savage" Tire Co., San Diego, Cal.																		
Savage Pl	16.00	19.80	24.40	28.30	32.90	34.70	35.40	43.20	45.00	47.50	48.60	49.30	....	58.50	61.40	....	....	....
Grip	17.50	21.00	25.80	30.00	34.30	36.20	36.90	46.00	47.50	48.30	49.90	52.00	55.50	59.40	62.80	....	....	....
D Type	....	33.80	36.90	....	47.70	48.60	50.10	55.80	57.60	59.60	60.30	64.00	69.80	73.50	80.00	....	....	....
G T	2.70	3.30	3.80	4.60	4.80	4.90	5.10	6.00	6.10	6.20	6.30	6.50	7.20	7.70	8.10	13.10	....	....
Grafinite	3.50	4.10	4.50	5.20	5.50	5.70	5.90	6.90	7.00	7.10	7.30	7.70	8.20	8.70	9.10	16.00	....	....
Stalwart Tire & Rubber Co., Ashland, O.																		
Stalwart N S	17.20	21.90	25.25	29.25	33.10	34.75	36.00	....	....	....	....	....	....	....	....			....
Standard Four Tire Co., Keokuk, Ia.																		
Fab Rb	17.95	21.10	28.50	30.25	34.50	36.25	36.95	....	....	47.90	50.05	50.75	....	58.80	62.35	....	....	....
Fab N S	18.50	21.95	29.85	31.80	36.20	37.95	38.80	47.25	48.80	50.35	52.60	53.40	....	61.75	65.45	....	....	....
Cd D T	....	31.50	41.35	....	54.05	55.40	56.95	....	62.40	64.05	....	....	....	79.65	....	....	....	....
Cd N S	....	33.40	43.45	....	56.55	58.00	59.30	64.05	65.70	67.45	69.10	70.75	79.55	81.65	87.45	121.75	....	....
Ex H Dandy	....	4.35	4.85	....	5.85	6.15	6.30	7.55	7.75	7.95	8.15	8.35	9.00	9.55	9.85	16.00	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.05	6.30	....	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.50	6.65	6.85	7.20	....	8.15	8.55	....	....	....
Standard Tire Co., Willoughby, O																		
Tiger Foot Fab Rb	17.75	20.60	25.70	28.25	33.55	35.30	36.00	45.35	46.70	48.35	50.55	51.35	....	59.60	63.25	....	....	....
Fab N S	18.00	21.40	27.00	29.40	35.30	37.10	37.90	47.25	48.75	50.35	52.60	53.40	....	61.75	65.45	....	....	....
Cd Rb and N S	....	32.40	42.80	....	54.40	56.00	57.50	61.50	62.90	64.50	66.40	67.80	....	80.45	84.60	....	....	....
G T	2.70	3.70	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.15	6.30	6.95	7.25	7.55	13.65	20.50	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	14.60	21.05	....
Star Rubber Co., Akron, O.																		
Fab Rb Cl	20.25	23.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
All Star Fab	21.00	24.50	32.00	32.00	38.20	39.35	40.45	48.10	49.65	51.20	52.80	54.35	....	64.50	68.75	....	....	....
Rb Cd S S	....	....	....	....	53.70	55.20	56.60	65.10	66.90	67.70	70.50	73.10	75.50	79.50	81.50	....	....	....
Cd S S	....	34 25	....	....	54.00	55.50	57.00	65.90	66.90	69.50	71.30	73.90	76.50	80.50	82.50	113.00	160.50	....
Meteor Cd S S	....	....	45.00	....	55.30	56.80	58.40	67.40	69.20	71.10	....	....	78.50	82.50	....	116.00	163.80	213.00
Star G T	3.20	3.70	4.00	4.70	5.00	5.20	5.40	6.25	6.50	6.75	7.00	7.25	7.65	8.15	8.65	....	....	....
R T	3.70	4.30	4.60	5.20	5.60	5.80	6.00	6.90	7.15	7.40	7.65	7.90	8.40	8.90	9.40	....	....	....
Cd Type R T	....	5.20	....	....	....	....	....	....	....	....	....	....	....	....	....	13.65	19.70	23.40
Sterling Tire Corporation, Rutherford, N. J.																		
Fab N S	19.00	24.00	29.50	30.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cd Rb or N S	....	....	43.85	....	55.80	57.50	59.00	63 00	64.50	66.20	68.10	69.50	78.50	82.50	86.30	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.15	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Sturges Tire & Rubber Co., Oakland, Cal.																		
Sturges Rb	21.40	24.20	30.70	38.10	40.86	42.55	44.15	47.85	50.30	51.15	55.15	60.15	....	66.95	69.75	....	....	....
N S	23.95	26.80	33.85	39.05	43.60	45 70	47.30	51.50	53.55	55.15	58.80	63.35	....	70.55	74.35	....	....	....
Cd Rb	....	29.15	41.60	....	53.75	54.60	56.05	62 70	65.05	65.70	67.90	69.30	76.50	80.10	84.85	....	....	....
Cd N S	....	30.40	44.00	....	57.40	59.20	61 35	66.00	68.40	69.10	70.95	72.30	81.70	84.90	89.10	....	....	....
Tubes	3.90	4.50	4.90	5.50	5.85	6.05	6.30	7.35	7.60	7.80	8.05	8.45	9.05	9.60	10.05	....	....	....
Surety Tire & Rubber Co., St. Louis, Mo.																		
Standard Fab Pl	18.50	21.00	25.50	29.00	34.00	36 00	38.25	....	....	....	....	....	....	....	....	....	....	....
Fab N S	19.30	22.00	27.50	30.00	35.00	37.25	39.50	....	....	....	....	....	....	....	....	....	....	....
Oversize Cd Rb or N S	....	33.50	43.50	....	55.00	56.25	57.75	62.00	64.25	65.85	67.75	69.30	78.00	80.50	85.50	115 00	....	....
Surety G T	2.90	3.40	3.80	4.55	4.65	4.90	5.10	6.45	6.55	6.65	6.75	6.95	7.70	7.90	8.30	12.15	....	....
Surety R T	3.80	4.10	5.10	6.20	6.45	6.60	6.90	7.85	8.05	8.35	8.55	8.85	9.85	10.50	11.10	14.25	....	....
Swinehart Tire & Rubber Co., Akron, O.																		
Fab Pl	16.80	20.00	25.15	32.40	33.65	35.35	36.10	45.00	46.45	47.90	49.30	50.80	....	55.50	62.35	....	....	....
Rb or Hexagon	18.65	22.25	27.95	36.00	37.40	39.25	40.10	50.00	51.60	53.20	54.80	56.45	....	61.65	69.25	....	....	....
Cd Rb	....	....	40.15	..	51.05	52.35	53.75	57.50	59.00	60.50	62.00	63.50	71.80	75.30	78.50	....	....	....
Cd Hexagon	....	....	42.30	....	53.75	55.15	56.60	60.50	62.10	63.70	65.30	66.90	75.50	79.25	83.00	114.80	162.40	....
G T	3.00	3.45	3.65	4.60	4.75	4.90	5.05	6.00	6.15	6.30	6.45	6.60	....	7.55	7.95	....	....	....
R T	....	4.05	4.25	....	5.25	5.45	5.65	6.70	6.85	7.00	7.15	7.30	8.10	8.50	8.90	13.50	20.00	25.50
Syracuse Rubber Co., Syracuse, N. Y.																		
Syra Cord	....	31.95	42.20	....	53.75	55.25	56.70	60.65	62.00	63.60	65.45	66.85	75.50	79.30	83.40	119.35	168.75	216.60
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	14.65	21.05	25.00
Times Square Auto Supply Co., New York.																		
Non Skid	16.40	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.25	47.95	50.10	50.85	....	58.80	62.35	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	8.30	....	....
***Toliver Tube & Tire Co., Denver. Col.**																		
Toliver D C Pl	15.00	18.50	22.75	25.50	30.30	31.80	32.50	....	....	43.15	....	....	....	52.80	....	....	....	....
N S	....	20.00	25.30	28.00	33.65	35.35	36.10	....	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Silver King Tubes	2.70	3.10	3.50	4.20	4.35	4.55	4.85	5.00	5.55	5.70	5.85	6.30	6.80	7.15	....	....	....	....
Red King Tubes	3.15	3.70	4.00	4.60	4.80	4.95	5.15	5.30	5.70	6.20	6.40	6.70	7.60	7.70	....	....	....	....
Triple Traf Ex H G T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.75	8.90	....	....	....	....
Ex H R T	3.80	4.50	4.90	5.75	5.85	6.05	6.25	7.30	7.40	7.50	7.80	8.05	9.20	9.35	....	....	....	....
Traveller Tire & Rubber Co., Bethlehem, Pa.																		
Neverslip	22.88	25.61	32.20	37.11	41.43	43.61	45.10	49.08	51.01	52.59	56.01	60.71	....	67.33	71.40	....	....	....
Cord	....	....	....	....	54.70	56.55	58.55	62.85	65.20	65.85	67.55	69.04	....	80.75	85.30	....	....	....
R T	3.80	4.35	4.90	6.05	6.20	6.35	6.55	7.65	7.75	8.10	8.20	8.40	....	9.60	10.15	....	....	....
G T	3.40	3.80	3.95	5.10	5.25	5.40	5.60	6.65	6.75	7.10	7.25	7.50	....	8.70	8.95	....	....	....
Trent Rubber Co., Trenton, N. J.																		
Trent Pl	18.10	22.75	26.50	32.30	34.40	36.25	37.45	44.55	45.70	47.10	48.85	49.90	57.35	61.60	65.10	....	....	....
N S	19.05	23.95	27.90	34.00	36.20	38.15	39.45	46.90	48.10	49.60	50.90	52.50	60.35	64.85	68.55	....	....	....
Cd N S	....	35.05	41.50	....	52.30	54.75	56.30	62.60	64.10	66.70	68.10	70.00	77.00	82.70	85.80	....	....	....
Tubes	3.40	4.05	4.70	5.60	5.95	6.15	6.45	6.60	6.75	7.50	8.30	8.70	9.00	9.30	9.60	....	....	....
Triumph Tire & Rubber Co., New York City.																		
Triumph N S	16.40	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.25	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	....	77.35	81.35	....	....	....
Timesco N S	16.40	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.25	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Triumph & Timesco T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Tuscan Tire & Rubber Co., Carrollton, O.																		
Tuscan Fab Cl	18.20	21.70	....	30.35	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab S S	....	....	27.35	....	36.50	38.35	39.15	....	....	....	....	....	....	....	....	....	....	....
Cd Cl	....	33.80	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cd S S	....	....	44.40	....	56.65	58.40	59.95	64.15	65.60	67.30	69.25	70.75	79.85	83.90	88.20	....	....	....
Buckskin Fab Cl	17.30	20.60	....	28.85	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab S S	....	....	....	....	34.70	36.45	37.20	....	....	....	....	....	....	....	....	....	....	....
Cd S S	....	....	42.20	....	53.85	55.50	56.95	60.95	62.35	63.95	65.80	67.20	75.85	79.70	83.80	....	....	....
Tuscan Mam. Lam F.	3.35	3.85	4.20	4.70	5.00	5.20	5.35	6.25	6.50	6.65	6.90	7.20	7.75	8.20	8.60	....	....	....
Mammoth G T	3.35	3.85	4.20	4.70	5.00	5.20	5.35	6.25	6.50	6.65	6.90	7.20	....	8.20	8.60	....	....	....

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*These prices include government excise tax.

Name and Type	30x3	30x3½	32x3½	31x4	32x4	33x4	34x4	32x4½	33x4½	34x4½	35x4½	36x4½	33x5	35x5	37x5	36x6	38x7	40x8
Tropical Tire & Rubber Co., Inc., New York City.																		
Tropical Fab Pl......	16.90	20.00	25.80	31.50	33.55	35.25	36.00	44.90	46.35	47.85	50.00	51.45	56.45	58.75	62.00	....	....	....
Fab N S	18.90	22.90	28.75	33.75	37.35	39.25	39.90	49.90	51.40	53.20	55.00	56.40	61.55	64.90	69.00	....	....	....
Cd N S	....	33.85	44.45	....	56.45	57.75	59.55	63.60	65.30	67.00	68.70	70.30	79.50	83.35	87.35	....	....	....
R T	3.90	4.40	4.90	5.50	5.85	6.05	6.30	7.35	7.60	7.80	8.05	8.45	9.05	9.55	10.05	....	....	....
Tyre Rubber Co., Andover, Mass.																		
Hold-Tite Fab N S Cl	17.25	20.55	....	29.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S S S	....	....	25.30	....	33.65	35.35	36.10	45.10	46.45	47.95	50.10	50.55	....	58.80	62.35	....	....	....
Tyrian Blk Cd N S S S	....	....	41.15	....	52.35	53.95	55.30	60.55	....	62.05	....	....	....	77.40	....	....	....	....
Tyrian R T..........	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	14.60	21.00	25.00
United & Globe Rubber Co., Trenton, N. J.																		
Safety Fab Pl.......	15.00	18.50	22.15	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	....	....	52.90	56.10	....	....	....
Fab N S...........	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	55.50	58.80	62.35	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Safety G T	2.70	3.20	3.60	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.25	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	4.95	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
United Motors Service, Inc., Detroit, Mich.																		
Formost Fab N S....	22.50	26.80	31.80	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	....	46.70	....	58.75	60.35	62.05	66.20	68.25	69.95	71.65	73.35	82.95	86.95	90.80	....	....	....
R T	4.15	4.75	5.25	6.00	6.25	6.40	6.75	7.70	7.90	8.10	8.35	8.65	9.70	10.10	10.50	....	....	....
G T	3.45	4.15	4.65	5.35	5.60	5.80	6.10	7.10	7.25	7.40	7.55	7.75	8.60	8.90	9.25	....	....	....
United Rubber Co., Akron, O.																		
Huskie Fab Pl.......	15.50	19.05	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab N S	17.30	20.60	26.05	28.85	34.70	36.45	37.20	46.40	47.90	49.45	51.60	....	....	60.60	....	....	....	....
Cd N S	....	32.10	42.20	....	53.85	55.50	56.95	60.95	62.35	63.95	....	....	....	79.70	....	....	....	....
G T	2.75	3.30	3.70	4.40	4.50	4.80	5.00	5.50	5.95	6.10	6.15	....	....	7.45	....	....	....	....
U. S. Compression Inner Tube Co., Tulsa, Okla.																		
Tulsa Fab N S	20.50	24.00	30.65	30.95	36.45	38.25	38.95	....	....	....	....	....	....	....	....	....	....	....
Cd N S	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Heavy R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Standard G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
Compression Fab I T	12.75	13.50	15.00	15.75	16.50	17.25	18.00	18.75	19.50	20.25	21.00	21.50	22.00	22.50	25.50	....	....	....
Cd I T	....	15.00	16.50	17.25	18.00	19.00	20.00	20.75	21.50	22.25	23.00	23.50	24.00	24.50	28.50	45.00	56.25	67.50
United States Tire Co., New York City.																		
U. S. Royal Cd.......	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Fab Pl	15.00	18.50	22.75	25.80	30.30	31.80	32.50	40.50	41.80	43.15	45.10	....	....	52.90	....	....	....	....
Usco Tread	15.55	18.50	22.75	25.80	30.30	31.80	32.50	....	41.80	43.15	45.10	45.75	....	52.90	56.10	....	....	....
Chain Tread	17.25	20.50	25.30	28.70	33.65	35.35	36.10	45.00	46.45	47.95	50.10	50.85	....	58.80	62.35	....	....	....
Nobby Tread	20.50	24.00	30.65	30.95	36.45	38.25	38.95	47.80	49.40	50.85	53.30	54.10	....	64.60	68.50	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
***United Tire & Rubber Co., Mansfield, O.**																		
United Pl Cl.........	15.52	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S Cl............	16.90	20.10	....	28.01	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N S S S	....	....	24.70	....	32.86	34.52	35.24	43.91	45.36	46.81	48.93	50.10	....	57.40	60.83	....	....	....
G T	2.77	3.28	3.71	4.42	4.58	4.78	4.99	5.81	5.96	6.12	6.17	6.48	7.20	7.45	7.76	....	....	....
R T	3.38	3.96	4.27	4.83	5.09	5.29	5.50	6.42	6.63	6.83	7.04	7.40	7.91	8.37	8.78	....	....	....
Universal Rubber Co., Philadelphia, Pa.																		
Transit N S	14.25	18.15	21.45	28.65	29.15	30.80	31.35	....	....	42.50	44.20	44.70	....	54.50	57.35	....	....	....
G T	2.90	3.45	3.75	4.60	4.85	5.05	5.20	....	....	6.50	6.70	6.95	....	7.70	8.15	....	....	....
R T	3.40	4.15	4.40	5.50	5.65	5.90	6.15	....	....	7.30	7.45	7.70	....	8.65	9.00	....	....	....
Victor Rubber Co., Springfield, O.																		
Victor Fab Pl........	15.80	19.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fab Rb	17.25	20.50	25.30	28.70	33.65	35.40	36.10	....	....	....	....	....	....	....	....	....	....	....
Fab N S...........	18.15	21.60	26.65	30.20	35.40	37.20	38.00	....	....	....	....	....	....	....	....	....	....	....
Cd Rb	....	37.95	41.15	37.95	52.30	53.90	55.30	59.15	60.50	62.05	63.85	....	....	77.35	81.35	....	....	....
Cd N S	....	39.95	43.30	39.95	55.05	56.75	58.20	62.25	63.70	65.25	67.20	68.65	77.50	81.40	85.60	....	....	....
Cd R T Spec......	....	4.40	5.05	....	6.30	6.45	6.75	7.75	8.10	8.45	8.50	8.75	9.40	9.70	10.20	....	....	....
Heavy Car G T....	2.70	3.20	3.65	4.30	4.45	4.65	4.85	5.65	5.80	5.95	6.00	6.30	6.95	7.30	7.55	....	....	....
R T	3.30	3.85	4.15	4.70	5.00	5.15	5.35	6.25	6.45	6.65	6.85	7.20	7.70	8.15	8.55	....	....	....
Voorhees Rubber Mfg. Co., Jersey City, N. J.																		
Voorhees R T	3.65	4.35	4.60	5.65	5.75	5.90	6.05	7.15	7.30	7.45	7.60	7.75	8.75	8.90	9.00	....	....	....
G T	3.20	3.70	3.95	5.00	5.10	5.25	5.40	6.45	6.60	6.75	6.85	6.95	7.60	7.90	8.25	....	....	....
Vulcan Rubber Co., Erie, Pa.																		
Loco Tred Fab Rb...	16.90	20.80	25.60	29.00	34.10	35.80	36.55	44.55	46.00	47.45	49.60	51.50	....	58.20	61.70	....	....	....
Vulco Tred Fab N S..	18.10	22.50	28.45	31.50	37.85	39.75	40.60	49.50	51.05	52.75	55.10	55.95	....	64.70	68.60	....	....	....
Loco Tred Cd Rb.....	....	31.15	41.15	....	52.30	53.90	55.30	....	60.50	62.05	63.55	....	....	77.35	81.35	....	....	....
Vulco Tred Cd N S..	....	32.70	43.20	....	54.90	56.60	58.05	62.10	63.55	65.15	67.05	68.45	....	81.20	85.40	117.75	....	....
G T	2.95	3.50	4.00	4.75	4.90	5.10	5.35	6.20	6.40	6.55	6.60	6.90	....	8.05	8.30	13.75	....	....
R T	3.65	4.25	4.55	5.15	5.50	5.65	5.90	6.85	7.10	7.30	7.55	7.90	....	8.95	9.40	15.75	....	....
Vulcweld Tire & Rubber Co., Pottstown, Pa.																		
Vulcweld Fab N S..	14.34	17.10	22.64	23.87	30.23	31.72	32.42	40.46	41.71	43.04	44.09	45.65	49.84	52.83	55.98	....	....	....
Cd N S	18.52	23.69	32.70	36.05	41.56	42.63	43.81	46.82	48.03	49.28	50.46	51.70	58.46	61.30	64.25	92.74	131.18	....
Tubes	3.12	3.30	3.97	4.22	4.30	4.44	4.63	5.40	5.59	5.77	5.91	6.21	6.65	7.06	7.39	10.42	15.04	....
Western Rubber Co., Tacoma, Wash.																		
Fab Rb or N S....	16.80	20.00	....	28.00	33.65	35.35	36.10	45.00	46.45	47.95	....	....	55.50	58.80	....	....	....	....
Cd Rb or N S......	....	....	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	119.35	....	....
Tubes	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	14.60	....	....
Zee-Zee Rubber Co., Yardville, N. J.																		
Zee Zee	16.80	20.00	25.30	28.00	33.65	35.35	36.10	45.00	....	47.95	50.10	50.85	....	58.80	62.35	....	....	....
R T	3.25	3.85	4.15	4.80	4.95	5.15	5.35	6.25	....	6.65	6.85	7.20	....	8.15	8.55	....	....	....

Received Too Late for Classification

Falls Rubber Co., Cuyahoga Falls, O.																		
Falls Fab Rb	17.75	21.00	26.50	29.50	35.25	36.50	37.75	....	....	49.50	52.75	....	....	....	....	....	....	....
Fab Neverslip N S.	17.75	25.00	26.50	29.50	35.25	36.50	37.75	47.25	48.75	49.50	52.75	53.50	....	60.75	65.00	....	....	....
Cd Rb & N S......	....	31.15	41.15	....	52.30	53.90	55.30	59.15	60.50	62.05	63.85	65.20	73.65	77.35	81.35	....	....	....
Cd Truck	....	....	....	....	....	....	....	....	....	....	....	....	....	85.00	....	123.00	163.00	225.00
Evergreen P G Tubes	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	....	....	....
Mid-West Tire Mfg. Co., Arvada, Col.																		
Mid-West Pl	15.00	18.50	22.75	22.50	30.30	31.80	32.50	....	....	43.15	....	....	....	52.80	....	....	....	....
N S	16.80	20.00	25.30	28.00	33.65	35.35	36.10	....	46.45	47.95	50.10	50.85	58.80	....	62.35	....	....	....
G T	2.70	3.20	3.65	4.30	4.45	4.65	4.95	6.00	6.20	6.30	6.40	6.70	7.25	7.75	8.15	....	....	....
R T	3.50	4.05	4.40	4.95	5.25	5.45	5.65	6.60	6.85	7.00	7.25	7.60	8.15	8.65	9.05	....	....	....

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*These prices include government excise tax.

ACTIVITIES IN GARAGE AND REPAIR SHOP FIELD

Happenings of the Month Briefly Noted and Classified by States and Towns—New Places of Business Opened, Sales and Transfers.

Alabama.

Atmore—Clark Bros., rebuild auto shop.

Birmingham—S. W. Harrison and H. M. Weatherly, filling station.

Florence—Miller Buick Co., rebuild garage and repair shop.

Arkansas.

Calico Rock—B. W. Hutchinson, sold garage and machine shop to Owen Sanders.

Gravette—Comer Garage, enlarge building, 26x100.

California.

Santa Cruz—J. J. and J. E. Michand, purchased T. W. Thompson's Avenue Garage, 269 Pacific Ave.

Georgia.

Brunswick—Brunswick Auto Co., rebuild garage.

Idaho.

Pocatello—Northwestern Auto Supply Co., rebuild garage and accessory shop.

Illinois.

Abingdon—John Famulener purchases Main Garage from C. W. Brown.

Aledo—H. R. Morgan sold garage and repair shop to C. C. Barr and Clyde Scott.

Batavia—Wm. C. Spencer sold tire shop, E. Wilson St., to H. Funk.

Bement—Schuh & Sons sold garage and implement business to Piatt Farm Supply Co.

Bloomington—Guy Wyckoff sold auto sales business, 405 W. Washington St., to Walter Ritchie.

Burlington—David O'Reilly, opened garage and service station, Center St.

Caledonia—Hampand Leonard, Rockford, purchased Caledonia Garage.

Canton:
- J. C. Elliott purchased interest of partner, F. S. Morse, in garage and service station, 139 E. Chestnut St.
- O. B. Meadows, moved Willard station to 36-38 E. Locust St.

Casenovia—Ranney Garage and Repair Shop, rebuild.

Champaign—A. A. Bailey and O. J. Paterson, opened garage and repair shop.

Chicago:
- Leslie Frye purchased Columbia Battery Service Station and Garage, Irving Park Blvd. and Sheridan Rd.
- Wm. A. Grunan, Jr., and Roscoe Nightingale, sold garage and repair shop, Irving Park Blvd. and Southport Ave., to Geo. A. Matson.

Clinton:
- C. L. Roberts opened vulcanizing and tire shop, Reid Bldg.
- D. M. Selsor sold garage and battery service station, Edward Wade Bldg., N. Quincy St., to Harry H. Taylor.

Dallas City—Grove Garage and Repair Shop, rebuild.

Dundee—Clarence Hepsfinger and Herman French purchased Wm. Duechler Garage and Repair Shop, Barringon Ave.

Effingham—Geo. C. Martin & Co., proprietor Auto Inn Garage, leased Lane Garage.

Elgin—H. J. Hillegas purchased half interest of A. B. Campbell in Elgin Tire Sales Co., 27 River St.

E. St. Louis—Royster & Jacobs Auto Repair Shop, 120 N. 6th St., rebuild.

Ewing—Henry Hubrich, open garage and repair shop.

Fisher—Star Garage and Repair Shop moved into Tom Dale Bldg.

Forest Park—Chas. Bader, Morris Quinn and Edmund Nendick purchased Castle Garage, 7240 Madison St.

Harvard—F. W. Weibell sold half interest in tire and vulcanizing shop to C. E. Barrows.

Herwin—Jesse Darley, taken over City Hall Garage.

Highland—Max Maxim rebuild garage and repair shop.

Hillsboro—L. A. McHugh purchased Davidson Garage and Repair Shop, S. Hamilton St.

Hoopeston—Austin Hickman, formerly of E. Lynn, garage and service station.

Ipava—C. B. Carroll sold garage and repair shop to Donald Jones.

Jacksonville—M. C. Young, garage and repair shop, S. Main St.

Jamesburg—Monte Farnsworth purchased Hoskin Garage.

Kewanee:
- Building adjoining Parkside Garage converted into vulcanizing shop.
- General Machine Shop & Garage opened, 336 Tenney St.

Lake Forest—Geo. A. McKinlock rebuild garage and repair shop, Deerpath and Telegraph Rds.

La Salle—L. A. McKenny, taken over Ford Garage and Repair Shop, 326 Third St.

Lee—Earl Wrigley and Edward Carlson, garage and repair shop.

Lewistown—C. V. Groot convert American theater into garage and battery supply station.

Lincoln—L. W. Kaylor and Warren Atterbury purchased Chaplin Electric Garage.

Litchfield—Improvements made on Central Garage.

Madison—Lee Rollins moved tire and vulcanizing shop to 206 Madison Ave.

Marseilles—Clyde Varley purchased Numdell Motor Co., Washington St.

Mattoon—Kizer Reynolds Motor Car Co., 1421 Broadway, rebuild garage and service station.

Moline—Webster Garage, 519 17th St., rebuild.

Mt. Vernon—E. Talbert sold Jefferson Garage and Repair Shop, N. 10th St., to Chas. N. Moss and others.

Olney—Everett Floyd and Clark Shippley purchased Lincoln Trail Garage, W. Main St.

Ottawa—Leroy Jeffery sold Spot Cash Garage, 219 W. Jackson St., to Julian Sion.

Palatine—Geo. Henning purchased Frye Garage and Accessory Shop.

Paris:
- Dr. E. E. Jones, garage and repair shop.
- Hazeltine & Co., convert warehouse into garage.
- Edgar County Buick Garage Co., enlarge garage.

Picatonica—G. Seeralson sold interest in garage and repair shop, Main St. to partner, Harry Cowin.

Peoria—W. H. Smith, I. W. Huindon and F. Hendon purchased Heintzman Garage, 5606 S. Adams St.

Peru—Carl Croesant, garage and repair shop, Peoria St.

Pittsfield—Karl and Evans Kirn, garage and repair shop.

Potomac—Fred Bennett purchased interest of Wm. Rogers in garage and repair shop.

Rockford:
- Danl. Fletcher and Chas. Mills leased Marmon Garage and Service Station, 705 W. State St.
- Kenneth Savage and Ernest J. Duel purchased Savage & Love Garage and Tire Shop, 700 S. Main St.

Savanna—Ward Orr purchased Hartman Garage.

Shawneetown—G. Fields and B F. Wright, garage and service station, Lower Main St.

Shipman—Marshall Bohlmeyer sold garage and repair shop to Everett Travers.

Sidell—Hans Stolley purchased garage and repair shop.

Springfield:
- Clough Reihm Co., auto and supply dealer, Quincy, Ill., opened branch; mgr., G. S. Malone.
- Harcher & Co. rebuild garage and repair shop.

Staunton—John Talbott & Son sold Central Garage to Henry and Walter Beinke.

Sterling—C. G. Bert, garage and repair shop.

Tuscola—Meister Bros. sold garage and repair shop to Herbert English and J. E. Schloff.

Virden—Geo. Bridwell, Jr., and H. R. Ellison purchased interest in Verdin Garage.

Wenona—Goodwin Bros. & Co. moved garage and accessory shop to Van Home Bldg.

Zenin—Chas. Shannon leased garage and repair shop to Miller Bros.

Indiana.

Algers—Archie Engleman and Raymond Meyers purchased Pipes Bros.' Garage.

Anderson—Fred Dixon purchased Palace Garage, 14th and Meridian Sts.

Battle Ground—Burley Wadkins and Lawrence Pauley purchased Modern Garage.

Bluffton—Orval Long and Walter Bentzelhoffe, garage and accessory shop, Jersey St.

Brazil—C. M. Wilson purchased service gargae, 522 E. National Ave.

Clinton—J. D. Lenhart, Terre Haute, purchased Western Avenue Garage.

Connersville—J. E. Weiler sold garage and repair shop, Mettel building, to Edward Gillespie and others.

Danville:
- Everett Robertson, garage and battery service station, W. Main St.
- Citizens' Motor Co. taken over Benbow Garage.

Eaton—Asa Babb sold vulcanizing shop to David Culburson.

Elkhart:
- Russell J. Gill purchased interest in Auto Sales Co., 109-111 E. Lexington Ave.
- Geo. W. Polk taken over Central Garage.

Evansville:
- Fischer & Wright, garage and repair shop, 144 Madison Ave.
- Granlich Garage and Service Station, 5th and Oak Sts., rebuild.

Flora—Chas. D. Wilkinson purchased half interest in Flora Garage.

Forest—Wm. Carrick & Sons, garage and repair shop.

Ft. Wayne—Vetter Bros., garage and accessory shop, Broadway.

Franklin—Halliday Bros. sold vulcanizing shop and garage to Sandman Bros., Shelbyville.

Geneva—Frank Hoffman, garage and repair shop, Cross Bldg.

Grass Creek—Chas. Sanders sold garage and service station to Easterday Bros.

Greensburg—Frank Huntington and John Robbins sold garage and service station, West Main St., to Roy Styers.

Howe—A. S. Atwater and W. W. Hudson purchased Schermerhoin Garage and Repair Shop.

Huntington:
- Geo. A. Calvert & Co. purchased garage and repair shop, E. Park Drive.
- Northern Indiana Motor Car Co., branch office, Warren St.

Indianapolis—Andrew H. Wahl, garage and accessory shop, 2137 N. Meridian St.

Knox—O. E. Ledwin, S. Bend, garage and accessory shop; mgr., Clarence Savery.

Kokomo—Glen De Long purchased D. D. Jenkins tire and accessory shop, 210 E. Sycamore St.

Lafayette—Roy Keys moved Overland garage and sales room to Foster Bldg., Clinton St.

Lebanon—H. O. Robins sold Auto Inn, N. Lebanon St. to Watt Fogley.

Logansport:
- Berkely McCoy Automotive Service Station, rebuild garage and repair shop.

Logansport—Standard Oil Co., garage and repair shop, 3rd St. and Broadway.

Macy—Lester Ward sold garage and filling station to Arvel Brown.

Milroy—Hall Bros. sold garage, E. Main St., to Frank McCorkle.

Montmorenci—Montmorenci Garage and Repair Shop, rebuild.

Paoli—John McIntosh, garage and repair shop.

Pendleton—Howard L. Holcomb Co., garage and service station.

Peru—B. S. Carson purchased interest in Glen E. Shiveley Auto Sales Co., 3rd and Main Sts.

Redkey:
- Geo. D. Brown purchased Chas. Dull Garage and Accessory Shop, Meridian St.
- Wm. Williams purchased Hammitt & Booker repair and supply business.

Richmond—C. M. Davis Sales Co. leased repair shop, 1209 Main st., to Thos. A. Robison.

Rockville—Floyd Mitchell, garage and accessory shop, Main St.

Sullivan—Frank Nicholas and Julius Hatry, garage and accessory shop, Jackson and Main Sts.

Syracuse—G. A. Weischaar sold tire and vulcanizing shop to Owen Strie1y.

Wabash—John Phoebus purchased E. G. Hanes Garage and Service Station, 122 Canal St.

Winamac—Blinn Boiders taken over Winamac Service Station.

Winchester—Max Wentz and Russell Payne purchased repair equipment of Hiatt Roosa and will conduct garage and repair shop.

Iowa.

Albwinett—Kee and Kee Garage and Service Station, rebuild.

Atlantic—S. R. Nelson, rebuild garage and repair shop, 3rd and Chestnut Sts.

Barnes City—Mortimer Garage and Accessory Shop, rebuild.

Belle Plaine—Louis Formanek taken over Transcontinental Garage.

Carroll—Phillip Neu, repair shop.

Council Bluffs—Lawton Auto Co. moved to 322 W. Broadway.

Cresco—W. C. Walton, garage and accessory shop, Market St.

Dubuque—T. A. Hall & Son sold garage, Spring Ave., to Fred and Orrie Gilson.

Ft. Madison:
- B. B. Lawrence, garage and accessory shop, Market St.
- Wenke Bros. remodelled garage and service station.

Hampton—Nash Garage, rebuild.

Iowa City—Oakland Garage and Accessory Shop, rebuild.

Iowa Falls—Norman Auto Co. purchased Younkers Garage, Washington Ave.

Knoxville—Arthur Watson and others purchased East Side Motor Co., E. Main St.

Merrill—Swan Anderson sold auto business to Clarence Norton.

Milford—C. N. Nielson sold Brooks Garage to H. B. Myerly.

Mt. Vernon—Standard Oil Co., garage and service station.

Orchard—Walter Wetter, garage and repair shop.

Riverside—Edin Bros. moved garage and repair shop to Ainsworth.

Shenandoah—Freeman Cain purchased interest in garage and accessory shop o. O'Day & Ames.

Sioux City—E. B. Saylers and R. H. Walters purchased branch of J. E. Steward Motor Co., 505 Pearl St.

Waukon—J. G. Minert Auto Co. purchased Markley Garage.

Waverley:
- Buick Garage moved to W. Bremer Ave
- W. W. Clark and A. Burns, garage and repair shop, W. Bremer Ave.

Kansas.

Arkansas City—Geo. Kidwell, service station and repair shop.

Coffeyville—H. J. Burger and S. B. Adams purchased filling station and accessory shop, 729 Union St.

Hutchinson—S. E. Roberts and J. M. Layman purchased garage, 118 S. Main St.

Iola—H. J. Malen and S. Monroe purchased Paterson Garage and Repair Shop.

Lawrence—Standard Oil Co., garage and filling station, 9th and Indiana Sts.

McPherson—J. H. Myers and Chas. Larson purchased interest of Ernest Sellberg in repair shop.

Topeka—Topeka Battery Service Co. moved to 126 Kansas Ave.

Washington—P. C. Swan sold garage and repair shop to Bert Reims, Munden.

Wichita—Jas. Moon taken over repair shop, College Hill Garage, 3108 E. Douglas Ave.

Kentucky.

Bardstown—J. F. Conway Motor Co. moved to W. Market St.

Bowling Green—Robert Crump & Son sold garage, 1020 State St., to M. F. Hagerman & Co.

Winchester:
- Bluegrass Garage, rebuild.
- T. M. Swope purchased Highland Garage.

Louisiana.

New Orleans—Crescent Battery Mfg. Co., 113 Howard St., rebuild burned service station.

Michigan.

Baraga—Baraga Garage, garage and accessory shop.

Battle Creek:
- Queen City Tire & Vulcanizing shop moved to 35 S. Jefferson Ave.; garage and tire service business.
- Jas. Arnold, garage and service station, Wills and E. Main Sts.
- Cushman Auto Sales Co. move into new quarters, W. Main St.

Cadillac—Cadillac Battery Co., garage and repair shop, N. Mitchell St.

Charlotte—Cox Spice purchased Geo. Spaull's garage and repair shop.

Detroit—Detroit Motor Bus Co., 1701 Dime Bank Bldg., garage and repair shop, Connor's Creek and Jefferson Ave.

Fremont—Fremont Auto Co., rebuild garage and accessory shop.

Grand Rapids—L. J. Van Hammen and R. D. Van Tassal purchased Wyoming Park Garage.

Jackson—Excel Battery Co., 114 E. Pearl St., taken over Battery Service Co., 118 Liberty St.

Lake Linden—Turner garage and repair shop, rebuild.

Muskegon—Auto Sales & Service Co., garage and repair shop, 197-203 W. Western Ave.

Olivet—Krieg Auto Co., garage and service station.

Saginaw—Hubbell Auto Sales Co., sold garage and service station, Court and Niagara Sts., to E. E. Fernette.

Ypsilanti—L. E. Hagel and Glyn Holmes, owners Ysilanti Cartage Co., taken over garage and accessory shop, 303 E. Michigan Ave.

Minnesota.

Barnesville—Ira B. Eding purchased Broadway garage and repair shop.

Bowlus—Auto Service Co., rebuild garage and repair shop.

Mankato—Graves Bros. purchased Spencer Garage.

Minneiska—Lloyd Gentzkow sold interest in garage to partner, Michael Heaser.

St. Paul:
- St. Paul Automobile Spring Co., garage and repair shop, W. 4th St., between Franklin and Exchange.
- Twin City Motor Bus Co., garage and repair shop, W. 5th St.

Springfield—Henry F. Weber purchased P. J. Pint garage and repair shop.

Missouri.

Jefferson City—J. Q. Taylor and L. F. Griffin, garage and repair shop.

Kirksville—Emery and Milton Keller, garage and repair shop.

Montgomery City—Smith Automobile Co., garage and service station.

Morgan—Chas. Atkinson and Burl Hough, garage and repair shop, North St.

St. Joseph—John R. Hopkins, garage and repair shop, 9th St.

St. Louis:
- Compton Height Garage, enlarged.
- Vesper Buick Auto Co., service station, Vanderenter Ave. and W. Pine St.

Savannah—Fred Helsby sold garage and repair shop to Hardin Bros.

Trenton—Crane Auto Co., tire repair and vulcanizing shop.

Montana.

Ennis—Claude Coomer and Jacob Linthacum, garage and repair shop.

Great Falls—L. A. Enebee purchased Auto Electric Shop, 707 Central Ave.

Hobsin—Ted and Max Wurmlee purchased Buffalo Trail Garage.

Lavina—Philips & Roach purchased White City garage and repair shop.

Missoula—L. J. Croonenberg sold garage and filling station, Pine and Stephens Sts., to McKenzie Wallace Service Co.

Nebraska.

Central City—G. L. Mills & Son taken over McDonald Garage.

Fairfield—John Wall sold garage and repair shop to Rich. Parpart.

Madison—John Walters sold interest in Alley Garage to Chas. Pinney and Edward Clarsen.

Nehawka—Wm. Hodge purchased St. John garage and repair shop.

North Carolina.

Asheville—J. W. Cambus, garage and repair shop, 24 N. Market St.

Greensboro—Coble Starr Garage, rebuild.

North Dakota.

Fargo—Motor Supply Co., 92-96 Front St., purchased by A. J. Matheson.

Sheldon:
- M. C. Adams purchased interest of partner, P. J. Foster, in Motor Service Garage.
- Currence & Peterson, Newark, S. D., purchased Speikermeir Bros.' Garage.

Bellaire—R. A. Johnson rebuild garage and repair shop.

Ohio.

Bowling Green—Russell & Patterson purchased Court St. Garage.

Cambridge—J. C. Purkey and others, garage and repair shop, S. 10th St.

Cincinnati—Wm. H. Hodge rebuild garage and accessory shop, 2543 Moorman Ave.

Columbus—B. John Buell purchased Main-Oakwood garage and service station, E. Main St. and Oakwood Ave.

Delphos—A. Husman purchased Delphos battery station, First and Canal St.

Eaton—Eaton Tire Service Co., rebuild garage and repair shop.

Gomer—Richard Humphreys sold interest in Gomer garage and repair shop to Harry Kiracofe.

Lima:
- Kindler & Eirtman, branch garage and battery station, Webb Bldg., W. Eureka St.
- Newell & Norman O'Brien taken over Bybee Tire & Service Co.
- John Stipp, garage and accessory shop Water St.

Lorain—Rathwell Garage, enlarged.

Marion:
- Philip Bauer, garage and service station.
- Hoch Bros. Garage, rebuild.
- Maxwell Garage, 176-82 N. State St., rebuild.

Middletown—D. Snider, garage and servce station, 2nd and Main Sts.

Mt. Gilead—Cecil Hopkins, rebuild garage and repair shop.

Springfield—Dayton Auto Sales & Parts Co., Dayton, O., two branches at Springfield and one at Richmond, Ind.

Warren—D. E. Miller Co., garage and repair shop, W. Market St.

Oklahoma.

Forgan—W. J. Harlow purchased interest of John Lawson in Ford garage.

Jet—B. H. Bodenheimer purchased Albert Pike Garage.

Oregon.

Adams—Adams Garage, rebuild.

Pennsylvania.

Harrisburg:
- Shaffner Garage, 88 S. Cameron St., rebuild public garage.
- Herman A. Early taken over Federal Square Garage, Court and Cranberry Sts.

Indiana—Jas. Hileman Garage, rebuild.

Sanataga—Pleasant View garage and repair shop, rebuild.

Fitersville—United Auto Stores, Inc., branch store, 118 N. Franklin St.

Uniontown:
- Frank Santo purchased Springer garage, E. Church St.
- Thos. L. Howard and Robt. Sample, convert brewing plant into garage.

Waynesboro—John B. Stoner, garage and repair shop.

Lebanon—Whitman Garage, 15th and Washington Sts., rebuild.

South Dakota.

Aberdeen—Otto Reidle purchased Springer & Ohls garage and repair shop, 119 Second Ave., S. E.

Wakpala—S. A. Severson sold garage and service station to A. H. Hall.

Willow Lake—John M. Schmid, garage and repair shop.

Tennessee.

Johnson City—Harold E. Wood purchased Lewis Battery Co., E. Main St.

Knoxville—B. H. Sprangle, garage and repair shop, Union Ave.

Memphis—Liberty Auto Sales & Storage Co.'s plant and W. H. Daniels' battery service station, 3rd and Monroe Ave., rebuild.

St. Bethlehem—John Cobb, Jr., and Wm. Woodard, garage and repair shop.

Union City—T. R. Massey, garage and service station, 2nd St.

Texas.

Gainesville—T. L. Gaston sold New Highway Garage to Degan Phillips.

Virginia.

Lynchburg—National Tire & Rubber Co., tire and accessory shop, filling station, etc.

West Virginia.

Clarksburg—Geo. A. Deuhan, garage and service station, E. Main St.

Wisconsin.

Beaver Dam—Bernard Krueger, garage and repair shop.

Burlington—Hoppe & Rueter, filling station, Pine and Jefferson Sts.

De Pere—Geman Bros., convert California hotel into garage and repair shop.

Evansville—Millard Winn, garage, W. Main St.

Fond du Lac:
- Jos. Kopf, garage and repair shop, Brooke and Johnson Sts.
- C. A. Rossey, garage and repair shop, Forest Ave.
- A. L. Wilson, garage and battery service station.

Honey Creek—Archie Fraser leased building from W. E. Babcock for garage and service station.

Manitowoc—W. C. Kicke, garage and repair shop, 11th and Franklin Sts.

Marinette—Robt. Schultz sold vulcanizing shop and garage, Main St., to Walter Kopplin.

Mellen—Walter Willoughby, garage and accessory shop.

Oshkosh—Hudson Garage, S. Main St., rebuild.

Potosi—Leo Keehner purchased Duvc garage and service station.

Sheboygan—Fred H. Poethig purchased half interest in North Side Garage.

Two Rivers—Langer Bros., garage and service station, adjacent to shop, Jefferson St.

Wanderoos—O. Christensen sold garage and repair shop to O. Erickson.

Watertown—Edgar Kuntz and Frank Zabel, garage and repair shop, 108 Jefferson St.

Waukesha—A. T. Breecher moves battery service station to 363 W. Main St.

Wausan—R. H. Smock Sales Co. enlarge garage and battery station, 311-13 S. 3rd Ave.

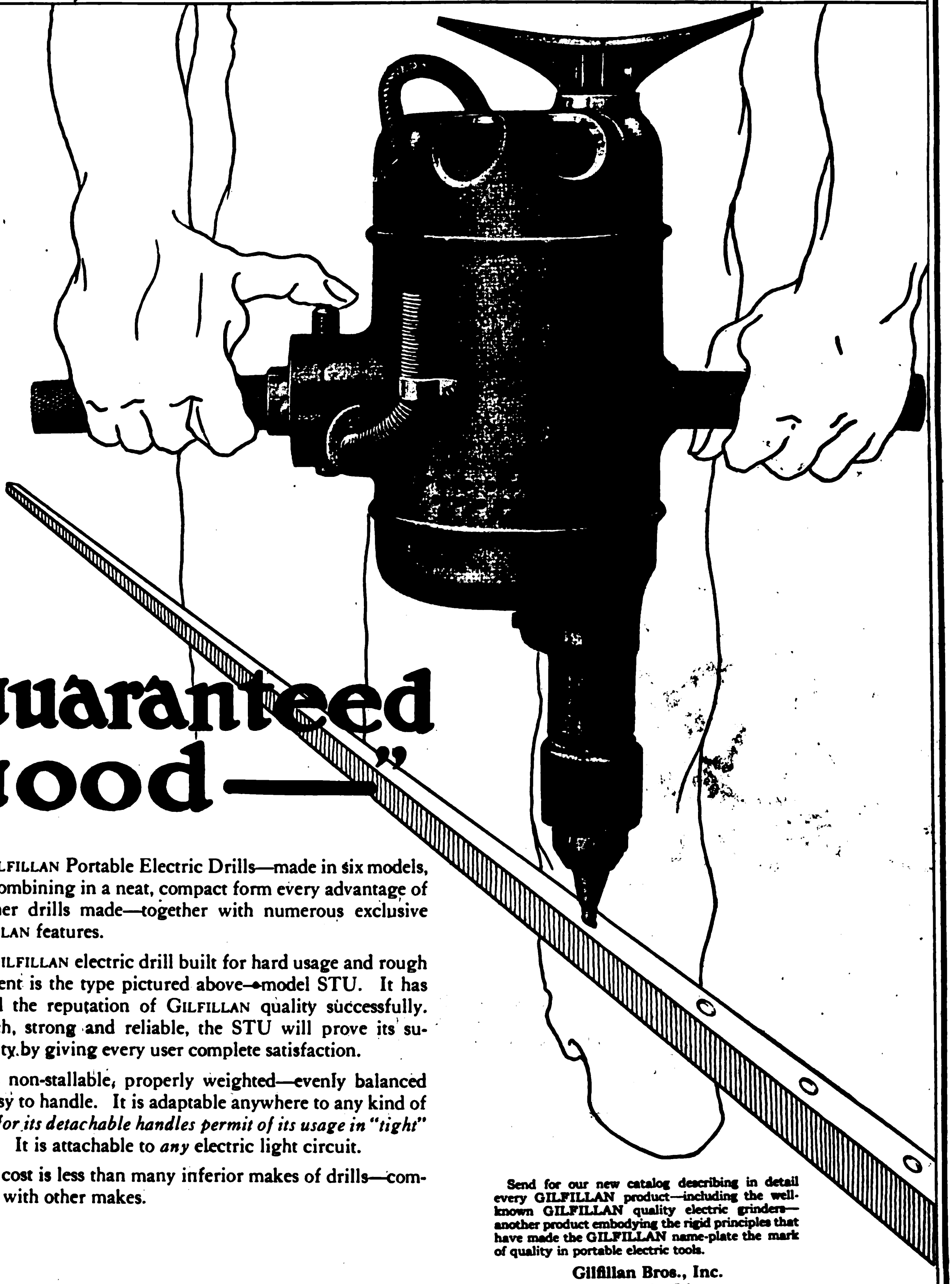
Weyanwega—Weyanga Auto Sales Co., garage and sales room.

Wyoming.

Lowell—Coliseum Motor Co., garage and sales room, Main St.

Sheridan—Herbert Fleischer purchased Wyoming Electric Supply Co. and Willard battery service.

Gilfillan Electric Drills



"Guaranteed Good—"

are GILFILLAN Portable Electric Drills—made in six models, each combining in a neat, compact form every advantage of *all* other drills made—together with numerous exclusive GILFILLAN features.

A GILFILLAN electric drill built for hard usage and rough treatment is the type pictured above—model STU. It has carried the reputation of GILFILLAN quality successfully. Staunch, strong and reliable, the STU will prove its superiority by giving every user complete satisfaction.

It is non-stallable, properly weighted—evenly balanced and easy to handle. It is adaptable anywhere to any kind of work, *for its detachable handles permit of its usage in "tight" places.* It is attachable to *any* electric light circuit.

The cost is less than many inferior makes of drills—compare it with other makes.

Send for our new catalog describing in detail every GILFILLAN product—including the well-known GILFILLAN quality electric grinders—another product embodying the rigid principles that have made the GILFILLAN name-plate the mark of quality in portable electric tools.

Gilfillan Bros., Inc.
Los Angeles, Cal.
New York Kansas City Atlanta

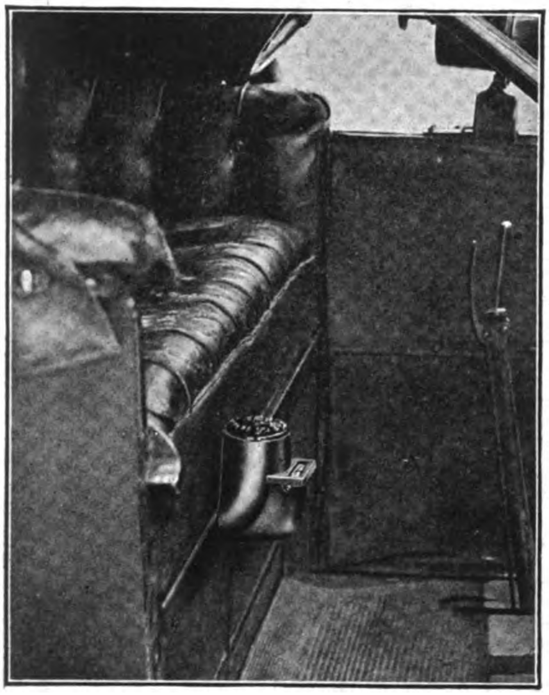
A Gilfillan Quality Product

GO-ITE GASOMETER FOR FORDS AND CHEVROLETS.

An accessory for Ford and Chevrolet automobiles that is attracting widespread attention both among dealers and car owners is the Go-Ite Gasometer, a combined gasoline filler and gauge. This device fits snugly under the cushion of the front seat of either of these makes of automobiles.

It eliminates the necessity of getting out of the car, lifting the seat cushion and measuring the gasoline. The special air vent prevents flooding while the tank is being filled. It is said to be the only combined gasoline filler and gauge on the market for these cars. It tells the driver just the amount of gasoline in the tank at all times and allows the tank to be filled in a half minute with no inconvenience to any passenger in the car.

The Go-Ite Sales Co., Kokomo, Ind., has been formed to handle the distribution and sales of the Go-Ite Gasometer.



Go-Ite Gasometer, a Combined Filler and Gauge.

Included in the personnel of the organization are the following: President, D. T. Hersey; vice president and sales manager, T. P. Nickell. Mr. Hersey was formerly sales manager of the Vulcan Spring Co., Richmond, Ind., and assistant general sales manager of the Splitdorf Co., Newark, N. J. Mr. Nickell was also formerly connected with the Vulcan Spring Co. in the capacity of sales manager and New England manager for the Splitdorf company.

The Go-Ite Gasometer is manufactured by the Go-Ite Manufacturing Co., Kokomo, Ind. Jobbers and dealers' proposition will be furnished on request.

LANE ROCKER ARM SILENCERS.

The function of the Lane Rocker Arm Silencers is to stop the tapping noises caused by the contact of the rocker arm with the valve stem in overhead valve engines, and to eliminate the play of the rocker arm on its bearings by keeping it under constant tension. Numerous letters received by the manufacturer from service stations and owners indicate that they perform this function most satsfactorily.

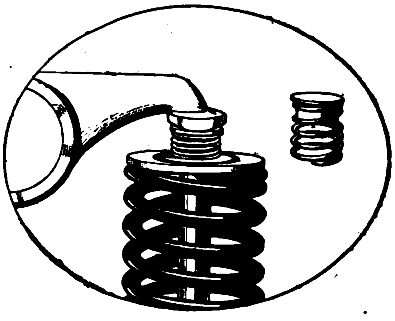
The silencers are composed of a metal cap, a fiber disc which is set inside the cap, and a spring made of piano wire. They are attached by placing the spring down over the valve stem with the cap pressed up against the rocker arm. The valve stem thus comes in contact with the fiber disc at the top of the cap instead of with the rocker arm itself, thus eliminating the noisy tapping of the rocker arm against the valve stem.

The spring keeps the rocker arm under constant tension by taking up the lost motion in the moving parts between the valve stem and the camshaft, and thus eliminates several additional irritating noises. The spring is of sufficient strength only to hold the cap firmly against the rocker arm and is not strong enough to interfere in any way with the operation of the valve. The silencers are easy to attach and once attached can be forgotten.

The accompanying cut illustrates the principle of construction and application.

These silencers are made in two sizes. One size fits the older Buick, the Chevrolet, Oakland, Oldsmobile, Franklin and other cars having a 5/16-inch valve stem, and the other size fits the newer Buick, the Nash, Templar, Premier and other cars having a ⅜ inch valve stem. Practically all engines of the overhead valve type have stems of one or the other of these diameters.

The silencers are sold in complete sets of 12 for any overhead valve car at a retail price of $2 a set. They are manufactured by Charles E. Ellis, 115 Broadway, New York city.



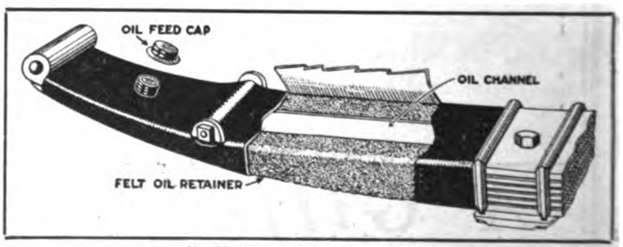
Lane Rocker Arm Silencer.

RELIABLE SPRING OILERS.

Automobile manufacturers are careful to see that all springs are properly lubricated before the cars leave the factory, thus insuring flexible springs that absorb road shocks and jars. This quality should be retained throughout the life of the car if the springs are given proper attention, but owing to their exposed position they are subjected to deposits of water and mud in wet weather and dust and road grit in dry, with the result that they become rusty and stiff, throwing extra burdens on the tires and shortening the life of this equipment.

Reliable spring oilers are designed to keep the car springs properly and perpetually lubricated and sell at a price that will appeal to automobile owners. As will be noted from the accompanying cut, each Reliable oiler has an oil channel down the center, which carries sufficient lubricant for three months' driving. The oilers are put on dry and then filled with oil. All that is necessary to do thereafter is to replenish the lubricant at intervals of two or three months.

Reliable spring oilers are made for all makes and models of cars. Manufactured by the Reliable Spring Oiler Co., 446 Miller avenue, Columbus, O., who will send full information in regard to this product on request.



Reliable Spring Oiler.

THE AERO-CAP FOR AUTOMOBILE RADIATORS.

The Aero-Cap, which is manufactured by F. Wolkow & Sons, Louisville, Ky., is an all-metal cap for motor car radiators, which, it is claimed, combines beauty, durability and utility. It was especially designed to do away with the inconvenience of handling the round type of radiator cap. As it is made of one piece of bronze, heavily nickelled, or of aluminum, there is nothing about it to crack or break. Only a slight pressure against the handy propeller arms is necessary to tighten or loosen the Aero-Cap.

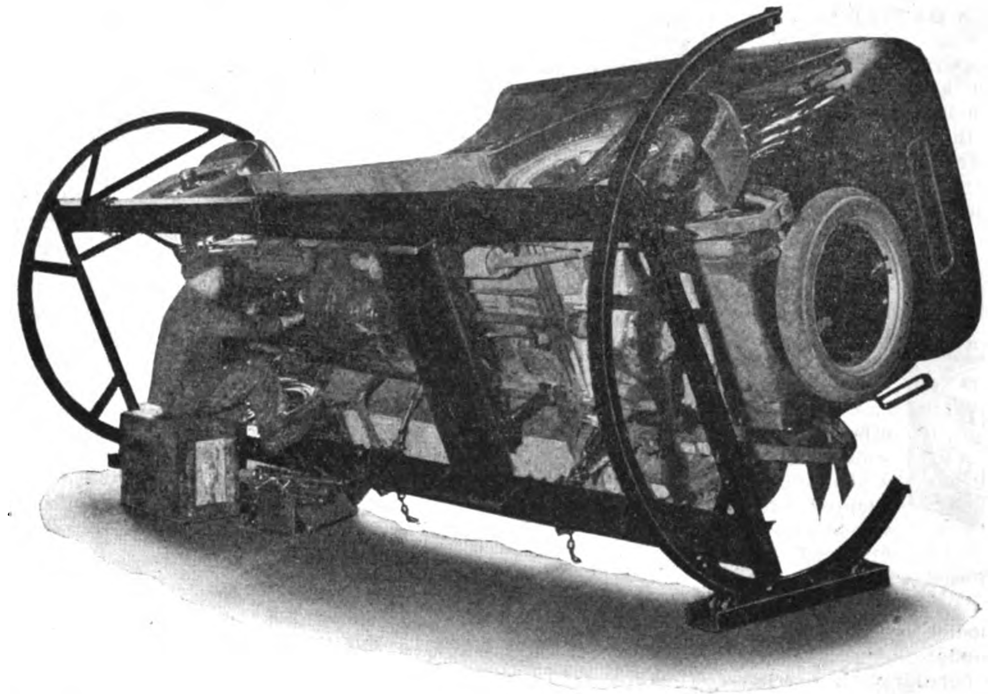
It is made in sizes to fit all types of radiators and the list price is $5 each. When ordering the name and model of car should be specified, also whether or not the cap is to be drilled for a motometer and the type used.

OFFICERS OF KELSEY MOTOR CO.

At the recent annual stockholders' meeting of the Kelsey Motor Co., Newark, N. J., the following officers and directors were elected:

Directors: E. J. Churchill, A. E. Jennings, John R. Thomas, Charles W. Hoyt, Charles Abbott, E. I. R. Cadmus and L. S. Tyler.

Officers: President, Ernest B. Slade; vice president, C. W. Kelsey; treasurer, Thomas J. Stewart; secretary and assistant treasurer, F. D. Dorman.



BETTER Work MORE Work

At Less Than Half the Time and Cost

That in a nutshell, sums up the results being obtained by garages, repair and paint shops which have installed the

TURN-AUTO

No more dark pits, inclines and creepers! No more working in unnatural positions! No more half-finished jobs! Just run the automobile—any size, any kind—on The Turn-Auto and in a moment all the underneath parts are in plain view. Working on them, then, is as easy as if they were on the bench in the lightest part of your shop.

PAYS FOR ITSELF IN TWO MONTHS

Improved working conditions and the ability to work on all mechanism with both hands and in a natural position will enable you to get twice as much work out of your mechanics. And their work will be twice as efficient.

AUTO SALES AGENCIES

are finding The Turn-Auto invaluable in showing prospective buyers the advantages of the underneath mechanism of their cars.

Send for Illustrated Booklet

The TURN-AUTO CORPORATION

Executive Offices
149 Broadway NEW YORK

REPRESENTATIVES WANTED:

We still have some state territory open for men of high calibre with financial backing who can undertake the full handling of this wonderful proposition. Write, phone or wire.

TURN-AUTO

ALCO DELUX BATTERY.

Realizing the necessity and appreciating the demand for a Ford battery to retail at $25, the Cincinnati Storage Battery Co., maker of the well known Cincinnati storage batteries, are now putting on the market a battery which is called the Alco Delux.

The Alco Delux is a six-volt, full strength battery for Ford cars and may be used for Buick, Chevrolet, Overland and other cars as well. It is especially adapted for wireless outfits and for various other purposes where a small battery is required.

ALCO
FORDTYPE
SPECIAL
DELUX
PAT. AUG. 5, 1919

This battery embodies the same principles which have made other Cincinnati storage batteries so popular with distributors, dealers and car owners. A feature of the Alco Delux is the remarkably insulation qualities of the wood separators, which are manufactured by a special process. It is a well known fact that the life and usefulness of a storage battery is dependent on its insulation. The manufacturer is ready to attest by actual comparative figures the unusual life of the separators used in the Alco.

The advent of this special battery will be good news to all dealers who have done so much to promote the sale of Cincinati storage batteries, as it will allow them to complete the Cincinnati line and to be prepared to meet all classes of battery trade.

Full information regarding the Alco Delux battery, prices, shipping dates and allotment of desirable territory still open may be had by writing or wiring the Cincinnati Storage Battery Co., Moorman avenue, Cincinnati, O.

LANE'S UNIQUE TOOLS ASSORTMENT.

The Will B. Lane Unique Tool Co., 170 West Randolph street, Chicago, Ill., has prepared an assortment of Lane's Unique tools for live dealers who wish to give their trade a guaranteed wear-resisting outfit. This assortment is especially suited for quick sales by automobile supply and hardware dealers, as nearly every car owner and mechanic needs one or more.

This assortment includes such ready sellers as styles A, B and C Universal socket wrench sets, styles F and S ratchet socket wrench sets, style K angle socket wrench sets, Super-Unique ratchet socket wrench sets and Lane's Offset Reversible ratchet screw driver.

No castings nor drawn work are used in the manufacture of Lane's Unique tools. They are made from solid steel throughout and all wearing parts are heat treated. It is claimed for the Lane wrenches that they were the first to be supplied with broached sockets, turned from solid, round-bar steel, which insures a strong and accurate type of socket.

If dealers cannot obtain Lane's Unique tools from their jobbers they are invited to write direct to the manufacturer.

A DELUXE ACHIEVEMENT.

Some seven or eight years ago Edward W. Clark, an engineer and inventor of 30 years' experience, decided to give a portion of his time to research work in connection with internal combustion motors, particularly automobile motors. Being thoroughly practical, Mr. Clark quickly decided that to make the motor efficient something must be done to reduce the weight of the reciprocating parts.

After about two years of experimenting he produced what was up to that time stated to be the most nearly perfect piston, consisting of an aluminum head and cast iron skirt, united in an unique and original manner, very light in weght and wonderfully successful and on which basic patents were granted. But its inventor felt that it could still be improved upon.

For instance: There was considerable wear on the ring grooves cut in the aluminum head. Mr. Clark overcame this by inventing a piston having a steel head with cast iron skirt, obtaining patents on this piston also.

In the several years that followed Mr. Clark continued to devote much time and attention to the further development of his piston. Many radical changes were made and finally came the beginnning of the braced or ribbed piston. Mr. Clark at once stopped the manufacture of other kinds and devoted his attention to the further development of his latest design, until the organization of the Clark-Turner Piston Co., Aug. 1, 1919, when the ribbed or reinforced piston was placed on the market nationally. Since then there has been constant improvement and today every detail—every step in production, from the daily analysis, through our electric furnace, through plant down to final inspection and shipment is carefully guarded, checked and rechecked.

Deluxe pistons are now made in standard and oversize for more than 800 makes of automobile, truck, tractor, motor boat, motorcycle and airplane engines.

Deluxe pistons are not an experiment —they are scientifically designed, light weight gray iron pistons, proved through actual use.

They are patented and manufactured by the Clark-Turner Piston Co., Los Angeles, Cal.

MARCH CAR SHIPMENTS ARE LARGE.

Reports to the traffic department of the National Automobile Chamber of Commerce for March from automobile factories producing two-thirds of the total volume indicate that figures for that month will be 16,500 car loads and 10,000 drive-aways. Figuring the drive-aways into car load equivalents, the March shipping was 63 per cent. greater than in February. Last year this increase was 20 per cent. In March, 1920, shipments amounted to 29,326 car loads and 57,273 drive-aways, the largest single month's shipping; shipments for March this year will be 42 per cent. of that record month.

Complete figures for February are 9920 car loads, 7491 drive-aways and 99 boat shipments. This is an increase of 58 per cent. over January. Last year this increase was 13 per cent.

A. E. A. CONVENTION AT MACKINAC ISLAND.

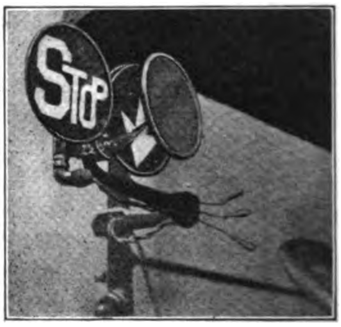
The next convention of the Automotive Equipment association will be held at the Grand hotel, Mackinac Island, Mich., the week of June 30. Meeting of the board of directors and committees will be held on Monday and Tuesday and the general meetings Wednesday, Thursday and Friday.

THE FOW-TOOR VEHICLE SIGNAL.

It is reported that evidence gathered in regard to casualties in which 10,000 lives were lost last year through automobile accidents, brought out the significant fact that by far the greater proportion were due not to reckless driving, but to lack of means whereby drivers could give timely, positive and conspicuous warning of their intention to turn to the right, to the left or to stop.

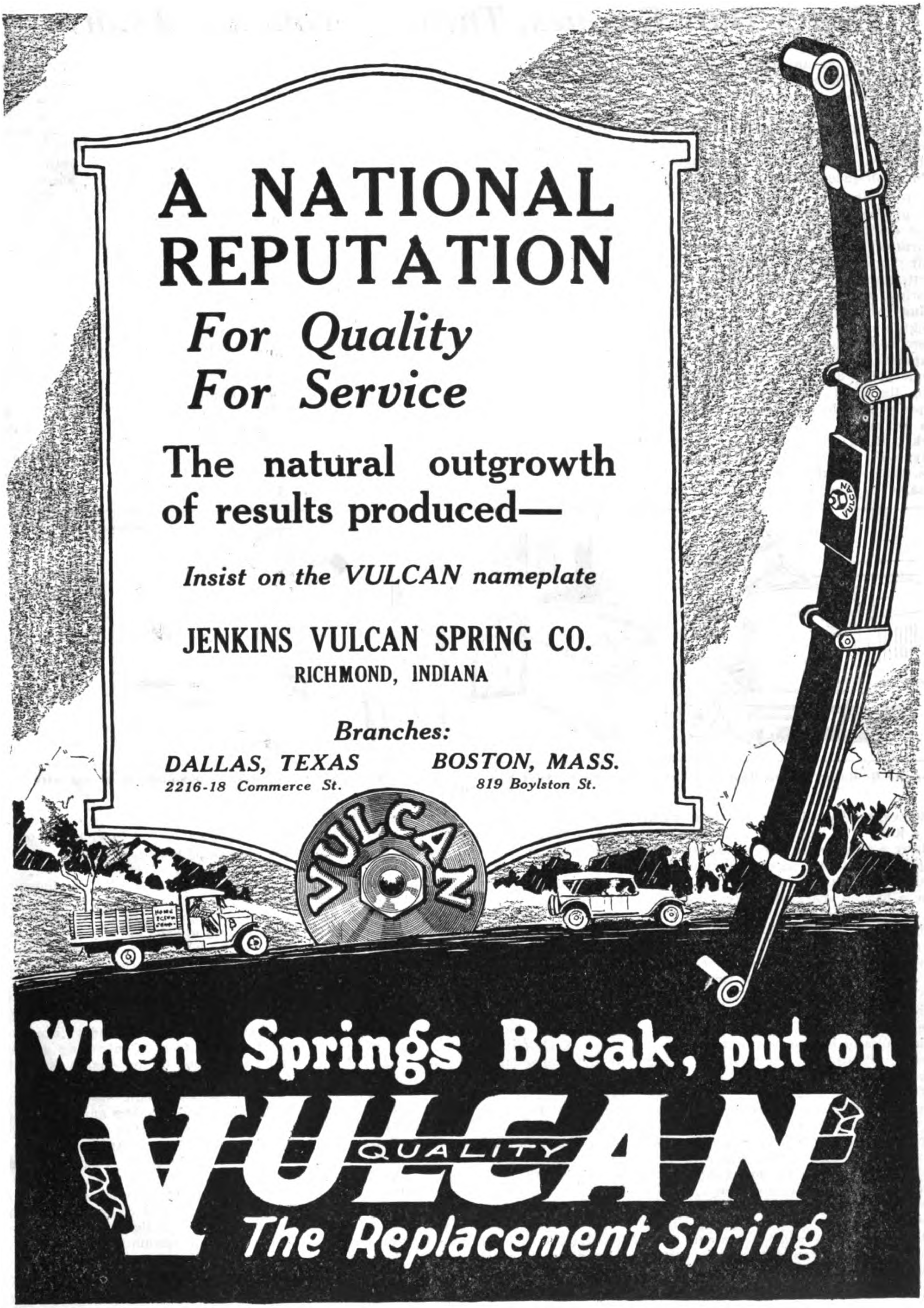
In the Fow-Toor vehicle signal, which has been developed after years of labor and experimentation, and subjected for many months to rigorous tests under every conceivable situation, the motor vehicle driver has at his disposal the means of giving such a warning. This device not only signals the driver's intention to other cars, front and rear, but also to traffic officers and pedestrians as well.

It is more than a day and night signal; it also embodies features which enable it to function as a rear view mirror, a parking light, a trouble lamp socket and a spot lamp bracket, making a combination of six necessary accessories in one.



The Fow-Toor signal is simple in construction, with all its parts standardized. It is positive in its operation and there is nothing to get out of order. It is readily attachable to any type of car, open or closed.

It is manufactured by the Toor Products, Inc., 29 West 34th street, New York city.



A NATIONAL REPUTATION

For Quality
For Service

The natural outgrowth of results produced—

Insist on the VULCAN nameplate

JENKINS VULCAN SPRING CO.
RICHMOND, INDIANA

Branches:

DALLAS, TEXAS
2216-18 Commerce St.

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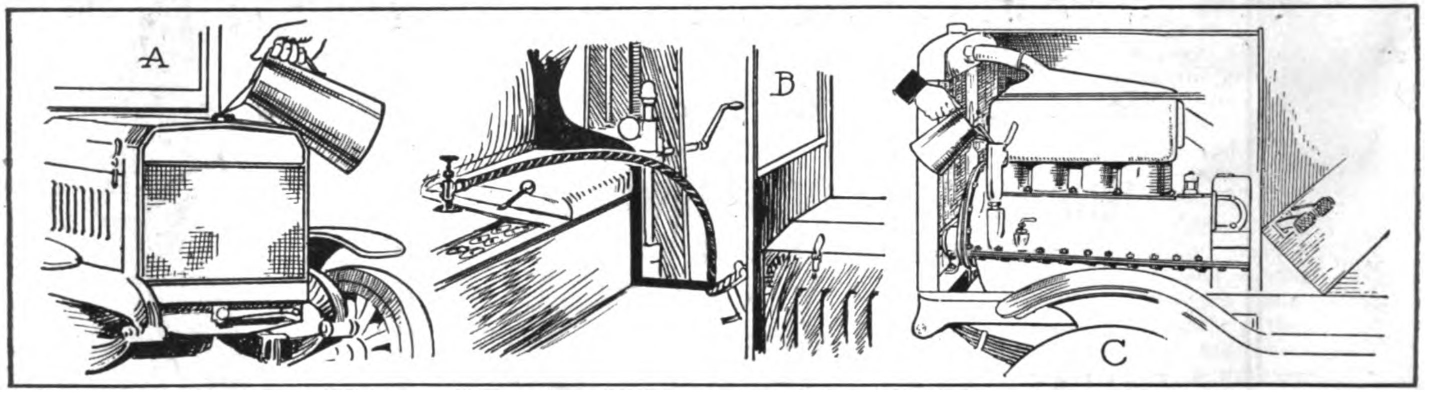
819 Boylston St.

VULCAN
VULCAN
When Springs Break, put on
VULCAN
QUALITY
The Replacement Spring

Heavy Duty Engines, Their Operation and Care

IT CANNOT be impressed too strongly upon the mind of the motor vehicle owner that no matter how well the engine of the power plant is made that it requires a reasonable amount of care and attention and this must be contributed by the owner or operator if the engine is to function successfully.

A few minutes of concentrated abuse will perceptibly shorten the life of the finest engine made and this is best demonstrated when an operator races the engine for several minutes just after starting the engine on a cold morning, laboring under the impression that by racing the engine he is warming it up quickly and getting the engine to a point where it will develop its full power. The temperature must be raised to a sufficient point before the engine will develop its rated horsepower, but this is properly done by allowing the engine to idle for several minutes before starting work. Idling speed, if practised moderately, will not harm a heavy duty engine, but racing the engine will do untold damage to the bearings and internal parts, especially when it is raced without a load.



A, the Radiator Should Receive First Attention; B, Next Fill the Gasoline Tank; C, the Oil Reservoir Should Be Filled with a Good Oil.

Many a trouble may be traced to some simple thing, like a carelessly made connection, dirt in the gasoline, a broken wire, a broken spark plug, etc., and drivers who understand the operation of an engine never condemn it for slips which are due to carelessness.

Preparing the Engine for Operation.

A little care used in preparing the engine for operation may save a great deal of trouble and possibly repairs at a later time.

The radiator should be the first unit to receive attention. See that all drain cocks in the water system are closed and fill the radiator with clean water. Make sure each morning before starting the car that the radiator is full and always keep it supplied with plenty of water, to prevent the engine overheating.

In an engine with thermo-syphon cooling this point is absolutely necessary, because the water will not circulate freely unless the top tank is filled above the inlet. In pump circulation systems it is not quite as important to carry the water high in the tank as the pump will circulate water even though it be low. Water will, however, tend to lower as it is heated and will be found low even after a few minutes driving. Do not let this fact worry you as no harm will come to the engine under normal conditions.

Never fill the radiator with cold water while the engine is running nor when the engine is hot, especially if the amount of water in the radiator is low. A sudden change of temperature in the cooling system is liable to cause the cylinder castings to crack.

Always make a practise of using clean water as free from lime, rust and impurities as possible. Clean rain water, when it can be obtained, is best, as it will keep the water jackets of the engine and the core of the radiator free from lime. Water spaces coated with lime or other impurities reduce the conductivity of the water, causing the engine to overheat, increasing oil consumption and reducing the life of the engine.

Filling Gasoline Tank.

Next fill the gasoline tank. Use nothing but the best grade, as it gives the most power and does not carbonize the cylinders as rapidly as low grade gasoline, which also spoils the lubricating qualities of oil.

Always strain the gasoline to remove any water or other impurities that may be present. The use of chamois skin placed over the top of a funnel is particularly good for removing water and sediment. Care should be taken, however, to see that the funnel sets on the top of the tank when filling, as many fires have resulted from leaving a small space between tank and funnel, the gasoline passing through the chamois causing frictional electricity, which causes a spark to jump between the funnel and tank.

Clean the chamois at frequent intervals to remove sediment and it will be found that gasoline will flow more freely.

Supplying Lubricant to the Engine.

After the radiator and gasoline tanks have been filled the oil reservoir should be filled with a good oil of the correct body as recommended by the engine manufacturer.

Much trouble and expense will be saved if close attention is given to the lubrication of your engine. If lubrication is neglected but once it can cause any amount of damage and expense.

There are usually three or four places that require lubrication on the modern heavy duty engine and these are usually the fan, water pump, magneto and oil reservoir in the engine pan. The pump and fan require a good grade of grease, while the magneto requires only a few drops of very fine grade oil about once in every 1000 miles of use. The oil reservoir in the engine base requires oil daily as the engine in heavy duty work uses oil more rapidly than in passenger car use. The lubricant is put into the reservoir through the breather and filler tube and in the grease cups by removing the caps.

Many engines are provided with a combined breather and oil filler tube, which acts as a ventilator for the crank case to prevent crank case pressure and increased temperature.

Never fill the engine too full of oil, as it will cause carbon to form and foul the spark plugs. A careful driver will soon learn how much oil an engine is needed for each 100-mile trip.

It is essential that the oil in the reservoir register half way between the two lines shown on the oil level indicator, if an oil indicator is fitted to the engine, or half way on the oil gauge if gauge is used. Therefore you should replenish the supply as soon as the oil level falls below this point. The oil indicator or gauge should always show that you have oil above the half full mark. The grease cups in water pump and fan should always be kept full.

When first starting a new engine do not go above a medium speed until the bearings, pistons and cylinders are running perfectly free. Controlling or governing the speed of the engine is vastly important.

A cold engine should be warmed up slowly, as it is dangerous and detrimental to race or accelerate a cold engine. This does more harm than constant service under full load at correct engine speed. Never race a cold engine, as when this instruction is disregarded and the engine is speeded up beyond the speeds which are indicated by the manufacturer as safe running speeds, you are inviting trouble, repairs and expense, which will soon take your car to the repair shop and may mean heavy expense.

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